
Photo: Howard McMichael

# STORM TRYSAIL HANDS-ON SAFETY-AT-SEA SEMINAR

**PRESENTED BY:**
**The Storm Trysail Foundation**
**The Storm Trysail Club**
**Sanctioned by US Sailing**

## “DON’T GIVE UP THE SHIP!”

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Storm Trysail Foundation Chairman Rich du Moulin

Storm Trysail Club Commodore Ed Cesare

SUNY Maritime College Superintendent Adm. Michael Alfultis

These three organizations have teamed-up to present an ongoing series of Storm Trysail Hands-On Safety-at-Sea Seminars at the Maritime College. The Storm Trysail Club, founded in 1938, aims to promote good fellowship among blue water sailors and to encourage ocean racing and offshore cruising. The Storm Trysail Foundation supports the Club's initiatives in Adult Hands-On and Junior Safety-at-Sea, the Intercollegiate Offshore Regatta, and community sailing programs. The Foundation has also been instrumental in the startup of the College Offshore Sailing Circuit headed by member Rich Wilson. A fleet of Figaro2 offshore yachts is now in place for college sailing. Working with Gary Jobson, a Storm Trysail member and Maritime College graduate, the Foundation produced a series of Safety-at-Sea videos. The Foundation also supported U.S. Sailing's Online SAS education. Storm Trysail is the leader in combining a one-day Hands-On Seminar with online learning to achieve the international World Sailing certification standard. We hope you enjoy this seminar and that it helps you enjoy safe and fun sailing.



# Schedule & Facilities Map

## Seminar Schedule:

Attendees will be divided into four color designated groups and rotated through each of the four blocks: On-the-Water, In-the-Pool, Firefighting & Pyrotechnics, and Damage Control.

| | Level 100 | | | |
|---|---|---|---|---|
| 0700-0745 | Registration - All | | | |
| 0745-0900 | Opening session - All | | | |
| 0910-1040 | On Water | Damage | Pool | Fire/Pyro |
| 1050-1220 | Damage | On Water | Fire/Pyro | Pool |
| 1230-1330 | Lunch - All | | | |
| 1330-1500 | Pool | Fire/Pyro | On Water | Damage |
| 1510-1640 | Fire/Pyro | Pool | Damage | On Water |
| 1650-1745 | Closing session - All | | | |

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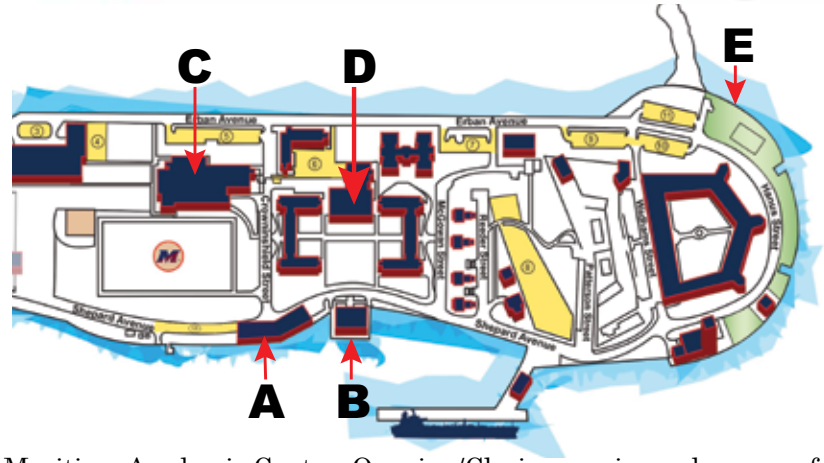



**A** Maritime Academic Center–Opening/Closing sessions, classroom for Fire Fighting & Pyrotechnics (session begins here in classroom, not at the Point)

**B** McMurray Hall– Damage Control (outside by the water) and Launches for on-the-water session

**C** Riesenberg Gymnasium & Pool–Life Raft and Drownproofing Session

**D** Vander Clute Hall–Lunch on second deck

**E** Point Lawn–Fire Fighting/Pyrotechnics (following classroom session in A)

**Yellow Areas** Parking

# Welcome


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. Kids learn best "hands-on" developing strong skills and having fun, a great draw into a lifetime enjoyment of big boat sailing. This also applies to adults!

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 the days of sailing ships, it was not a coincidence that experienced seafarers became the great explorers. 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 good cheer and optimism 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 cheer.

What does all this have to do with this Seminar and Storm Trysail Club? It is simple. We want 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** (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**–channel the skills and energy of the crew to achieve objectives and ensure a favorable outcome (racing or cruising)

**SITUATIONAL AWARENESS**–identify risks, problems (opportunities) early in order to take corrective action with minimal risk and loss



# Moderator's Overview

**RESET GOALS** and strategy as conditions change; be flexible

**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 that include: the proper use of tethers (see photos), rig and bilge inspections every watch, leeward and aft lookout, and for male crew, use of the famous "P-cup" instead of hanging off the stern.

