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MARINE TECHNOLOGY
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SALVAGE AND RESCUE

Best practices in the aftermath

Challenging Inaction
The normalcy bias

DISSUB
Escape or rescue

Emergency Towage
Evolving scenarios

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ASA provides training events for USCG Strike Team personnel, such as this 2023 marine salvage course.

Training Salvors

ASA's work in preparing the next generation

BY JOSEPH FARRELL III

The marine salvage profession has become increasingly complex. Ships are growing in size and cargo content is more diverse. Containerships can carry more than 24,000 TEUs and the types of cargo being carried have become more challenging and hazardous to transport. Alternative fuel systems—both in use and under development—that reduce a ship's carbon footprint create different challenges removing fuel in a salvage operation. According to Statista Research, the volume of seaborne trade and capacity of the global merchant fleet is also growing. And more recently, there are ever-present threats of ships being attacked by weaponized drones, shored-based missile launches, and pirates. These growing variables intensify marine emergency response for professionals whose work is already highly complex and multi-disciplined.

As the variety of vessels grows and the type of work at sea expands, so does the art of marine salvage. Marine salvors continue to work on legacy and historical wrecks, groundings, collisions and allisions, sinkings, vessels that lose power, and derelict vessels. Salvors, however, are also sought after to assist with marine disasters that are a combination of intentional, unintentional, natural disasters, terrorism, ill-will, and even bad luck. Examples include the Deepwater Horizon, the largest marine oil spill in history; the Houthi terrorist missile attack and sinking of *Rubymar*, a British-owned cargo ship laden with fertilizer in the Red Sea; the removal of 80-plus fishing and pleasure boats that were burned, sunk, or strewn in Lahaina Harbor, Maui, HI; extinguishing a car carrier fire laden with vehicles, including electric vehicles (EV) in Jacksonville, FL; fighting a containership fire following a bomb cyclone off the coast of British Columbia, Canada; and responding to a lithium-ion (Li-ion) battery cargo fire in Alaska's Aleutian island chain in arctic conditions.

The skills required to conduct modern-day marine salvage efforts go beyond the basic elements of *Muckles Naval Architecture*, strength of materials, and boatswain's mate rigging. The laundry list of required skills includes knowledge and experience in alternative fuels; oil and hazardous substance spill recovery; admiralty law; environmental compliance; the Oil Pollution Act of 1990 (OPA 90) regulations; marine insurance; international trade; subsea operations; United Nations sanctions; cabotage laws including The Jones Act; and environmental recovery restrictions, to name just a few. Despite increasing complexities across the industry, the basic objectives of marine salvage remain the same: save lives, preserve the environment, and protect property, in that order.

Wide spectrum

Marine salvage professionals, expertise, and equipment continue to evolve along with the broader shipping industry, and today's salvage response community comprises a wide spectrum of stakeholders with vested interests in marine casualties and

catastrophes. Despite this, the federally mandated Incident Command System in the U.S. continues to demonstrate that it is the most effective tool in keeping a chaotic event organized and efficient. Additionally, sophisticated marine salvage organizations and personnel, with decades of experience, often act as "ringleaders" to enable communications among different parties who may be unfamiliar with how to handle the situation and are under pressure to act quickly.

Marine salvage requires broad and deep technical skills. On modern-day large marine casualties, salvage engineers, naval architects, salvage masters, heavy lift vessel and tug operators, salvage divers, and environmental specialists are needed and come from local, regional, and global salvage companies. They work in tandem with United States Coast Guard (USCG) personnel, National Oceanographic and Atmospheric Administration scientists, Environmental Protection Agency (EPA) regulators, law enforcement officials, media, wildlife response service providers, and more.

The number of significant marine casualties requiring marine salvage has been on the decline over the past three decades, especially in U.S. waters. OPA 90 was a cornerstone of this improvement, and it was spawned in large part by *Exxon Valdez* running aground in 1989 in Prince William Sound and spilling 11 million gallons of Alaskan North Slope crude. Taken together, the requirements of OPA 90 have silently improved the safety of the marine transportation system (MTS) in the U.S. and are now being adapted to other global waters.

OPA 90 regulations must continue to incorporate new technologies, new alternative fuels, and a wider array of cargos. To help legislators and regulators accomplish this, groups such as the American Salvage Association (ASA) advise and advocate to government agencies on behalf of the salvage industry. Established in 2000, the ASA aims to bring together regulators, environmental agencies, shipowners, underwriters, and industry players to foster open communications and better protect the public and the environment.

As an association of professional salvors and resource providers, the ASA provides an identity to the industry to lead by example and provide a professional marine salvage and firefighting response. By doing so, the ASA helps to improve marine casualty response in North American coastal and inland waters. Since its inception, the ASA has expanded its reach and

Training Salvors *continued*

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advocates for salvage and marine firefighting response throughout North, Central, and South America, and the Caribbean.

