TRAINING AND PREPARATION FOR FIRE AT SEA

Paper Presented at SASMEX Conference, Baltimore, Maryland, April, 1995

by Capt. Jonathan E. Kjaerulff

"The matador must dominate the bulls by knowledge and science."

When Ernest Hemingway wrote that line in 1932, he pointed out that bullfighting is unique among sporting events in that only one of the two adversaries in the ring has had the benefit of previous training and experience. The matador's hopes for a successful performance are based primarily upon his expectations that a bull, when provoked in a certain manner, will respond in a predetermined way. Because he has studied extensively the behavior of bulls, and has had the opportunity to practice and develop his skills, he develops a level of confidence in himself and his team, which most often allows him to successfully dispatch the bull in the allotted fifteen minutes time.

Unfortunately for the bull, he is not provided beforehand with a copy of the afternoon's agenda. He is unaware of the strategy which will be deployed against him. He has no idea of the foundation of effort which has been laid to ensure his impending and unnatural demise. All he knows is that he has suddenly been thrust into an open ring and there stands in front of him a man with a red cape. So, lacking any reason to behave otherwise, he charges. And charges. And charges yet again until he has so exhausted himself that in the end it is a relatively easy task for the matador to step in and extinguish him.

Although in any given bullfight it is possible that the bull may overwhelm or even kill the bullfighter, it is hard to imagine that most matadors would be likely to enter the ring if they thought the bull had even a modest chance of success. The matador is in the ring solely because of his confidence in his ability to use knowledge and science to dominate the bull.

A fire at sea is not unlike being suddenly thrust into the midst of a bullfight. A fire at sea is a competition in that it will not be over until one party has managed to overwhelm the other, but it is certainly not a competition between equals. A fire at sea is a bull charging headlong through your vessel with no respect for time outs or lack of readiness on the part of your crew. Your only options are to dominate and extinguish the fire or to get yourself and your crew out of the arena. In direct confrontation, fire presents a strength and intensity no human can resist. But it does behave in a predictable way. If a fire aboard ship is to be dominated, it can be done only through the application of knowledge and science.

Science can be described as the materials which went into building the ship, the inherent safety of the components and systems, the division of the ship into fire zones, and the portable and installed systems provided for the extinguishment of fire. This science side of fire domination can be strictly stipulated by government agencies, classification societies, insurance companies, and company policies, and the level of actual compliance
can be accurately measured through objective inspections both during and after construction. Many shipboard fires are prevented altogether due to innovations in the science of fire domination.

When a fire erupts aboard ship however, it means that the bull has to a certain degree already overcome the science side of the equation, and extinguishment now is dependent upon the successful application of firefighting knowledge.

Where does this knowledge come from? How can it be measured? How can a vessel owner know for sure who will have it and who will not? To paraphrase Hemingway, how does he know that an inherently dangerous situation is not suddenly about to be made much worse through ignorance, through disregard of the fundamental rules, through physical or mental slowness, or through blind folly? Case histories show that many crews when first faced with an outbreak of fire immediately concede (or suddenly become aware of) their own lack of knowledge (or fortitude), and depart the arena by way of the lifeboats or rafts. This would not be a bad policy if one could be assured that the crew's chances for survival were invariably enhanced by departing the vessel, that sea conditions would never be adverse, that no crew or passengers would ever be stranded, trapped, or cut off by the fire, and that the fire would generously grant all persons aboard ample time to locate their abandon ship stations and make a gracious entry into their assigned survival craft.

No one will argue that any ship, no matter how fine or expensive is worth more than one human life. Unfortunately however, there are an infinite number of situations where the greatest chance for saving life rests with successful domination of the fire, or at the very least holding it at bay until conditions change or a successful abandonment is assured. Training crews in the knowledge and science of fire domination is not an option. It is a necessity. It is an absolute necessity that every crewman aboard possess an appropriate level of firefighting knowledge which will enable him to maximize the applied science of fire containment and extinguishment in a manner which keeps at a minimum the risk to himself and to his shipmates.

Training of seafarers in firefighting takes place on two levels: training conducted at a fire training school or academy, and the training conducted aboard the seaman's own vessel. Training at a fire school has the advantage of providing focused training sessions presented by professional instructors, combined with the opportunity to reinforce classroom lessons with live fire exercises in a fire field or vessel mock-up. Training conducted aboard the seaman's own vessel, although not involving actual fire, has the advantage of building familiarity and confidence with the gear actually carried aboard, providing an opportunity for the seaman to practice fire response as a member of his actual team, and to incorporate and reinforce vessel-specific fire plans.