**"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, and Flooding, and use of storm sails on your own boat with your own crew in a range of sailing conditions.


**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.

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.

# Moderator's Overview (Cont'd.)

- **BOAT PREPARATION** - understand, inspect, and test everything including:

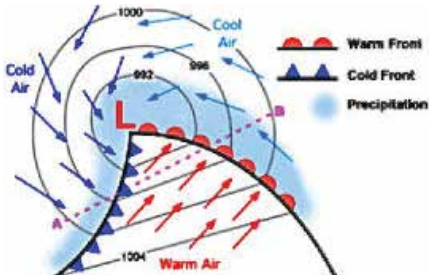
Watertight integrity–hull, deck, ports, mast partners, fore deck hatch
Pumps–small & big electric, bilge alarm, manual cockpit & cabin, clean bilges
Mechanical- batteries, engine, watermaker, fuel system
Rig–closeup inspection, tune, heavy weather setup (positive bend)
Sails–inspection, leads, wind range/sail 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
- Proper clothing–foul weather gear, boots, warm wicking clothing and wool
- Watch system–balance of skills, intelligent schedule, good leadership, 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

**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.

**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.

**A CASE STUDY**: The training and preparation worked for 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 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 and Moderator

# 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
Screwdrivers, crescent wrenches, Socket sets: metric, English (useful sizes, including for engine repairs)  Allen wrenches: metric, English

## 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 Kit

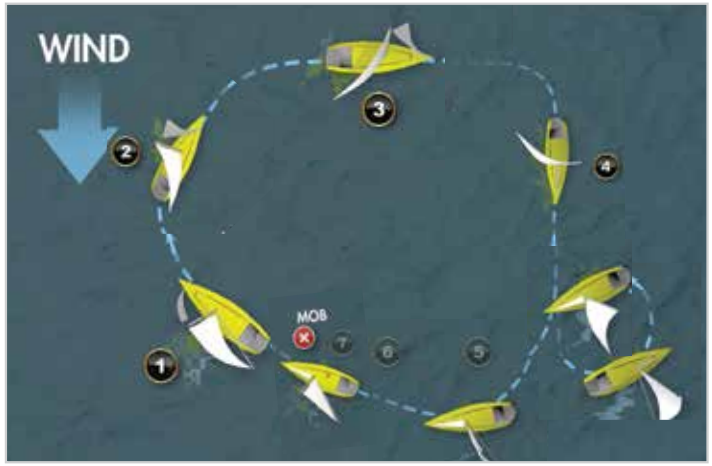
**Damage Control** tools and supplies should be stowed in containers so they are available at short notice. Location should be noted on the posted Emergency Chart. Larger items such as timber, spare shroud, drogue, and emergency tiller should also be noted. In the corner photo is a charged power pack 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 STC video).

# Damage Control Emergency Responses

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

# MOB Upwind Quick Stop




Any maneuver associated with an MOB recovery must take into consideration both a desire to remain close to the victim in the water, and a controlled return and approach to the MOB. Remember your hull may be the biggest threat to the life of the MOB. It is of the utmost importance that you practice a variety of MOB maneuvers with your own crew aboard your own vessel. Remember, the engine will provide critical maneuverability during a recovery.

**POSITION 1**: Shout "Man Overboard!" Pull the pin on the MOM. Throw flotation. Hit the MOB button. Helmsman shouts "Hold on! Tacking!" One crew assumes role of Pointer shouting continuous bearing & range of the MOB.

**POSITION 2**: Crew holds on while helmsman quickly tacks. If crew hiking, helmsman does slow tack to allow crew to get inboard or just goes head to wind. Jib sheet is not released.; With backed jib and luffing main, the boat "heaves to".. Engine started and kept in neutral; check for lines in water.

**POSITION 3**: As soon as crew is prepared (off-watch wearing footwear and pfds on deck), ease main and beam reach 2-4 lengths. Jib remains 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 the MOB, helmsman luffs towards MOB. Ideal approach is a close reach, main luffing, engine standing by. Pointer moves forward to shrouds to keep MOB in sight 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 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 to MOB and with halyard on Lifesling bridle (or knot on line above bridle), the MOB is hoisted on deck.

If MOB unconscious, hypothermic or weak - but close aboard - a tethered "Rescue Crew" in bosun chair (climbing harness) must be lowered by halyard into water as boat comes alongside MOB. Professional racers often have a highly trained rescue swimmer fitted with a rescue PFD, long tether, face mask, stubby fins and in cold water a drysuit, who can swim a few strokes if necessary to secure an immobile MOB.



