



## **Handling Emergencies – The Captain’s Perspective**

### **Big Ships’ Practices Aboard Yachts**

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#### **Background**

Navy and large commercial vessels have, over centuries, developed effective techniques for handling emergencies. A sailor from Nelson’s Navy would initially be baffled by today’s ships, but he would immediately understand what was happening during today’s equivalent of “beating to quarters” (going to general quarters to handle an emergency).

This article suggests how the principles of handling emergencies on large ship can be applied to smaller private yachts – yachts capable of being cruised comfortably by two people. The principles can be easily extended to crews of more than two people, larger yachts, and professionally crewed vessels.

This article is it is written specifically for the captain, and in larger crews, for her/his watch captains and second in command. It intentionally does not address specific damage control equipment; individual damage control skills of crewmembers, vessel preparation to withstand and minimize damage, or actions to prevent emergencies.

## **Principles of Damage Control**

- **Organization:**
  - A “control station” to operate the boat and direct damage control effort.
  - A “damage control party” of one or more people that go to the location of the problem, fix the problem, and stabilize the location.
- **Initial Action:**
  - Alert all hands
  - Put the boat into a stable configuration which is basically the same for all emergencies. Stop any unnecessary evolutions.
  - Establish the most reliable methods of propulsion and steering
  - “Damage control party” goes to the location of the emergency.
- **Follow-up Action:**
  - Stop the casualty (i.e., put out the fire, stop the flooding, etc.)
  - Stand down from all hands emergency response.
  - Make provisions to operate the boat with degraded capability and restore the boat to full capability when possible.

### **Organization**

There are two major parts of a yacht’s organization for emergencies.

On US Navy vessels, Damage Control (DC) Central coordinates damage control efforts and communicates status and recommendations to the control station. Damage control parties at the location(s) of the emergency communicate with DC central. Due to a yacht’s relatively small size and limited crew, these damage control activities are most likely concentrated in a single location and performed by one or a few crewmembers. Therefore, I will refer to this part of the yacht’s emergency organization as the “***Damage Control Party***”.

The second major part of a yacht’s emergency organization is the control station. The control station controls the yacht, provides overall coordination actions during the emergency, and directs any external communication. I will refer to this part of yacht’s emergency organization as the “***Control Station***”.

It is vitally important that the captain understand the roles and responsibilities of the two parts of the yacht’s emergency organization – the Control Station and the Damage Control Party - and time-share her/his efforts between them as appropriate for the specific emergency, for that particular crew, and the yacht. The remainder of this article suggests considerations, methods, tips, and lessons learned for a captain to establish the yacht’s emergency organization and combat emergencies.

## “Control Station”

With a crew of just two people, the captain may choose to be in cockpit or on the bridge of powerboat and thus perform the functions of the control station herself/himself. This decision should be based on the captain’s assessment of the skills of the other crewmember. With a larger crew, crewmembers can be assigned roles and the Captain can step back to keep the bigger picture. In any case, the captain must avoid getting involved completely in one of the functions to the detriment of the other. Focusing on just one function can lead to additional problems such as collision or running aground while focusing on solely on the Damage Control Party actions; or not controlling the boat and its equipment to facilitate fighting the emergency while focusing purely on the control of the yacht. In a two-person crew, the single person at the control station is performing the functions of controlling the vessel, overall coordination of emergency actions and external communications. That person must consciously divide their time between the functions as the situation dictates. For example, if it is calm weather with no other vessels in sight and a stable propulsion configuration, more time can be spent on the coordination function. It is very easy to slip into focusing on just one function. By recognizing that there are distinct functions that must be performed, the person in the control station will avoid getting involved completely in one of the functions to the detriment of the others.

If the vessel has more than two crewmembers, the captain can decide to use one person for ship’s control while he/she shares time between performing the DC Central function and monitoring person in the ship control function.

With an even larger crew, the captain can establish one or more people for ship’s control and one or more people for the DC party. The captain may choose to stay in the cockpit with the helmsman (control station) and send another person as the DC party leader to main cabin where he/she could stage damage control gear, direct aid to injured personnel, coordinate damage control efforts, etc. If the captain is able to delegate both the control station and DC party leaders, the situation is ideal because the captain can stay “above the fray” and think two or three steps ahead.

**TIP:** At night it is helpful to set up the damage control party below decks where there is presumably better light and more room.