Effective firefighting response requires effective and relevant firefighting training both at the fire school and aboard the vessel. Even the best training provided by the fire school is of marginal value if the principles are not adapted, reinforced and incorporated into the student's vessel's operational procedures. When the galley is reported engulfed in flames
it is just a little too late to break out last year's class notes and try to explain to the
crewman how to don the fireman's outfit and self-contained breathing apparatus.
Especially when your gear is discovered to be size medium and your crewman is size
double extra large.

At the same time, a program of well-intentioned shipboard drills and training can still be
just the start of a cascading calamity if all of the training which has gone before was
based solely on second hand information obtained from books, lectures and training
films. At our India Tango fire training school in Seattle, we have witnessed numerous
examples of panic or sudden ineptitude on the part of lead members of ships' fire parties
the first time they found themselves in a hot, smoke-filled compartment.

Effective fire training requires a coordinated effort at both the school and the shipboard
level. Fire schools should assign the highest priority to making their curricula relevant to
the shipboard environment. Curriculum writers and instructors should possess not only a
passing familiarity with vessel construction, but also with the way the ships of different
types do business. Shipboard firefighters are very different from professional firemen,
who always arrive on scene dressed out in full protective gear and breathing apparatus,
who have the ability to call for more assistance when needed, and have the luxury of
stepping back to the curb when things get worse. It should be understood that in virtually
all cases ships' crewmen will need time to don protective equipment, even as the fire
builds, and that in many cases there may be no requirement that such equipment even be
carried on board. Even when gear is carried, crewmen may find themselves trapped by
the fire and need to fight their way to safety using only the gear which is at hand. If fire
schools are to do a true service to the mariner, they must not only teach how to dominate
fires when all manner of protective gear and extinguishment devices are available; they
must also teach how to deal with fires when they are not.

The primary goals of the fire school then should be to develop in the trainee a sense of
confidence and understanding in the gear he carries aboard his vessel, in his ability to use
it to dominate fire, and in his ability to anticipate and understand the path and patterns
which fire aboard will pursue. He should also be made aware of the limitations which
may be imposed upon him and his shipmates by the type of fire response equipment
carried aboard, the size of the crew, and features of the vessel's design and construction.

Most importantly, and this is where I feel most off-ship fire training programs fall short, a
student certified by an accredited fire training program should be provided with the tools,
the talent, and the ambition to develop a realistic and effective shipboard fire response
plan. This plan in turn will form the nucleus of the ship's onboard fire training program.
At every step of an off-ship course, the instructor must keep in mind that he is not only
teaching his student how to dominate fires, he is also preparing his student to go forth and
teach his shipmates how to dominate fires. This is extremely important because until the
day arrives when all mariners are required to attend a hands-on fire training course, the
majority of seaman will learn their firefighting duties not from professional instructors,
but from each other.
Procedures for conducting effective shipboard fire drills and training sessions should be an essential ingredient in any fire school's curriculum. A list of measurable skills and performance standards should be provided which the student can take back to his vessel and use to evaluate the ongoing effectiveness of the members of his ship's fire party. Before graduation from the course, students should be required to submit copies of lesson plans and drill scenarios which they propose to incorporate upon return to their vessels. Just as with navigation, docking, and other seamanship skills, lessons taught in firefighting are of only marginal value unless they are taught in such a way as to become part of the operational routine of the vessel.

Assuming the fire training school does its' job properly and well, there still remains the question as to how well the information they have provided will be incorporated and re-taught aboard the student's own vessel. Probably the most significant factor here is the level of commitment present from the company and the vessel's master. As the former master of a vessel with a crew of 32, and the former mate of a vessel with a crew of 85, I know that there are at least as many reasons as there are hands aboard as to why fire drills and training sessions are "impractical," "unreasonable," and "unnecessary." As a professional trainer who has witnessed hundreds of shipboard fire drills by crews at all levels of the learning curve, I know that whatever the number of crew carried aboard, there are at least twice as many reasons why effective training is imperative. Unless the vessel operator, and by extension the master is willing to make time for training and find a way to surmount the inconveniences associated with it, any monies spent on fire school are most likely wasted. Fire aboard ship is an all-hands evolution, and even though crew size may be such that it is impractical to train all hands how to dominate the beast, every person aboard should be aware of his or her duties and responsibilities when a fire breaks out. They should, if nothing else, be made aware of the behaviors and actions which would represent ignorance or blind folly.

As a professional instructor, I frequently hear from students case histories of incidents of fire or other emergencies aboard their own vessels. What I have found most interesting is the number of fires which should properly have been relegated to "nickel-dime" status yet instead became million dollar casualties. Why? Not because the situation started out big. And not because the captain and mates had never been to fire school (in most cases they had). Instead, because the vessel had not made sufficient efforts to impart an acceptable level of fire training (including fire prevention, fire safety, fire awareness) to the ir crew, and when it chanced upon that untrained crewman to be in a position to extinguish that fire in the incipient stage, he generally failed to do so.

