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WHAT'S YOUR STRATEGY?

Shipboard fires are rare these days, but they can still be deadly.

By Captain Jonathan Kjaerulff

WHEN A FIRE BREAKS OUT ABOARD YOUR SHIP, you have only one objective – survival. Naval architects can design ships to reduce the chances of fire and vessel owners can provide equipment to manage the fire, but the difference between a minor incident and a major catastrophe often comes down to the manner in which the crew responds.

Effective response begins long before the elements of heat, fuel and oxygen ever come together. Whether your crew plans to fight or flee, the survival of everyone onboard requires disciplined training, awareness and, most importantly, a strategic plan of action. Military people know that to achieve an objective you must have both a strategy and tactics. Strategy is the big picture, the desired goal. Tactics are the methods used to achieve that goal.

The best approach, of course, is prevention. The good news is that today fewer ships catch fire than ever before. The bad news is

that when fire overwhelms a ship's defenses, most if not all of the crew will be facing a powerful enemy for the very first time.

The second-best approach is a strong, coordinated response. Responsible owners provide seaworthy ships and crew them with certified crew members. Is that enough? What else can they do to help win the battle against fire?

DETERMINING THE STRATEGY

Crewmembers must be taught that, just as there are many types of fires, there are many types and levels of response. Strat-

egies may involve abandoning the vessel, fighting the fire or a combination of the two. There are four strategic pathways to choose from when faced with a fire. Which one is appropriate is the Master's decision.

OFFENSIVE FIREFIGHTING involves making a direct attack and putting the fire out. This is easiest to do in the early stages of a fire before it grows and spreads to multiple compartments. Firefighters call this "putting the wet stuff on the red stuff." Portable extinguishers properly used may extinguish the fire in the incipient stage or help

control it while response teams suit up and bring additional equipment to the scene.

DEFENSIVE FIREFIGHTING strives to contain the fire within its current location by setting boundaries to prevent it from spreading. If carried out properly, the fire will burn itself out after consuming all of the available fuel or oxygen.

RESCUE FIREFIGHTING is the process of making a direct but limited attack on the fire to allow a team to evacuate trapped personnel or passengers. This strategy combines elements of both Offensive and Defensive Firefighting. Once the people are rescued, the Master will revert to one of the other strategies.

STRATEGIC RETREAT is utilized when the fire cannot be defeated and the ship will ultimately be lost, but it is necessary to keep the fire at bay long enough to allow for an orderly evacuation. This strategy attempts to slow the spread of the fire and maintain safe pathways to survival craft for the time it takes crew, technicians and passengers to safely abandon the ship.

CHOOSING THE TACTICS

Firefighting strategies must be accompanied by a well-rehearsed series of vessel-specific tactics. Shoreside and onboard training help crewmembers develop proficiency in tactics while drills assess their proficiency in carrying them out. Don't assume because someone has a certificate from an approved training program that they are proficient in the tactics needed for your vessel!

A DIRECT ATTACK requires personnel to actively deploy water or other extinguishing agents against the fire, and crewmembers need to know how to operate and maintain the equipment provided.

This includes not only the fire hoses and nozzles but the pump that provides the water and the piping that delivers it throughout the vessel. They must understand the strengths and weaknesses of different extinguishing agents, extinguishing tools and their personal protective equipment such as self-contained breathing apparatus (SCBA).

AN INDIRECT ATTACK means fighting a fire in a compartment without actually having to make entry. Crewmembers may take advantage of installed fixed gas flooding, sprinkler or water mist systems, or they may deploy firefighting foam via a door, porthole or hatch. Indirect firefighting generally provides far less risk to crewmembers than direct firefighting but still requires training, preparation and coordination if it is to be successful. Every vessel's system is different, and if the crew has never been trained or in their excitement forget how to isolate the space prior to system activation, they may waste their one silver bullet.

Developing tactics based on the type of indirect system installed can lead to a faster and more effective response, less risk to personnel and increased chances of success. For example, CO₂ gas flooding systems extinguish fires by displacing oxygen in the protected space. They are very effective but usually require complete sealing of all openings including supply and exhaust ventilation ducts.

That may require the crew to under-



take a series of actions from turning off blowers to closing dampers and even physically placing heavy steel plates over exterior air intakes. Additionally, since CO₂ suffocates the fire by displacing oxygen, a person who is trapped or injured and cannot evacuate the space will die if the gas is discharged.

Clean agents such as NOVEC 1230 and FM-200, on the other hand, still require sealing the space off, but they can be deployed in an occupied space with minimal risk to people who are unable to get out and would otherwise die. Water mist systems such as HI-FOG do an excellent job of dowsing the fire *and* do not require sealing the space, do not pose a threat to people who can't get out and – depending on the type – can be refilled after use by the ship's crew or while in use through the ship's seawater inlet.

Whether fighting a fire directly or indirectly, *Containment* of fuel, heat, smoke and toxic fumes is essential. Most compartments aboard ship are bordered on six sides by other spaces. If a fire spreads from its compartment of origin to surrounding spaces, the effort needed to fight it grows exponentially. First-responding crewmembers can significantly reduce the size, scope and effort required to eliminate the fire if



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they are trained to make a proper report, then close doors and hatches and secure ventilation and electricity while waiting for teammates to arrive.

USING YOUR TOOLS

Firefighting tools can help the crew carry out their tactics but cannot do the job for them. Regulatory requirements dictate the carriage of many tools, but the ability to use them is often a function of the ship's culture. Whatever the tool, the user only gains proficiency by repeated use and guided instruction and assessment.

STATION BILLS OR MUSTER LISTS

are often perceived as static documents, more like a script for a stage play than the starting point for an improvisation. It's important for people to know where to start, but the fact that the ship is on fire means their plan to prevent that situation already failed. Like the coach of a football team, officers and crew need to be able to read the situation as it develops, adjust their tactics and make substitutions as required.

PRE-FIRE SURVEYS are rarely developed but extremely effective when available. Written in conjunction with the Fire Plan, a pre-fire survey consists of a page for every space on the vessel and

identifies the boundaries, exposures, access points and nearest firefighting equipment. During training sessions, officers and crews can develop compartment-specific response plans that identify the strategies and tactics most likely to result in success. While fighting an actual fire, firefighters reference the document to ensure no resources are overlooked or boundaries left unguarded.

FIREFIGHTER'S OUTFITS consist of protective clothing and self-contained breathing apparatus. Often this gear is identical to that worn by professional firefighters, who only don and use it after far more extensive training than that provided to mariners. For this reason, many vessel operators are reluctant to put it on their vessels unless required by law, and even when it is carried many Masters and officers hesitate to include it in their training and drills.

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COMMUNICATIONS is probably the single most important tool in responding

to and managing a fire. Without good information, there is no way for the Master or the team fighting the fire to make good decisions. New regulations will soon require SOLAS vessels to carry intrinsically safe two-way radios for their fire teams, but radios can be difficult to use when wearing a mask.

Managers purchasing such radios should not just go for the cheapest compliant option but look for a radio that can be effectively used by a person wearing full protective gear including heavy gloves. Buttons should be easily manipulated, and the speaker should be loud enough to overcome extensive background noise. The McMurdo SmartFind R8F UHF FireFighter Radio is an intrinsically safe, two-way radio that meets new SOLAS II-2 mandated regulations for improved fire safety at sea.

BE PREPARED!

When a fire breaks out, it will always be a surprise. If you knew when the next fire was going to break out on your vessel, you could hold off on training until the date gets close. Lacking that inside knowledge, the time to prepare is now.

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