If the captain starts to do damage control himself or herself – which may be required and appropriate on a yacht - he/she needs to recognize that the role of the captain is degraded. Doing damage control herself/himself is logical for a captain because often the captain is the owner and most knowledgeable person about the boat. There may be no alternative with a crew of two, and if that is the case, the captain should recognize the risks involved in she/he having “hands on”

**Tip:** My guidance to my officers of the deck and to officers in charge at the location of an emergency was that if they could keep their hands in their pockets, they were probably staying above the fray, directing others, and thinking ahead. The captain should always be asking herself/himself during an emergency: “What comes next? What comes after that?”

involvement in damage control efforts and compensate for this. For example, he/she may want to slow down, heave to, put the boat on autopilot, drop anchor, etc. to reduce the complexity of the situation while damage control is in progress.

### **The Damage Control Party**

The DC party is the crewmember(s) that go to the location of the emergency.

In large crews, the DC party will have (a) a team leader, (b) a person designated for communications of the DC party to/from the control station, and (c) crew members fighting the emergency (e.g. using the fire extinguisher, stopping the flooding, etc.). For a two-person crew, the DC party functions are all combined in the single crew member. Regardless of size, it is important to remember there are three roles in the DC party so that all three functions happen even if the DC party is only one person.

I recommend that a vessel have a “default” plan designed for its minimum crew – two people. The captain should decide *IN ADVANCE* whether she/he will go to the location of the emergency and be the DC party, or if she/he will go to the control station to perform or supervise the control station function. My personal opinion is that either way works depending on the experience, skill, and physical condition of the crew. When the emergency actually occurs, if the crew is sufficiently experienced and trained, the captain can switch roles if she/he decides that would work better in that specific situation. *The key point is that there must be a default plan that everyone understands and executes initially when the emergency first occurs.* You can adapt the plan as the situation warrants but you must have a plan to start with.

If the crew has three or more people, I recommend that the default plan be that the captain goes to the control station initially (cockpit or bridge) and the second most experienced crewmember goes to the location of the emergency to perform the function of DC party leader (and other DC party roles if needed).

If a crew has two or more watch sections, using the concept of watch section roles for the yacht’s emergency organization works nicely. For example, if a vessel has two watch sections, the on-watch section would take the ship’s control role and the off-watch section would be the DC party. The watch captain of the off-going watch takes the role of the DC party leader. If there are three watch sections, the on-coming watch section musters in the cockpit or bridge and can be assigned as needed to supplement either the DC party and the bridge/cockpit team. Using the watch team concept for the DC party works better than assigning roles to individuals by name. If an individual is assigned to a role by name, she/he may be on-watch when the emergency occurs which in turn may require a watch relief in the middle of an emergency in order for them to perform their role.

### **Summary:**

There are innumerable permutations of crew, boat, and casualties but the roles of the DC party and control station are always the same. By understanding the functions of the DC party and the

control station, the captain can allot the proper resources to these two parts of the yacht's emergency organization so that both happen in a manner that fits the situation.

### **Categories Of Emergencies**

It may seem that there are an overwhelming number of possible emergencies and ways to respond. I suggest that the emergencies we are most likely to experience on yachts fall into one of three categories. Each of the three types of emergencies has a different initial response:

- 1. Fire**
- 2. Collision/Flooding** (includes grounding)
- 3. All other emergencies** (includes man overboard)

These categories are a consolidation of the categories used by military and civilian ships. Characterizing emergencies into only three categories is very helpful in training the crew and responding to emergencies.

**Fire:** This category is listed first intentionally. I consider fire the greatest danger at sea. It is most likely to kill or seriously injure a crew member, has the potential for the greatest damage and possible loss of the vessel, and requires the fastest response. The actions to fight this casualty are distinctly different and use different DC equipment compared to the next casualty.

**Flooding:** The choice of the name for this emergency is important. I recommend the use of the specific word – “flooding”. Every crew should discuss the difference between “flooding” and a “leak”. The response is dramatically different. A “leak” is within the capacity of bilge pumps and gets handled on a priority basis. It is not an all hands emergency. “Flooding” is an all hands emergency. The difference is simple – If the person reporting the emergency feels their life or the safety of the vessel is threatened, it is flooding. A more precise definition is not needed but a discussion with the crew during training is useful. For example, “If the water is at the deck plates ...” If you are standing in water...” would be examples of water that threatens the safety of the boat so it would be flooding. If in doubt, it's flooding.

