

Flash Point

After several high-profile incidents, are new firefighting rules and more training needed?

By Dale K. DuPont, Correspondent

A fatal barge fire and explosion four years ago and a deadly dive boat fire two years later left 36 people dead. Both vessels had Coast Guard Certificates of Inspection (COI). One had a Safety Management System (SMS), but inspection and survey records indicated that the overall condition of the barge was poor. An investigation of the dive boat found several unsafe practices including a lack of crew training and emergency drills and no roving patrol.

Both incidents raise questions about how well existing rules are followed and whether there need to be new ones. Subchapter M – the towboat inspection rule – has new firefighting mandates, and additional requirements for passenger vessels are looming. Firefighting detection equipment has evolved. New extinguishing agents like 3M's Novec 1230, FM-200 and water mist have come on the market. And challenges have grown with the wider use of lithium-ion batteries.

"Generally, the rules in place are certainly adequate,"

said Capt. Jon Kjaerulff, director of business development at Seattle's **Maritime Institute of Technology and Graduate Studies (MITAGS)**, and founder of **Fremont Maritime Services**. The question is how the rules are interpreted. How rigid are the auditors? Does the vessel have all the necessary equipment? Is it well maintained?

It also comes down to how well trained the crew is and how often they drill. "There's a core group of companies and operators who have taken this seriously all along," he said. "Unfortunately, there are companies who go with the absolute minimum."

"The training has got to be realistic. It's got to keep the interest of everybody," said Tom Guldner, president, **Marine Firefighting Inc.**, a retired lieutenant from the New York City Fire Department's Marine Division, who held a Coast Guard license as a ships master and is certified as a fire instructor in New York and nationally. He has also trained firefighters and mariners in Canada, Mexico and Australia.

Members of Coast Guard recruit company Kilo 190 conduct firefighting training in a simulator on board Coast Guard Training Center Cape May. Firefighting training is part of the Coast Guard recruit's eight-week basic training curriculum.

Guldner said all firefighting equipment should be checked. "If you don't do that, they're not actually drilling.

"I'm a big proponent of live drills," he said. And don't do the same drill every time. "A lot of time the drills are everybody sits in the kitchen and discusses a fire in the galley."

SMS, SUBCHAPTER M

Subchapter M "changed everything. It was a good change," said Capt. Sean Tortora, master mariner at the marine consulting firm **Long Island Maritime LLC**, and author of *Study Guide for Marine Fire Prevention, Firefighting & Fire Safety*. "Definitely, fire safety was addressed in Subchapter M," and a safety management system is the key.

The American Waterways Operators' Responsible Carrier Program was accepted by the Coast Guard in 2016 as an existing SMS that complies with Subchapter M. The Passenger Vessel Association's (PVA) Flagship SMS was accepted in 2017.

SMSes require recordkeeping, reporting and auditing. Tortora supports more training and more documentation. "You can have training, but you have to have the paper behind it."

Tortora points out a number of new firefighting requirements in Subchapter M including: portable, semi-portable and fixed fire extinguishing systems must be Coast Guard approved; monthly fire drills for all crew – similar to blue water commercial vessels; at least two firefighter outfits that meet National Fire Prevention Association (NFPA) standards and two approved SCBAs (self-contained breathing apparatus); operators must provide documented evidence of satisfactory testing, servicing and inspection of systems and equipment; every crew-member must receive a safety orientation within 24 hours of boarding.

"The mentality of the crewmembers up to the captain about safety in general has increased significantly," said Will Williamson, maritime training coordinator, **Resolve Maritime Academy**, Fort Lauderdale, Fla., and a Coast Guard veteran. Unfortunately, it comes from incidents like the dive boat and *El Faro*, the 790' container-ship that sank in Hurricane Joaquin in 2015 with all 33 on board.

In the workboat community, firefighting and training are held in high regard, Williamson said. Still, budgets for training and safety gear are smaller than for other parts of the boat. "There's a ton of room for improvement."

Firefighting has been helped by advances in equipment such as SCBAs, which are ergonomically more comfortable with masks that give an LED indicator when running out of air, and in thermal imaging, which is especially critical in search and rescue.

The biggest challenges onboard versus onshore are damage control, communication flow among the crew, and stability — removing the water you're putting on the boat. For the latter, the easiest solution is to have functioning bilge pumps. "If that doesn't happen, you have to get your portable pumps in action," Williamson said, and that

FIRES AND EXPLOSIONS

Nearly 83% of fires/explosions on towing vessels, passenger vessels and OSVs occurred in machinery and some auxiliary machine and generator spaces.

Accommodation spaces were next at 4.8%, followed by galley and open deck space at 3.5% each.

Material failure/malfunction accounted for 51.4% of the incidents, followed by fire at 40.1%.

From 2016 to 2020, there were 236 incidents with 36 people dead and 40 injured. Property damage was \$43 million.

Source: U.S. Coast Guard

means making sure in advance they'll start when you need them.

And that goes back to SMS. "There's no ceiling for that," he said. "It needs to be in the forefront of everything."

Insurers are keenly interested in fire safety, too.



Resolve Maritime Academy training on the 140' fire training vessel *Gray Manatee*.

Resolve Maritime Academy

“A fire at sea is the most terrifying thing I’ve ever experienced,” said Capt. Andrew Kinsey, senior marine risk consultant for insurer **Allianz Global Corporate & Specialty** (AGCS), and a member of the International Union of Marine Insurance (IUMI) loss prevention committee. “You don’t have time to think. You can’t call 911. There’s no fire department.”

