

IMPROVING MARINE FIREFIGHTING AND SALVAGE RESPONSE USING A NON-REGULATORY APPROACH THROUGH KEY STAKEHOLDER INVOLVEMENT

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ABSTRACT

While catastrophic marine fires are a rare event, minor shipboard fires do have a significant potential for damage and a potential impact on the marine transportation system. As such, it is critical that responders at the federal, state, local, industrial, and contractor levels be trained and prepared to conduct timely operations to mitigate any incidents that occur. Due to the nature of services performed in the firefighting community today (fire suppression, rescue, hazardous materials response, and emergency medical services, to name but a few), time and effort is not always dedicated towards responding to events onboard vessels. As over 70% of fire departments in the United States are volunteer departments, this has the potential to become even more of an issue. In addition, shipboard fires typically require some level of participation from a marine salvor. Depending on the damage to the vessel, this may involve significant salvage activities. The number of salvors scattered throughout the United States is somewhat limited, and their home base locations dictate their response times to specific geographic areas. Critical issues that need to be addressed by senior response managers who may find themselves involved in responding to vessel fires include: 1. Establishment of an effective Unified Command to address all stakeholder issues, 2. Enhancing knowledge of regional capabilities and resources to respond to shipboard fires and resultant salvage activities, 3. Ensuring appropriate training of response personnel that meets recognized standards (such as NFPA 1405), and 4. Developing, exercising, and validating plans to respond to shipboard fires and salvage activities. Efforts throughout the Eighth Coast Guard District over the past several years have begun to address many of these issues, with enhanced incident management training, challenging exercises to validate plans, and extensive workshops to improve responder knowledge being a few of the positive steps. Only by addressing these four critical areas can response managers be assured of an effective and efficient response that would minimize the impact to the marine transportation system.

ESTABLISHMENT OF AN EFFECTIVE UNIFIED COMMAND TO ADDRESS ALL STAKEHOLDER ISSUES

The National Incident Management System is the standard response management system, as stated in Homeland Security Presidential Directive 5. It is designed to aid response managers in more effectively managing all aspects of a given incident. It also stresses the importance of interoperability with other response stakeholders. Very few entities are staffed and equipped with enough trained and capable resources to handle every emergency. As such, it is critically important for all response supervisors and managers to become aware of what other responders may also be on scene with them, along with their capabilities and limitations.

It is also vitally important that those relationships be established PRIOR to an incident occurring. The incident site is NOT the place to meet your fellow responders for the first time. There will be far too much going on at that time and you will be unable to process the plethora of information regarding the capabilities of a wide variety of other responding resources. Having this important knowledge beforehand can be critical in developing effective response strategies—EARLY in the incident—that may mean the difference between success and failure.

Establishing a Unified Command also ensures that all agencies and organizations “with a dog in the fight” are represented in such a manner that their jurisdictional responsibilities are addressed.

The location of the fire will be paramount to determining who will be active in a Unified Command. If the vessel is underway or away from a dock, the vessel Master will serve as the sole Incident Commander until additional representation is available from the Coast Guard, state agencies, contracted resources, or other mariners acting as Good Samaritans.

Vessel fires at a dock tend to be a bit more manageable, as the location lends itself to an easier development of a Unified Command with available resources. Note that we do not say that a vessel fire is “easy” because it is at a dock—vessel fires are rarely described in terms such as easy or simple...

The initial phase of a shipboard fire is typically recognized as the "Emergency Response Phase." This is where the fire is discovered, resources are called for, and initial response activities are initiated. Typical members of a Unified Command at this time will include the vessel Master (or his successor if he is unavailable or incapacitated) and the senior fire service officer who is responding to the incident. This senior fire service officer may be a representative of a municipality or a member of an industrial fire brigade. At this stage, these two individuals have the biggest "dogs in the fight" and therefore have the lead in developing initial response strategies and tactics. Deputy Unified Commanders may include a representative from the facility the vessel is docked at, a representative of the Captain of the Port (ideally the Marine Fire-fighting Coordinator, if one is available), state agencies, and possibly a Qualified Individual, if appropriate. These representatives will initially serve at the deputy level due to their limited resources available during this phase of the response.