The initial actions for collision and grounding start with basically the same response as flooding so they fall under this emergency.

**All other emergencies:** Whereas flooding and fire are an immediate and grave threat to the safety of the vessel and entire crew, emergencies in this category also require an all hands immediate response but are may not be as severe a threat to the safety of the vessel and entire crew. Examples are man overboard, major damage to sails and rigging, medical emergency, rescue and assistance to other vessels, steering or propulsion casualties in restricted water, etc. The category is “open” in that there is not a limited, pre-defined list. The captain can use this response for any emergency requiring an urgent, all hands response with maximum flexibility in how to employ the crew.

## Initial Actions

The two goals of the initial actions are to (1) **alert the control station of the emergency and then** (2) **put the boat into a pre-determined, known configuration**. Each word is significant so let's examine that sentence.

Absolutely first and foremost is that the person discovering the emergency alert the control station. The person should not attempt to combat the emergency until after alerting the control station. This must be drilled into every person onboard.

**Tips:** The captain should emphasize in every training session the importance of first notifying the control station before any other action. A person's first urge is to combat the emergency rather than notify the control station.

Why notify first and then fight the emergency?

This lesson is written in blood, literally. If the person discovering the emergency attempts to fight the emergency before notifying the control station, all too often the emergency gets out of control for one person and because the control station was not notified, the vessel's response is delayed. Another tragedy is the person fighting the emergency single handed is overcome and becomes a casualty.

Why notify the control station? It is the one place that can be counted on to have a person awake and on watch at all times. So that is the station that by default must be notified.

Once the control station has been notified, the control station must "call away" the emergency. With a two-person crew, the control station may be the person discovering the emergency and he/she must insure the other crewmember is notified if they are not already up. With a larger crew, a crewmember should be sent to physically notify all crewmembers and visually inspect all bunks to insure all people are up. It is critical that an inspection of all berthing be done, particularly in the case of a fire. You don't know where people may be sleeping and failure to awaken them may result in them being overcome by smoke in their sleep. The person performing the role of the DC party leader is responsible for insuring all hands are awake and responding.

**TIP:** We mounted two small air horns (about 4 inches high – available at any party supply store) with Velcro in the cockpit and the salon that can be used to sound the alarm for any emergency.

The next step is to put the boat and its systems into a planned, baseline configuration for fighting the casualty. The exact way the boat should be operated in an emergency depends on the type boat and its specific equipment. In general, two principles should be followed. First, secure any unnecessary evolutions. For example, if a generator set is running, secure it. This is one less source of water for flooding, one less source of electricity in a fire, and in general one less thing going on that can complicate damage control. If galley equipment is being used, secure it.

**Tip:** Slow down the problem. Slowing the boat down will likely make many things easier – less wind across the deck, less heel, less strain on rigging, less demand on the helm, etc. But don't slow down to the point of being a hazard to other vessels or losing steerage way.

Shut off the propane supply. Other examples of unnecessary evolutions are changing sail configurations, pumping holding tanks, doing routine maintenance, etc.

The second part of establishing a known baseline configuration is to establish the most reliable mode of propulsion and steering. For the two-man crew, this may mean leaving the sails untouched and putting the boat on autopilot. With a larger crew the captain may direct a manual helm and reducing sail/changing course to give a smoother ride in order to make damage control efforts easier. The goal is to get the boat to a configuration that makes it easiest to maneuver and with no unneeded things going on. What condition this exactly is will depend on the boat and the situation, but it is helpful to think through possible scenarios in advance and have a general plan in mind.

**TIP:** It is a worthwhile team building training session to sit down with crew and brainstorm what would be the best way to configure the boat for fire and for flooding in the conditions anticipated during the current voyage.

### Follow Up Actions

#### **Stop the casualty**

The purpose of this article is to describe high level considerations for handling emergencies. Therefore, this section contains general guidance applicable to all vessels and does not get into specifics such as techniques to stop flooding.

#### **Fire:**

***The need for speed: FIRE is the only emergency where speed of response is always a life or death matter.*** A yacht is not equipped with personal protective gear for firefighting and air breathing apparatus as a large ship would be. The yacht also does not have equipment to remove smoke from below decks. Therefore, if a fire on a yacht is not extinguished very rapidly, likely the area below decks will become uninhabitable due to smoke and heat - thus stopping effective firefighting efforts. If a fire gets to that point, the crew must abandon ship and the yacht is likely lost. If anyone is overcome by smoke or otherwise trapped below decks, they will die. This is why I consider fire the most dangerous emergency at sea.

