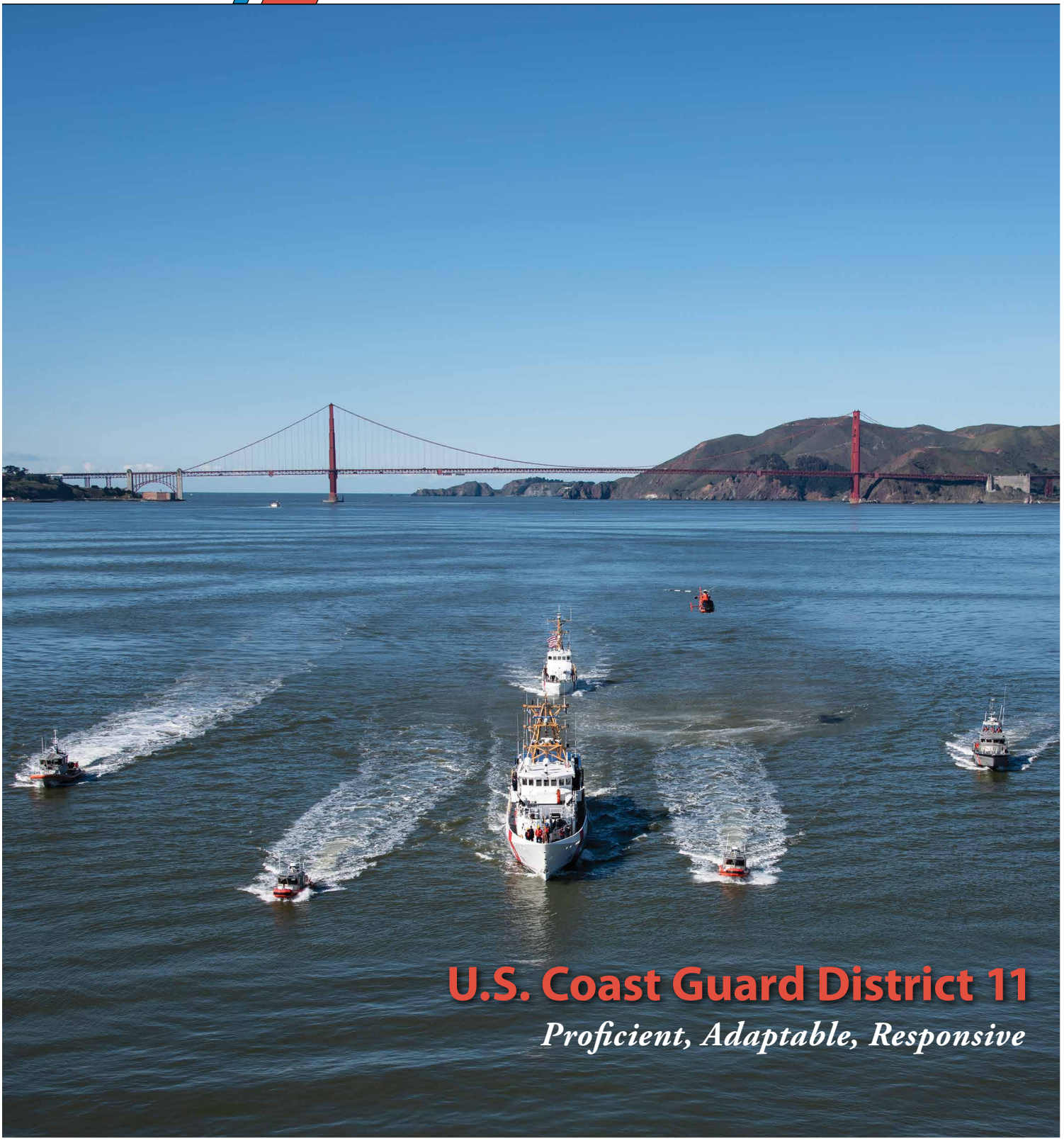
The Coast Guard Journal of Safety & Security at Sea