Updated regs

Recent ship casualties have highlighted an urgent need to review and update the OPA 90 regulations to address evolving industry issues. The cargo ship carrying Li-ion batteries that caught fire in western Alaska in December 2023 was extinguished without loss of the ship. However, the response to the offshore fire coupled with how to handle and dispose of damaged Li-ion batteries became the first of its kind for USCG to resolve. The 2020 Jacksonville, FL car carrier fire took a week to extinguish; the ship and cargo were a complete loss, and nine firefighters were injured.

In July 2023, a foreign-flagged RoRo vessel carrying 1,200 vehicles docked in the Port of Newark caught fire. As the USCG Safety Alert 09-23 notes, "Tragically, during the response, two land-based firefighters were lost and several others were injured." These incidents point up the need for more formal coordination and training among municipal local firefighter respondents and commercial marine firefighters.

Evolving response methods have the industry's attention. During an ASA member event in 2023, Dewey Morrison, a global expert on firefighting foam concentrate, spoke to ASA members in Fort Lauderdale, FL. Among other topics, he spoke about aqueous film-forming foams (AFFF) being banned by the EPA before an equally effective substitute has been developed. AFFF is one of the most effective tools in the firefighters' arsenal when attacking marine oil fires; therefore, the need for suitable alternatives is paramount as marine salvors work toward addressing such incidents.

Traditional salvage involving lightering of bunkers during a casualty is well understood and the industry has the equipment to effectively respond. However, the science of marine salvage now demands specialized equipment for new alternative fuels, such as LNG, LPG, methanol, ammonia, Li-ion batteries, hydrogen, and biofuels that needs to be different and is not yet readily available. Is there an opportunity for OPA 90 regulations to be reviewed and updated to address EV cargos, Li-ion batteries as cargo and propulsion, and other alternative fuels for propulsion? Is there a growing need to formalize training and cooperation between municipal firefighters and salvage and marine firefighters? The ASA believes so and we will advocate for OPA 90 regulations around evolving vessel fuel and cargo fire and spill risks.

Current initiatives

The ASA is currently working on several initiatives through our working committees. Training is an important area and ASA members are updating curriculum that will be used to provide salvage response-related training to USCG personnel. These training sessions are helpful in facilitating common understanding and an effective and efficient response when ASA members and USCG personnel mobilize for actual salvage events.

A second initiative is the establishment of industry best practices for ASA members. This framework is intended to lift the entire industry to provide the safest, most effective response possible. Another active initiative is to assist in the expansion of OPA-90 vessel response plan (VRP) requirements for alternative field, non-tank vessels. VRPs have successfully saved ships and prevented oil spills for decades since the requirement was established as part of OPA-90. As the shipping industry moves to alternative fueled (non-oil) vessels, non-tank vessels will fall outside of the requirement for having an approved VRP. Closing this gap is essential to our industry's continued protection of the environment.

Marine salvage will always have the need for well educated, experienced, and resourceful salvage teams that include salvage masters, naval architects, engineers, and personnel in supporting roles. But the niche business of salvage isn't taught in maritime academies. How do we continue to recruit, develop, and retain the next generation of talent in the marine salvage business to prevent loss of life and minimize environmental catastrophes?

Some members of the ASA routinely reach out to maritime academies to recruit interns during their formal education. Internships enable students the opportunity to participate in salvage operations and learn how to analyze damaged stability, lighter a stranded vessel, and perform engineering trade-offs on the fly as conditions change. They also equip students to understand regulatory requirements, underwriter considerations, and admiralty law as it pertains to marine transportation. Students can then bring these experiences back to the classroom, broaden the thought processes for future ship designs, and even consider pursuing a career in marine salvage after graduation.

Interactive experience

The ASA Education Committee is committed to helping develop maritime industry expertise through interactive experience with ASA salvage professionals. The committee's goal is to support career development in all maritime disciplines and the promotion of STEM areas of study that can lead toward salvage related career disciplines. Toward that end, the ASA Education Committee organizes the Future Salvors Program as well as an annual Marine Science Scholarship Competition.

The Future Salvors Program offers a sponsorship award that provides a successful recipient opportunities to learn and participate in industry-related meetings,

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events, and networking engagements. This will include a complimentary registration to attend the ASA's annual general meeting in New Orleans in November, an opportunity to attend the annual International WorkBoat Show that same week, and include travel and lodging credits to attend. Both events will provide opportunities to learn about key salvage projects and relevant industry developments, and to meet and network with leading marine salvage industry professionals and regulatory authorities. Additionally, the awardee will be able to learn about future employment and internship opportunities directly from salvage industry representatives.

The Marine Science Scholarship Competition is a joint program with the North American Marine Environment Protection Association, in which students who have recently demonstrated a passion for the marine sciences by participating in a science or engineering fair either individually or in a team can participate in the 12th annual Marine Sciences Scholarship Competition. The winner(s) will earn scholarship funds to further their education and research. The competition is intended to highlight the importance of preserving the marine environment through the use of sound environmental practices, raise awareness of the art and science of marine salvage and engineering, and to promote careers within the greater maritime industry and in marine sciences.

Applications for both programs are due no later than September 20, 2024. More details are available at https://www.americansalvage.org/committees.html **MT**

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