The general steps are to determine the location and source of the fire, eliminate the source if possible, put out the flames, remove the smoke from the vessel, and “overhaul” the fire.

Except for a fire on the galley stove, the location and source of fire aboard a vessel is rarely immediately obvious. The more complex the vessel, the more likely it is that the source of a fire is an electrical component. Major electrical components are seldom in plain view. Electrical fires often produce light smoke – light in color and light density. Cooling fans and ventilation fans

may move the smoke some distance from its source. Finding the exact location and source of the fire will likely require opening panels and other means of gaining access to components. Once access is gained to the general area of the fire, there will likely be multiple components in the space. There are only a few places on a cruising yacht where major electrical components can be located so these spaces often have several major components and a mass of wiring. If the space is filled with smoke, it may be challenging to determine exactly what is burning.

In the discussion about the DC party, I stated as a default the captain goes to the control station and the second most experienced person goes to the location of the emergency. The situation described above illustrates the utility of the second most experienced person going to the location. It will likely take an experienced person with some specific knowledge of that vessel to find the source of a fire, particularly an electrical fire.

With a small crew, if the source of the fire is not quickly identified, the captain – who is likely the owner – may consider having the DC party leader come to the control station to take charge there while the captain takes over at the location to find the source of the fire.

**TIP:** It is very helpful to place labels with large letters on major electrical components. This helps crew members rapidly identify equipment for routine operations and in emergencies. Labeling key valves is also a good idea. Valve labels can either be on the hull or frames near the valves, or on tags attached to the valves.

If the source of the fire is electrical, the odds are good that the fire cannot be completely extinguished until electrical power to the damaged component is shut off. Additionally, it would be dangerous to remove the cover of a major electrical component to get to the burning interior unless the power was removed from the component. The captain should decide whether she/he wishes to retain control of the decision to manipulate the electrical system and components; or whether she/he is willing to delegate that control the DC party leader. If the DC party leader has sufficient knowledge of that vessel, it may be advantageous to delegate the authority to manipulate the electrical system to the DC party leader (open breakers, turn off equipment, etc.). The DC party leader is most likely physically closer to the electrical control panels and the location of the fire.

If the burning component is an AC component, it is usually relatively easy to deenergize it. Normally AC power only comes from an inverter, a generator, or shore power. The AC distribution system usually has breakers for all components and outlets. Therefore, opening (shut off) all AC breakers should deenergize the burning AC component. All vital navigation and many other pieces of equipment needed to handling sails, ground tackle, steering, etc. on cruising yachts are DC powered so securing AC power will likely not degrade the ability to operate the vessel. Therefore, there should be little risk in turning off all AC power.

If the burning component is a DC component or has both AC and DC power (i.e. inverters and battery chargers), the option to shut off all DC power has more significant implications because shutting off all DC power could seriously degrade the boat's capabilities since most navigation, communication, vessel control systems, and pumps are DC powered. The first step should be to

open the appropriate breakers. If power to the burning component cannot be shut off by opening breakers on the electrical distribution panel, the captain may make the decision to open the battery disconnects for the house battery bank(s) and/or other battery banks (starting batteries, bow thruster/windlass batteries, etc.). Remember that when a diesel engine is running (propulsion or generator), this is also a source of DC power and should also be shut off. On some electrical systems, disconnecting the battery while diesel engine is running may damage the alternator on that engine. I suggest that disconnecting the batteries is a decision the captain should have the opportunity to concur with due to the impact on the capability of the vessel.

Once a burning electrical component is deenergized, the class C fire is now a simple Class A fire and can be extinguished.

When the fire is out, the DC party leader should report “The fire is out” to the control station. This is obviously a key status report. The DC party shifts to removing smoke from the boat and inspecting to insure the fire is completely out. Good lighting is required to do this. The process of exposing interior areas of components, compartments, cushions, behind panels, behind the overhead panels, etc. is called “overhauling” a fire. This process insures the fire is not still smoldering in areas you cannot see. It is important that the fire be overhauled before the vessel stands down from the emergency.