The second phase of a vessel fire scenario is the "Stabilization and Suppression" phase. At this time, a full Unified Command is activated with the following personnel represented:

Federal On-Scene Coordinator—US Coast Guard Captain of the Port (COTP)

State On-Scene Coordinator—appropriate state agency

Local On-Scene Coordinator—Senior Fire service Officer

Responsible Party On-Scene Coordinator—Vessel Master of Qualified Individual

Facility On-Scene Coordinator—facility representative

All of these members of the Unified Command have significant jurisdictional responsibilities and therefore should have equal weight in the decision making process. The Ports and Waterways Safety Act puts the key responsibility for fire extinguishment on the senior fire service officer in whose jurisdiction the incident occurs. This key point in the law, coupled with the fact that the he or she will likely have the most resources to make a positive difference on the incident, gives the senior fire service officer a sort of "lead" position within the Unified Command and most likely will have a subordinate serve as the Operations Section Chief and/or the Planning Section Chief.

Coast Guard authority plays a very critical role. Under Captain of the Port authority in accordance with the Port and Waterways Safety Act and Magnuson Act, the US Coast Guard can direct the movement of the vessel if it endangers a port, waterway, public safety and welfare. If the vessel imposes a pollution threat, then the Captain of the Port can use his/her Federal On-Scene Commander authority under the National Contingency Plan, Clean Water Act, and/or the Oil Pollution Act of 1990. Under the National Search and Rescue Plan, the Coast Guard also has the responsibility for rescuing crewmembers. Quick assessment of the condition of the vessel to determine if the vessel fire can be safely fought with available resources and where the vessel can be placed to fight the fire are decisions that will challenge both the Coast Guard and Unified Command early in the response. A disabled, deep draft vessel that is on fire and impeding a navigable waterway, such as the Mississippi River, also impacts commerce and vessel traffic. Even though Coast Guard policy states they will not be the lead for firefighting resources, they have a significant role in bringing Unified Command together, controlling a vessel and determining where a vessel can be placed (whether in a waterway, shoreside, at anchor or guided to a remote area) are critical for successful management. While Coast Guard policy is typically not to be the lead firefighting authority, the local Fire Department's and Responsible Party's (RP) firefighting representatives should lead this effort

"Salvage and Mitigation" activities comprise the third phase. At this stage, the fire is extinguished (although what the fire service calls "salvage and overhaul" may still be ongoing) and members of the Unified Command are looking at accomplishing some key objectives. These might include responding to any hazardous materials release or oil spill; vessel stabilization and repair; and activities to open up the waterway and available dock spaces to other members of the marine transportation system. As such, members of the Unified Command will likely be:

Federal On-Scene Coordinator—US Coast Guard Captain of the Port

State On-Scene Coordinator—appropriate state agency

Responsible Party On-Scene Coordinator—Vessel Master of Qualified Individual

The Local and Facility On-Scene Coordinators may either serve as members of the Unified Command or as deputies, based on the nature of the incident. If a hazardous materials release or oil spill is present, the Operations Section Chief may come from the Responsible Party, the Coast Guard, or the local municipality. If there is no hazardous materials release or oil spill and only salvage activities necessary to mitigate the event, then a Salvage Master or representative of the Responsible Party will likely serve as the Operations Section Chief and/or Planning Section Chief.

The final phase, consisting of "Documentation and Cost Recovery," will likely see the Federal, State, and Responsible Party On-Scene Coordinators (or representatives) will manage this post-incident phase.

The fluid nature of the response to a shipboard fire will dictate who will comprise the Unified Command during a particular phase of an incident. Active participation by these personnel will facilitate an appropriate and timely response. Knowledge of who these other players are BEFORE an incident will go a long way to rapid and effective establishment of a successful Unified Command.

ENHANCING KNOWLEDGE OF REGIONAL CAPABILITIES AND RESOURCES TO RESPOND TO SHIPBOARD FIRES AND RESULTANT SALVAGE ACTIVITIES

Firefighters have described a shipboard fire as a combination of major structure fire, hazardous materials incident, and technical rescue—all of which are operations they deal with every day—but rarely with such unusual characteristics. In addition, firefighters will typically find a myriad of other agencies—all with their own unique resources—responding to the scene with them.

To achieve what is often termed a "best response," members of the Unified Command must be cognizant of the capabilities of these resources. It is important to note that most fire departments envision responding in the "emergency response phase" but will seldom keep large numbers of resources on-scene for long-term response and remediation efforts.

Firefighters will respond with engine, ladder, rescue, and hazardous materials companies, along with ambulances and other specialized resources (including fire boats, if they are available locally). But once on scene, they often discover the need for more specialized resources.