He’s seen improvements since Subchapter M became effective. “It’s not people coming on telling you what to do, but verifying that what you say you’re doing, you’re actually doing,” he said.

“From a marine insurance standpoint, we are still in a relationship business. A COI is the starting point,” Kinsey said. “In many cases, the broker will ask us for help.”

They look at everything from losses to procedures. Do you have job descriptions? Do you tell your crewmembers what’s expected of them?

“That’s really the challenge. You have to change a mindset,” he said. “SMS was a steep learning curve for blue water.”

Most SMSes “are really written



MITAGS

MITAGS students in an advanced firefighting class fight a fire in the engine room of the *Fire Dragon*, a 130' ship mockup built in 2001 for the India Tango Marine Firefighting Training Program.

from the deck plates up. They make a vessel safer, and a safer vessel is a more efficient vessel,” Kinsey said. And that could translate to lower premiums.

Just having an SMS guarantees nothing. The National Transportation Safety Board (NTSB) determined that a 2017 explosion on the articulated tug-barge *Buster Bouchard/B. No. 255* that killed two crewmen near Port Aran-

sas, Texas, was caused by inadequate maintenance and safety management by operator **Bouchard Transportation Co.**, compounded by ineffective inspections and surveys by the Coast Guard and **American Bureau of Shipping**. Crude oil cargo leaked through a corroded bulkhead into the forepeak void space, forming vapor and igniting, NTSB said.

The century-old Bouchard’s path to a Chapter 11 filing last September can be traced back to that tragedy, Matthew Ray, of **Portage Point Partners** and chief restructuring officer, said in a bankruptcy court filing. “The resulting litigation, environmental costs, and public hearings conducted by the Coast Guard, exacerbated by general industry headwinds, ultimately precipitated a steady decline in both revenue and liquidity, severely straining operations throughout 2017 and 2018.”

SMS RULES FOR PASSENGER VESSELS

The Coast Guard is formally considering SMS rules for U.S.-flag passenger vessels. The proposed rulemaking comes after the 2019 *Conception* dive boat accident off Santa Cruz Island, Calif., that killed 33 passengers and one crew. The NTSB blamed lax oversight by the owner, no roving watch, insufficient smoke detectors



The tugboat *Signet Constellation* fights a fire on board the *B. No. 255* tank barge approximately three miles from the Port Aransas, Texas, jetties on Oct. 20, 2017. The explosion on the ATB *Buster Bouchard/B. No. 255* killed two crewmen.

Coast Guard photo.

escape routes, and faulted the Coast Guard for not requiring SMSes as called for in the 2010 Coast Guard Authorization Act.

Six passenger vessel accidents from 2017 to 2019 including the *Conception* resulted in 55 deaths, the Coast Guard said in its recent Advanced Notice of Proposed Rulemaking. Five of the six incidents and all but one of the deaths involved vessels without an SMS. The agency wants to know whether owners have seen any safety improvements using the PVA's Flagship SMS.

"The (dive) boat was technically in compliance with the rules. It's just the rules were not adequate," said Guldner, who's also a principal member of NFPA's technical committee on merchant vessels.

The NTSB didn't positively identify an ignition source but said possible flashpoints included the vessel's electrical distribution system and divers' electronic devices such as cell phones, underwater flashlights and tablets being charged overnight. A Coast Guard safety bulletin urged operators to limit the unsupervised charging of lithium-ion batteries and extensive use of power strips and extension cords.

Lithium-ion batteries present new firefighting challenges. They will "continue to burn even if you extinguish the fire," said Ernie Ellis, president of **Metalcraft Inc.**, Baltimore, parent of **Sea-Fire Marine**, which designs and manufactures fire detection and suppression systems. Heat released by cell failure can trigger a thermal runaway reaction.

The industry primarily has used CO2 suppression systems to protect the engine rooms where there was the greatest likelihood of fire, Ellis said. The problem with CO2 is it's potentially deadly for humans. "There's a movement away from CO2 for that reason."

What came to market were man-made chemicals, which were great extinguishing agents but had adverse environmental implications. Among the newer products on the market is 3M's Novec 1230 fluid, which has



Ventura County Fire Department photos

The Coast Guard is considering SMS rules for U.S.-flag passenger vessels. The proposed rulemaking comes after the 2019 *Conception* dive boat accident off Santa Cruz Island, Calif., that killed 33 passengers and one crew.

negligible global warming potential and is being specified in many marine applications, Ellis said. "The industry can continue to use CO2, but it needs to have strict protocols so it doesn't accidentally discharge. CO2 is a lot less expensive initially, however, over its useful life it turns out to be a lot more expensive," he said. It takes one third less Novec to extinguish a fire than CO2.

Lee Nelson, president **Upper River Services**, St. Paul, Minn., installed the Novec 1230 "Clean Agent" system in the *Mendota*, his new 2,013-hp,

76'x30'x94" triple-screw towboat. Designed by **CT Marine**, Portland, Maine, and built by **C&C Marine and Repair**, Belle Chasse, La., the boat is the first new vessel built for the company.

He saw a demonstration of Novec at the **International WorkBoat Show** and was intrigued by the safety for crews and electrical non-conductivity. "We haven't had to use it and I'm glad," he said. And as for the cost versus other systems, "if we were to have a fire, if it saved a life, then how can you put a price on that?"

WB