If the fire had spread and was extensive, the captain should consider stationing a “re-flash watch” for some period after the fire is out.

**Flooding:** The goal of the response to flooding is to stop the flooding or reduce it to a leak. Again, I emphasize the importance of training the crew on the use of the words “flooding” and “leak”. Flooding is a life and vessel threatening, all hands emergency. A leak becomes an operational annoyance and a maintenance issue.

**TIP:** The most inexpensive portable fire extinguishers are dry chemical fire extinguishers. This type of extinguisher is often the only type of portable fire extinguishers found on cruising yachts. The dry chemical in these extinguishers is extremely corrosive. If a fire is in an electrical panel, the use of the dry chemical on the panel can result in corrosion problems inside wires, in connectors, and in other components for years to come. Consider having a Halotron or CO2 extinguisher onboard for use in electrical fire. These types of extinguishers are considerably more expensive than dry chemical extinguishers but are cheaper than replacing a major section of the electrical system.

**TIP:** It is important to determine if the water is salt water or fresh water. Although it may sound silly, the “taste test” is the simple means for doing this.

**TIP:** Have both a diagram and list of all hull openings below the waterline posted. The list should have very large font for ease of use. The source of the flooding may not be obvious. The DC party members may have to go down the list of hull openings methodically to find the source.

If an engine is running (propulsion or generator), there’s a good chance the flooding is from a hose or fitting associated with the

engine. On powerboats, statistics show that if an engine is operating, it is almost certainly the source of the flooding.

The key report in this phase for flooding is “The flooding is stopped”. The DC party then dewateres the boat.

**All other emergencies:** Other emergencies may also require an all hands immediate response but may not be as severe a threat to the safety of the vessel and entire crew. Examples are man overboard, major damage to sails and rigging, rescue and assistance to other vessels, steering casualties in restricted water, etc. The category is very broad. The captain can use this response for any emergency requiring an urgent, all hands response with maximum flexibility in how to employ the crew.

**TIP:** When aiding another vessel, the same organization and process will apply. Using the emergency organization, equipment, and processes that are used aboard one’s own vessel will immediately organize the crew’s response to the same emergency aboard another vessel.

### **Stand down from “general emergency”**

The captain makes the decision on when to stand down from an emergency. It is important that this be a formal decision by the captain (often at the recommendation of the DC party leader). It should be announced to all hands. “Secure from firefighting” or something like that for other emergencies. The most important effects of the captain making this announcement to the crew is the calming effect it has and building of confidence. A confident sounding announcement by the captain to the effect that “We are OK” and her/his general intentions on how they will proceed will give the crew an enormous boost in morale as the adrenalin ebbs.

The yacht stands down from an emergency as soon as it is safe to do so. In the case of fire, the fire must be out and have been overhauled. In the case of flooding, the flooding must have been stopped (or reduced to a leak) and the bilges dewatered. For other emergencies, stand down when all hands are no longer needed.

A crew cannot stay at “general quarters” indefinitely. No one would sleep or eat. It is important to get the normal watch section back on watch and the on-coming watch section into bed in preparation for their next watch. The captain can consider modifying the watch bill so that one or more people no longer stand watch and can be dedicated to the repair work.

If equipment has been damaged, the captain should establish temporary operating procedures that address how the vessel will be operated until it is restored to its full capability.

### **Restore the vessel to full capability**

The captain should make the call on how much crew effort will be devoted to repair work based on the nature of the damage and the yacht’s situation. For example, if the yacht is a short time from harbor or anchoring perhaps the repair efforts can be delayed until the yacht is no longer underway. A storm at sea may preclude any meaningful repair efforts until the vessel is more stable. If repair parts or assistance ashore may be required, the repair effort may be a priority to

assess the damage and determine what parts and assistance are needed so that this can be communicated to shore.

**TIP:** The captain can consider modifying the watch bill if the vessel has sufficient crewmembers so that one or more people no longer stand watch and can be dedicated to the repair work.

**TIP:** If equipment has been damaged, the captain should establish temporary operating procedures and/or standing orders that address how the vessel will be operated until it is restored to its full capability.