# MOB Downwind Quick Stop


**POSITION 1**: POSITION 1: Shout "Man Overboard!" Pull the pin on the MOM. Throw flotation. Hit the MOB button. The helmsman shouts: "Hold on! Coming up!" One crew assumes role of the Pointer shouting continuous bearing and range to MOB.

**POSITION 2**: Ease pole to headstay, trim foreguy, cleat both. Trimmer gives quick luff to spin sheet to unload sail. Crew holds on as helmsman luffs up to close hauled.

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

**POSITION 4**: Start engine and keep in neutral; check for lines in water. Tack towards MOB using engine to gain speed and steerage. The Pointer moves forward to shrouds to keep MOB in sight and continue calling bearing and range. Crewman on foredeck prepares to deploy throw bag. Remainder of recovery same as Positions 6 & 7 for Upwind Quick Stop.

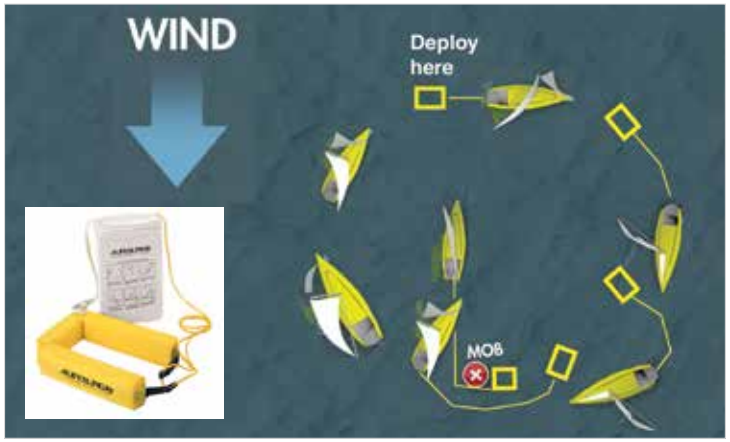
**ASYMMETRICAL SPRIT BOATS**: Spin sheet eased 5-10 feet to unload sail as helmsman luffs to close hauled. Spinnaker sheet then trimmed tight, the foot grabbed by crew, and halyard is run (keep 1-2 turns).. For both the spinnaker pole and sprit rigs, the tack of the spinnaker is not eased until the sail is on deck under control and the bowman asks for it. This keeps the sail from blowing aft and overboard.

**HEAVY AIR DOWNWIND MOB RECOVERIES**: Depending on specific boat characteristics, Downwind Quick Stops are not recommended in heavy air over 20-25 knots. A heavy air Downwind 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 an extra sheet always be attached to the clew and rigged "letterbox" style between the foot of the mainsail and boom to a block on the weather rail and back to a cockpit winch. UK Sailmakers has a great letterbox video: www.youtube.com/watch?v=47HCqVQMEsA&feature=youtube

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

# MOB Quick Stop with Lifesling

## The Lifesling




is required for all major ocean races. It is a "must have" for any family cruising boat. The Lifesling is a horseshoe-shaped flotation device connected to the boat by a long, yellow floating line. It is particularly useful for a short-handed crew, double-handers or cruisers. 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 a stanchion base or strong point, and a water-activated light inserted in the horseshoe pocket.

When a crew goes overboard, the helmsman does the Quick Stop, the Lifesling is thrown into the water by the nearest crew (usually the helmsman), and towed behind the boat. The boat circles the MOB "water skier pickup style" until the MOB makes contact with the floating rope. Stop the boat immediately so the horseshoe is not ripped from the MOB's grip. The engine is a big help. Remaining sails are quickly dropped/furled.

The MOB slips the Lifesling over the head and under the armpits. If the boat is dragging the MOB, 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.

Racing crew should practice recoveries with and without a Lifesling. Cruising crew can focus on Lifesling recoveries. In either case, all MOB situations first require the Quick Stop; then a decision can be made to use the Lifesling or perform a close aboard recovery.

In heavy air, when a chicken tack is preferred to a gybe, do not deploy Lifesling until after the tack, or the boat will sail over the floating line.

If the MOB is unconscious or appears weak, the Lifesling Recovery will not work. The MOB will be unable to grab and secure the Lifesling. A close approach with a tethered Rescue Crew in a bosun chair (climbing harness) is the only option and attempting to use the Lifesling loses critical time. Professional level boats may deploy a rescue swimmer.

In very rough seas use of the Lifesling is questionable; it may be necessary to shift tactics to the alongside approach.



# Improved MOB Recovery

Storm Trysail has been in the forefront of developing improved methods of MOB recovery; actually getting the MOB safely on deck. Storm Trysail first introduced tallboy buoys for practice. They do not blow downwind, and are easily picked up and reset. However, tallboys cannot simulate a waterlogged MOB.