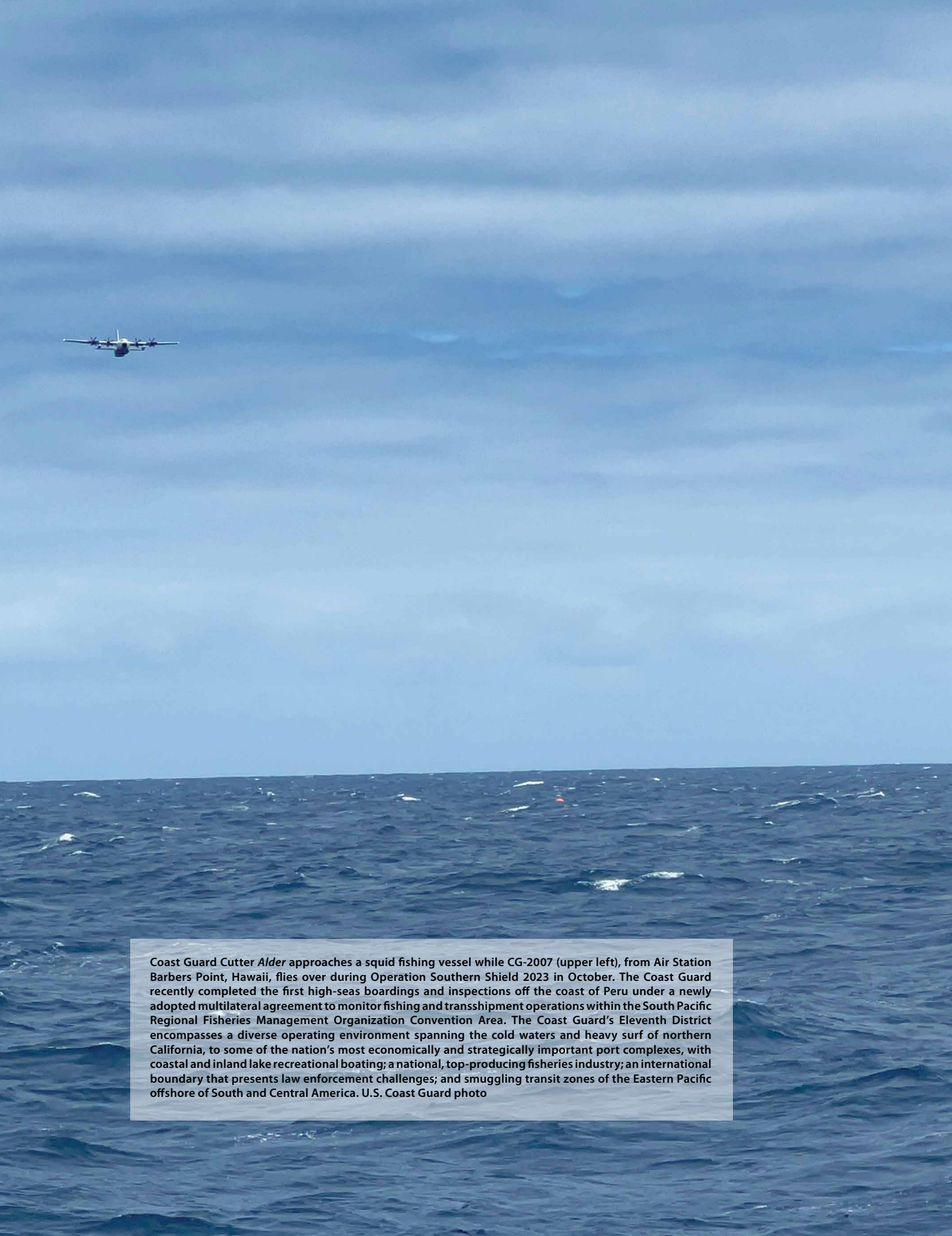
Proceedings

Spring 2024 of the Marine Safety & Security Council



U.S. Coast Guard District 11

Proficient, Adaptable, Responsive



Coast Guard Cutter *Alder* approaches a squid fishing vessel while CG-2007 (upper left), from Air Station Barbers Point, Hawaii, flies over during Operation Southern Shield 2023 in October. The Coast Guard recently completed the first high-seas boardings and inspections off the coast of Peru under a newly adopted multilateral agreement to monitor fishing and transshipment operations within the South Pacific Regional Fisheries Management Organization Convention Area. The Coast Guard's Eleventh District encompasses a diverse operating environment spanning the cold waters and heavy surf of northern California, to some of the nation's most economically and strategically important port complexes, with coastal and inland lake recreational boating; a national, top-producing fisheries industry; an international boundary that presents law enforcement challenges; and smuggling transit zones of the Eastern Pacific offshore of South and Central America. U.S. Coast Guard photo

PROCEEDINGS

Spring 2024 Vol. 81, Number 1

Prevention

Response

Building Awareness

On Deck

On the Cover: Coast Guard Cutter* Robert Ward *is escorted by San Francisco and Sacramento Coast Guard assets to Sector San Francisco in the Coast Guard's Eleventh District for a ceremonial commissioning in February 2019. The District is charged with protecting the public, ensuring maritime safety and security, safeguarding the environment, and combatting transnational criminal organizations in the waters of California, the southwestern United States, and offshore. Adobe Photoshop Generative AI was used to extend the sky in the cover photo.