### CONSIDERATIONS FOR THE CAPTAIN

**Project confidence:** What does that mean in the practice? It does NOT mean the captain has no fear or acts like a stalwart character in a movie. In my experience, *the key ingredients for projecting confidence in an emergency are (a) communicate the plan frequently and (b) show confidence in the crew.* A seasoned captain may have a detailed plan for emergencies that the crew has trained on. In an unusual situation or with a less experienced captain and/or crew the plan may be as simple as stating what is being done at the moment. By communicating the plan to the crew, the captain enables each crew member to understand the plan, figure out what they can best do to support the plan, and hopefully speak up with any problems or suggestions they have about the plan. Many minds will always do better than one mind. Conversely if the captain does not communicate a plan, crewmembers fearing for the safety of the vessel will all develop their own plans and the situation will devolve into chaos.

**Tip:** In my experience, it doesn't matter so much what the plan is, as long as the captain communicates a plan.

The captain must also demonstrate she/he has confidence in the crew. An emergency is not the time to start yelling at or criticizing crewmember's actions. Even if the captain directs crewmembers to do things they have never done before, he should show confidence in their ability to do the task. This will both inspire the crewmember and give others confidence in that crew member.

**Think two steps ahead:** The captain must make every effort to think at least two steps ahead. Likely no one else is doing that. The crew is focused on their immediate and specific actions for the emergency. It is essential that the captain force herself/himself to step back, let the crew carry out the actions that have been directed, and think ahead. She/he should be asking herself/himself questions like: "What else can we do now?" "Is every person onboard accounted for and being used effectively?" "Do we need to call for help?" "When the emergency is over, what will we need to do?" "Are we in danger of losing the vessel and if so, at what point do we stop DC efforts and abandon ship?" "What if we have to abandon ship?" If the captain gets

**Tip:** Direct a crew member to record key information such as time, major actions, etc. After the emergency is over, it is hard to remember what actually happened and when.

“hands on” involved in handling the emergency, she/he can no longer effectively perform this critical function. This may be necessary if the captain is the only one with the knowledge or experience required to handle the DC effort. However, in this case, the captain must pass the responsibility for stepping back and looking two steps ahead to the second in command. (see next section)

## **Training the Crew**

### **(How to start implementing the concepts of this article)**

Insuring the crew is properly trained is the captain’s responsibility. This does not mean the captain must personally conduct all the training. However, the captain must decide what level of training is required for each crew member individually, what level of training is required for the crew as a team, set the standards for training, and insure the training is conducted as needed.

It is helpful to think of training in two categories:

1. Personal (individual) qualification and training
2. Crew (team) training

### **Personal Qualification and Training:**

Personal qualification and training are the building blocks for crew training. Crew training will be less than successful if individual crew members do not have the requisite personal skills. For example, crew training on firefighting will fail if crew members do not know the location of firefighting equipment or do not know which type of fire extinguisher to use or how to use it.

The good news is that much of the required individual training is not unique to a specific vessel. Individual crew members can get this training in many ways and the crew does not need to be together as a team to get individual training. For example, individual damage control skills such as the proper use of fire extinguishers or techniques to stop flooding are taught in Safety at Sea courses by conducted by various organizations. First aid and CPR courses are readily available. The captain will need to determine what individual skills are required and which crewmembers

**TIP:** A good way to track crewmember qualification and organize their learning is the “personal qualification card.” This is a simple checklist of individual skills and practical exercises. The card can be purely for damage control or it can be expanded to include other skills. We regularly sail on longer trips with friends and family that have little boating experience. We have developed a qualification card that makes it fun for them to train on skills and participate in evolutions that both increase their enjoyment of the cruise and make them more capable crewmembers. The first section of this qualification card is the personal skills they need in event of an emergency (where to go in an emergency, location of DC and other emergency equipment, use of PFD’s, etc.). We award a guest crewmember a monogrammed boat’s hat or T-shirt when they complete a sufficient portion of the qualification card. The card also has advanced skills if they wish to go further. The card makes a nice souvenir for them when they leave.

need those skills. The ideal but seldom achieved situation is all crewmembers trained on all required individual skills. This gives the most flexibility in the boat's organization.

### **Crew (team) Training:**

Most vessels are familiar with man overboard training and this training is often taught in formal training courses and license programs. I suggest that additionally each vessel should do team training on fire and flooding emergencies.

A Navy ship likely conducts all hands drills at least two days a week. Yachts conduct team training much less frequently. Therefore, I recommend that a captain conduct team training on emergencies in several steps, each building and advancing from the previous step in order to get the most from the training.