One of the most critical resources can be a salvage contractor, such as T&T Marine Salvage or Bisso Marine. Salvors, as they are called, can be a significant force multiplier. They can provide advice on how to access key points on the vessel to achieve rapid extinguishment. They can assess vessel stability to enhance safety of responders as well as contributing to saving the vessel from possible capsizing or sinking. They can also assist the fire department in removing fire water from the stricken vessel, further

improving stability (this is very important...Firefighters are known for their ability to “put wet stuff on red stuff,” often without realizing the consequences. The result of putting too much water on board was discovered by the Fire Department of New York in 1942 aboard the SS LAFAYETTE—more commonly known as the NORMANDY—and more recently by the New Orleans Fire Department aboard the M/V BALMORAL SEA).

Another important resource can be fire service contractors, such as Williams Fire & Hazard Control or Wild Well Control. A contractor of this nature brings very specialized capabilities, such as large caliber application devices to deliver an enormous amount of extinguishing agent to a fire. They also bring large pumps to support these water delivery appliances. Finally, they have access to vast quantities of specialized extinguishing agents, such as foam, CO₂, or dry chemical. Their knowledge in shipboard fire operations—often far above that of typical senior fire service responders—can be significant in developing response strategies and implementing effective tactical operations.

Hazardous materials and oil spill response contractors, such as Garner Environmental Services, may also arrive on-scene, especially if the incident is expected to be of long duration. These resources can relieve scarce fire department hazardous materials response units once the emergency response phase has concluded.

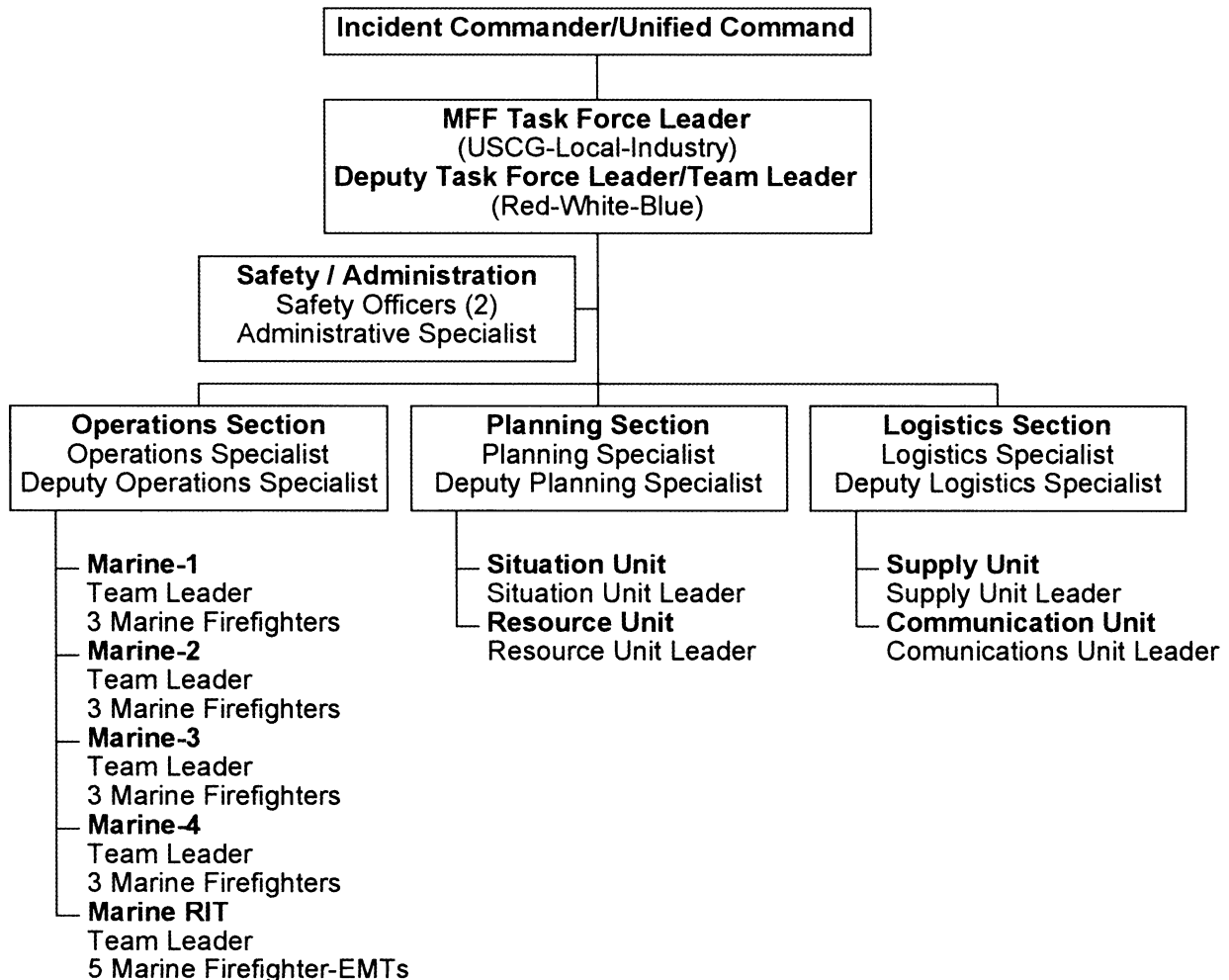
The can also deploy resources to minimize potential impact on the environment or on the marine transportation system. Early employment of response contractors of this nature may facilitate a rapid reopening of any impacted areas within a port.