In one particular case, a vessel was in port, with all of the crew ashore except the captain. Two crewmen returning discovered a small fire in the forward part of the vessel and decided to fight it themselves without ever sounding the alarm. They extinguished the fire several times and yet it kept rekindling until their fire extinguishers were empty and the fire then spread throughout the entire vessel. An investigation revealed that the fire had started (and continued to rekindle) as a result of a faulty electrical heater in one of the staterooms. The simple act of securing power at the breaker panel would have prevented the rekindling, and would probably have kept damage to a minimum.
In other cases, fire response falls short because the crew's response in a drill scenario is markedly different from their planned response to "the real thing." When a distinction is made between a "drill" and a "real" situation, it is a fairly sure bet that when the "real thing" does occur, the ship's intended response will be found woefully inadequate. Pandemonium will probably ensue.

One of our instructors was sent out to run a series of emergency drills aboard a fish processing vessel with a fairly large crew. The first thing he did was sound the alarm for abandon ship. Imagine his surprise when the entire crew showed up in the galley, with the emergency squad dressed out to fight a fire. "Why are you here?" he asked, "Why are you dressed out to fight a fire? I sounded the abandon ship signal."

"We always hold the fire drill first," he was told. And since the vessel operated in Alaska, the fire drill was invariably held in the galley since that place was sure to be warm and there was plenty of coffee. Here was a crew which did not recognize the different signals of the general alarm as a warnings of different forms of imminent danger. To them, an alarm, any alarm, was simply a signal to drop what they were doing and go to the galley, get a cup of coffee, and listen to the mate talk about fire. I wonder what this crew's response would have been if there really had been a fire in the galley, and in addition to the six designated personnel attempting to deal with the fire, there was the additional crush of forty personnel trying to squeeze in and get coffee.

Trying to make the best of the situation however, our instructor adapted his drill and told the crew, "Okay, there is a fire in the galley. Let me see your response." The fire party dutifully broke out fire hoses and brought their gear to the scene. All of their breathing apparatus were set on the deck next to them, unopened in their cases. Our man said to the lead firefighter "Go ahead and put on your breathing apparatus."

"Oh no," the crewman said "We don't put these on for drills."

"Well today we're putting them on," said our instructor. "Go ahead and do it."

It turned out the crewman couldn't do it. Not only did he have no understanding as to how the piece of gear worked, he was physically too large to fit in it. If a casualty had occurred aboard this vessel, and lives had been lost (as they most probably would), and the master survived to give testimony at the inquiry afterwards, he would most probably have been very bewildered as to why his crew was unsuccessful. "After all your honor," he might say "The mate had been sent to fire school, and we did hold drills on a regular basis."

Too many captains, port captains, and corporate safety directors think that emergency preparedness begins and ends with the purchase of a fireman's outfit, a training manual or set of training films, and the posting of a station bill. Too many crews are afraid to remove expensive emergency equipment from its original packaging and utilize it in their drills, for fear that it might someday wear out or even worse, get dirty. There are too many eloquently written and scripted emergency plans and station bills (usually provided
by the company or written by a previous crew) which bear not even a passing resemblance to the way in which the current crew responds when a fire or abandon ship drill abandons the old familiar routine and begins to resemble the way a real casualty might unfold.

Saving lives and saving ships takes more than wishful thinking. It takes hard work. It takes realistic training supported by realistic drills. Crews need realistic hands-on practice using their equipment, as a crew and as a team, both on the vessel and off of it. Each and every hand aboard needs to know where the various pieces of his or her ship's equipment are, how to make them work, how to get them to where they are needed, and they need to be able to do it in pitch darkness on a violently rolling deck. If they can't do that, they're not ready to even leave the dock.

Shipboard training programs should not purport to provide the crew with all of right answers; they should aspire instead to providing the right questions. They should encourage their crews to think always in terms of "what if." Ships need emergency drill programs which challenge their crews, not ones which are "short and sweet" so everyone can quickly get back to the "important" work of running a vessel. Management needs to do more than pay the bills for safety equipment; they need to make sure it is being used, and used frequently and competently. They need to establish and maintain an ongoing dialogue with their area's training and equipment service professionals. Fire schools should focus their primary efforts not on how to extinguish fires in the tank cars, warehouses, and concrete basins which make up the fire training ground, but in providing students with experience, confidence, tools, ideas, methods, and resources which are relevant to their true working environment and can be put into practice immediately upon return to their ships.

Fire aboard ship is a raging bull which can be defeated, but only through the skillful application of knowledge and science. No ship can afford for the effort to be sidetracked by an unforeseen lack of confidence induced by adrenalin or the sudden realization of the inadequacy of one's preparedness. A crew's success in dominating the beast depends not only on the actions taken at the time it is unleashed, but in the strategic groundwork which has been laid and reinforced through relentless hours of rehearsal, practice, and preparation.