First do a "walkthrough". A walkthrough goes through all the actions required to handle an emergency at a slow pace with discussion during each step. This can be done at sea or almost as well at the pier or mooring. Typically, in a walkthrough the crew would be start from locations where they would typically be at sea (e.g., in the cockpit, salon, and in the bunk). The captain would then lead the crew through each step of the response to the emergency, pausing to discuss each step with the crew. Crew members can ask questions, practice their individual actions, locate equipment, etc. The crew often makes helpful suggestions that can improve the vessel's response to an emergency.

Second, do a complete response without pausing. Then gather everyone together and have each crew member comment on the response. This insures everyone is engaged. Note that if the response goes badly wrong at some point in the practice, it is completely appropriate for the captain to stop the practice, critique the actions, do any additional individual skill training that may be required, and try the practice again. This is a better learning experience than continuing a practice that is going badly wrong.

Finally, the practice must be conducted while the vessel is underway in order to insure complete realism with the vessel in its normal operating configuration.

### **Training AFTER an actual emergency:**

Some of the best training occurs after an actual emergency has occurred. As soon as practical after an emergency (so memories do not fade), a review session with all hands should be conducted. It should start with a review of the details of what happened so that all aspects of the are known to all hands. Have someone write down the details. Then review the crew's actions. The captain should actively encourage full and open discussion. Do not shoot the messenger! Undoubtedly there are some things that could have been done better. Use this session to draw out the details, encourage discussion, and learn what to do better next time. Finally, write down a set of lessons learned and if appropriate, required follow up actions (such as getting additional DC equipment, additional training, etc.). Consider sharing significant lessons with other crews. This "after action" critique is a key element in the success of the US submarine force in peace and war.

### **The second in command:**

I strongly recommend that the Captain designate a second in command. There are several advantages in doing this. The obvious one is that the captain may become incapacitated or simply exhausted. There will be no uncertainty as to who acts in her/his stead if the second in command is formally designated. Second, designating a second in command is an exceptionally good training opportunity. The captain should share his/her intentions, planning, and so forth with the second in command. Have the second in command lead a crew training session and emergency drill. This is a great opportunity to train the second in command and simultaneously demonstrate the captain's confidence in the second in command to the rest of the crew. Third, designating and training the second in command adds flexibility and strength in emergency situations. For example, if the captain decides to she/he is best used at the location of the emergency (perhaps due to technical expertise, medical skill, knowledge of the vessel, etc.), the second in command would go to the control station. If the emergency is on a second vessel, the second in command is the logical choice to lead the assistance team if they are sent to the vessel in distress.

### **Non-watchstanders:**

This category includes people onboard who do not stand watch. For example, friends and family members underway for a day trip or a multi-day voyage but with no boating experience. It could also be a regular crew member like a cook who does not normally stand watch. Consider the minimum essential training for a non-watchstander. Captains should have a short briefing for them on the minimum essential *personal* skills such as the location of personal flotation devices, how avoid falling overboard, etc. In a professional crew, non-watchstanders may have formal training in personal skills, e.g.

**TIP:** Put non-watchstanders to work during an emergency. They can be very helpful, and it will help maintain confidence. For example, they can keep a record of events. They can check each other's life jackets. In restricted waters they can monitor & call out depth readings. With supervision, they can help with evolutions. Use imagination to find ways for them to contribute.

STCW. After reading this article, it should be clear that non-watchstanders should also be trained on how and who to notify if they discover an emergency, what they should do (notify the control station and where to muster, don life jackets, etc.), and be introduced at a high level to the crew's planned response to the three categories of emergencies.

### **Conclusions**

Navy and large commercial vessels have, over the centuries and during untold hours of training and actual emergencies, developed effective techniques for handling emergencies. These techniques and the principles behind them can be adapted for yachts by understanding the differences in crew size, in crew skills, and in onboard emergency equipment.

The broad spectrum of emergencies that yachts are likely to experience can be reduced to three general categories: (1) fire, (2) flooding, and (3) all other emergencies. Thinking of emergencies in these three categories enables a captain to train his crew on a few standard crew responses that use the same organization for all of them. A captain can use the crew's personal emergency skills and training as building blocks for crew training exercises.

From the perspective of the complete crew response to an emergency at sea, the key is to have a simple, standard organization and response plan. This enables a crew to start the response to an emergency from a planned, stable configuration of the yacht and with all people onboard acting with coordinated actions.