Lastly, we need to look at federal and state resources, which will vary based on the location of the incident.

The Coast Guard, usually represented by the Captain of the Port, will typically be the lead federal agency for most marine events. Personnel assigned to the Captain of the Port can aid firefighters in assessing vessel stability, understanding the vessel’s fire plan, emplacing and enforcing safety zones, and, on occasion, providing tactical or operational support to active firefighting operations. Other resources available to the Coast Guard, such as Strike Teams of the National Strike Force or on-scene support from the Marine Safety Center are often several hours away.

In the Houston-Galveston area, the Captain of the Port and several response partners have initiated the formation of a Marine Firefighting Task Force (MFFTF) as an additional resource available at shipboard fires. This 111-person task force, divided into three 37-person teams, detailed in Figure 1, is designed as a bridge between the initial fire response resources and those of a fire service contractor or marine salvage contractor.

Figure 1--MFFTF Response Organization



The Marine Firefighting Task Force is comprised of members of the fire service, municipal fire brigades, and the Coast Guard. It is designed to be deployed to any port area within the Captain of the Port Zone within two hours of notification and to be operations for up to twenty-four hours. Duties may include:

1. Serving as overhead elements for the Unified Command,
2. Providing tactical support to the lead fire service organization, or
3. Acting as the lead fire service responders, if others are not trained or available.

State response agencies may include emergency management agencies, pollution response resources, and law enforcement. State resources are also uniquely suited to address local concerns from impacted municipalities. State Offices of Emergency Management may also have emergency plans that describe response operations in the event of a shipboard fire. Appendix V of Annex F of the State of Texas Emergency Plan is the "Catastrophic Fire Plan." This plan was developed after 9-11 to address critical shortfall during major conflagrations, including significant fires to petrochemical facilities and ships.

ENSURING APPROPRIATE TRAINING OF RESPONSE PERSONNEL THAT MEETS RECOGNIZED STANDARDS

The National Fire Protection Association (NFPA) provides nationally recognized standards for all fire related activities, from suppression to construction to inspection. NFPA 1405 is entitled "Guide for Land-Based Fire Fighters Who Respond to Marine Vessel Fires." This comprehensive document includes a wide variety of information that any firefighter who may respond to a shipboard fire is required to know and understand.

While many fire departments spend much time and effort on training for structure fires, vehicle accidents, and hazardous materials releases, few spend significant time on responding to maritime incidents. In their defense, it must be noted that vessel fires are extremely rare. It must also be noted that the Ports and Waterways Safety Act places responsibility for responding to shipboard fires with the senior fire service officer in whose jurisdiction the fire occurs. As such, fire chiefs have a responsibility to their community to ensure their personnel are trained to respond appropriately to a shipboard incident.

Along the Gulf Coast, we are extremely lucky to be near several facilities that provide in-depth marine firefighting training, such as the Texas Engineering Extension Service (TEEX) at the Texas A&M University. Training can range from three to eight days, with specialized courses developed to meet the needs of specific departments. For the Houston Fire Department (3rd largest in the United States), this included two days of classroom instruction for personnel from all first and second-alarm companies, followed by live-fire training for chief officers, company officers, and members of the hazardous materials and rescue companies. In short order, the number of personnel trained as marine firefighters in the Houston area grew from approximately 60 to over 400. Ongoing programs conducted jointly by the Coast Guard, Houston Fire Department, and Greater Houston Local Emergency Planning Committee in and around the Houston-Galveston-Freeport area have trained an additional 200+ firefighters over the past few years.