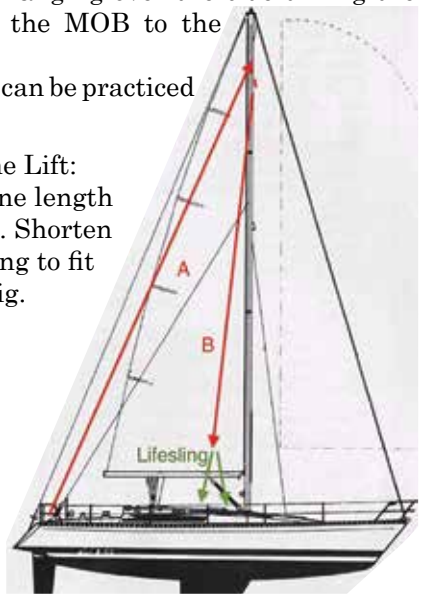
In real incidents, MOBs have been lost even after making contact with the crew's outreached hands, or when struck by the bow or sucked under the hull. In Junior and Adult Hands-On Seminars, and in May 2021 at "SAS Training Day" with six fully crewed boats practicing with MOB dummies (see photo), Storm Trysail has radically adjusted its MOB Recovery recommendations. Some of these are incorporated in the previous three pages, but it is important to elaborate.

## Most Important Lessons:

- It is critical to practice MOB Recovery on your own boat with your own crew in a variety of conditions. Training is essential, and tailoring the evolution to the characteristics of your boat is mandatory.
- Understand that your hull is the biggest threat to the safety of the MOB (assuming the MOB has flotation); maneuver accordingly in both the alongside and Lifesling recoveries.
- Rushing back to the MOB in an unprepared state risks a catastrophe; Quick Stop to stay close, but don't go back until fully prepared.
- If the MOB appears uninjured and mobile, use the Lifesling plus Mid-line Lift Recovery. Practice to make sure you believe this is best for your crew and boat. Storm Trysail's tests to date are highly favorable.
- If the MOB appears unconscious, injured or hypothermic, prepare for an Alongside Recovery with a Rescue Crew hanging over the side during the final approach to make contact, secure the MOB to the halyard, and hoist.
- With a MOB dummy, the above evolutions can be practiced in perfect safety.

Midline lift with Dummy (see video: stormtrysail.org/sas)

Midline Lift: Tow line length = A+B. Shorten Lifesling to fit your rig.



# 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 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 17). 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, minimize apparent wind
- If a fuel fire- close the shut offs
- If electrical fire – shutoff systems except communications & GPS
- Navigator issues Mayday with vessel name, position and situation; activate DSC VHF distress button
- Non-firefighters muster on deck wearing PFDs & 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!
- Do not open compartments to see if fire is out; if engine fire stick nozzle into Fire Port
- When fire is out, remove debris ("fuel "); for A type fire soak area



# 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

| | |
|---|---|
| Mayday/Position/Take Satphone & EPIRB | Navigator |
| Officer in Charge: Cockpit | On-watch Captain |
| Officer in Charge: Cabin | Off-watch Captain |
| Life rafts/ditch kits/flares to cockpit | Crew____,Crew_____ |
| Water Jugs, PFDs, FW gear to cockpit | Cook |
| Stop leak/fight fire | Crew____,Crew_____ |

**Remember:**

- Secure life raft painter to cleat but do not toss the raft overboard until ready to abandon ship.
- All crew wear FW Gear and PFDs with tethers
- If two rafts, split ditch kit, water; one watch captain in each raft

**Fire Fighting (cont/d.)**

with sea water; no water on B liquid or C electrical fire.

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

**P.A.S.S.** – 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).

# 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. fire a second parachute rocket about 60 seconds after the first has burned out. 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.

Courtesy of Sea Safety International, a USCG approved life raft service company, supplying safety gear and service to the marine industry.



# Medical Kit Check List

## Recommendations For Offshore Sailing

Recommendations for offshore racing and passagemaking:

1. 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.
2. Crew training with basic first aid or wilderness medicine courses.
3. First aid reference books, one or more, for the crew to consult.
4. Communications: VHF and single sideband radios, satellite phone securely installed and well tested.
5. Recognize and address sea sickness, hypothermia, dehydration and fatigue in the earliest stages.
6. 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.
7. Crew to bring adequate supply of all their regular medications.
8. 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
**Eyes**: 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

# 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 use 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, Nick |
| 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.

# Sail Repair

**The sail "First Aid" kit** you received from Dimension-Polyant, a major sailcloth and laminate supplier, shows you some of the new, better ways to temporarily fix a sail. Woven Dacron® sails can still be repaired with the time tested palm & 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.

Included are small samples of 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 larger 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.



# 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 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.