Training is not a one-time event, however. In order to maintain that knowledge, recurrent training on a regular basis is necessary. Creative, low-cost ways can be developed to accomplish this, including:

1. Touring port areas to better determine potential firefighting locations and the availability of water supplies,
2. Ship familiarity tours, especially for vessels that make frequent port calls to specific municipalities,

3. Conducting short drills aboard vessels that are in port, such as stretching and advancing hoselines, removing an injured victim from deep within the ship, or establishing a water supply to the international shore connection,
4. Interagency training with other responders who find themselves on the scene of a shipboard fire,
5. Meetings with incident management teams, qualified individuals, and contractors (particularly fire service and salvage contractors) to more fully comprehend resource capabilities and limitations.

DEVELOPING, EXERCISING, AND VALIDATING PLANS TO RESPOND TO SHIPBOARD FIRES AND SALVAGE ACTIVITIES

Knowledge of vessels and how to put a fire out is all well and good, but could prove to be inadequate if there is not a comprehensive understanding of the wide variety of response plans that may come into play during an incident. One plan may address how the fire department responds, while another discusses the activities of the port authority during the incident. The local Coast Guard Operations Plan will discuss how the Coast Guard will respond to a marine disaster (Appendix 25 of Annex C) while Section 8000 of the Area Contingency Plan will delineate a more regionalized approach. State plans may also discuss response activities.

With such a large number of plans, it is critical for response managers—especially those who will find themselves as part of the Unified Command—to become familiar with their contents and the expectations various agencies and organizations have on one another. In some cases, these plans may be mutually contradictory and will have to be addressed (preferably BEFORE an incident occurs!).

Since no plan is truly complete until it is validated, exercises are developed to see how well these plans work. Participants should include key decision makers at all levels that may find themselves involved in the response.

They can start out at tabletop exercises, where participants discuss their resources, capabilities, limitations, and specific jurisdictional issues in a non-threatening environment.

The next step may be a functional exercise where participants go through one or more scenarios while covering response strategies and tactics in depth. In some cases, models may be used to more fully understand specific tactics and deployment of resources (see "Adding Realism to Tabletop Exercises" in the 1999 Proceedings of the International Oil Spill Conference for additional information).

The most detailed type of exercise is the full-scale exercise that involves the deployment of personnel and equipment. This can be a very involved and time-consuming process, but is the final step necessary to ensure potential participants understand not only their roles, but also the capability of their equipment to respond to a marine incident.

General of the Army George Marshal, Chief of Staff of the U.S. Army during World War II is often credited with saying, "The plan is nothing...to plan is everything." That is as true today as it was over sixty years ago. The process of developing effective plans is where the critical learning will occur. Planners will discover what agencies will participate (and to what level); resource capabilities, limitations, and shortfalls; and training needs that will need to be addressed. If these planners can determine how to best ensure interoperability amongst these diverse organizations on-scene, then the foundation for a successful response has been established.

CONCLUSION

It is fairly easy to recognize how involved a shipboard fire could become. To minimize the impact of such a significant event,

key stakeholders within the marine transportation system need to be engaged early and often—and that means BEFORE an incident occurs. Active participation in a variety of forums that exchange information on jurisdictional concerns and responsibilities, resource capabilities and utilization, training levels, and appropriate plans that may be implemented during a crisis can spell the difference between success and failure. This active participation can facilitate the rapid establishment of an effective Unified Command that possesses the knowledge of regional capabilities and how best to implement appropriate response plans. Efforts like this minimize the impact on the marine transportation system while simultaneously protecting the environment.

Current salvage and marine firefighting regulations are still unresolved. There are spill response co-ops and salvage agreements, yet very little marine firefighting agreements specifically for marine fires. Captains of the Port should pursue initiatives with the marine industry and local fire departments in develop-

ing joint training and equipment agreements. Not having local fire departments in vessel firefighting plans would be a great mistake. Agreements reviewing mutual aid and cost sharing for fire boats and foam storage are greatly needed. If vessel owners are to provide primary firefighting resources, then local government resources need to be considered a part of the plan. We highly recommend pursuing this initiative.

BIOGRAPHY

Lieutenant Joe Leonard is the Chief of the Response Department for Marine Safety Unit Galveston. Commander Mike Drieu is the Commanding Officer of Marine Safety Office Savannah. Bob Royal recently retired from the Houston Fire Department and is currently the Emergency Management Coordinator for the Harris County Health Department.