Coast Guard photo by
Petty Officer 3rd Class Jordan Akiyama

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District Commander's Perspective

by Rear Admiral Andrew M. Sugimoto
Commander
Eleventh Coast Guard District
U.S. Coast Guard

Every day I am truly impressed by the amazing work performed by our Coast Guard professionals across the military, civilian, and volunteer Auxiliary workforce. The Eleventh District (D11) team's diligence and ingenuity is on display in the way we approach every mission, and I could not be any more excited to work with each of them.

Individually, we respect and take care of each other.

Professionally, we strive to be brilliant at the basics.

As sentinels, we stand the watch.

D11 has a vast, demanding area of responsibility that includes the states of California, Nevada, Arizona and Utah,

Champion's Point of View

by Commander Jeffrey K. Padilla
Deputy Enforcement Branch Chief
Eleventh Coast Guard District
U.S. Coast Guard

It is my incredible honor to introduce to you the Eleventh Coast Guard District (D11) issue of Proceedings!

I have had the distinct privilege of working with such a talented and diverse team that authored articles across the range of operations at D11. I truly hope you will enjoy reading about the mission execution that helps set D11 apart.

The hard work that went into each article in this issue highihlihts our latest efforts to improve safety and security in the U.S. commercial fleet, from eliminating sexual misconduct on U.S.-flagged vessels to improving small passenger vessel safety. We also focus on the deliberate efforts to improve maritime domain awareness, the rapid expansion of commercial enterprise in California coastal waterways, D11's joint interagency and international operations in an evolving Eastern Pacific theater of operations.

extending west into the Pacific Ocean and south into Central and South America. Each of our crews can tell amazing and humbling stories. This is true whether they are on boats in the shadows of the Golden Gate Bridge; on darkened vessels patrolling the Southwest Border and its approaches; flying daring missions over land and sea; or setting and preserving aids to navigation, among numerous other jobs.

In fiscal year 2022, D11, its units and mission partners responded to 2,759 search and rescue cases, saving 575 lives and $60.6 million in property. Under D11 tactical control, allied assets joined those of the U.S. Coast Guard and Navy to interdict 60.3 tons of cocaine and 18 tons of marijuana. Additionally, joint and interagency forces led by D11 sectors apprehended 2,261 of a record 4,567 non-U.S.-citizens attempting to enter the United States from across the maritime Southwest Border with Mexico.

I am confident you will enjoy reading this issue of *Proceedings* highlighting the Eleventh District and a small sample of what happens here every day.

Authors from several D11 field units also highlight their challenges, successes, and experiences.

Many of our authors conducted extensive research with others that indirectly contributed to the success of their writing. This issue would not have been possible without the support of our colleagues and friends to whom we owe our thanks.

As a two-time staffer at D11, I have seen our missions and network of partnerships grow in both complexity and global reach over the years. Please enjoy this issue of *Proceedings* featuring the outstanding professionals in the field and on staff at D11.

I also encourage readers to follow the latest updates from D11 on social media: Twitter [X]: @USCGPacificSW, https://www.facebook.com/USCoastGuardPacificSouthwest, and Instagram: @pacificsw

Also visit https://www.news.uscg.mil/News-by-Region/11th-District-Pacific-Southwest/

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Operation Trident Oar

Operationalizing safety enforcement for overnight accommodation vessels

by CDR Rebecca Sheehan
Inspections and Investigations Branch
District 11
U.S. Coast Guard

LT Anthony Solares
Inspections and Investigations Branch
District 11
U.S. Coast Guard

LCDR John Botti
Inspections and Investigations Branch
District 11
U.S. Coast Guard

On September 2, 2019, at approximately 3:15 a.m., Coast Guard Sector Los Angeles-Long Beach watchstanders overheard a mayday call via channel 16 that the 75-foot small passenger vessel *Conception* (O.N. #638133) with 39 people aboard was engulfed in flames. Crews from the Coast Guard, Santa Barbara, and Ventura County fire departments, and Vessel Assist tow service responded. The fire department crews were fighting the fire when the vessel sank 20 yards off Santa Cruz Island in 64 feet of water.

Five people, all crewmembers, including the Master, escaped and were rescued by a good Samaritan pleasure craft, *Grape Escape*. The remaining 34 people were unable to escape the vessel and died in the fire. The Coast Guard suspended its search and rescue efforts as of the following day. Responders recovered the deceased victims and salvage crews raised the *Conception* and transported it to a location to collect evidence and attempt to determine the origin of the fire.

Given the magnitude of this marine casualty, the Coast Guard convened a formal Marine Board of Investigation (MBI) on September 6, 2019, to determine the casual factors that led to this tragic incident. The MBI was established pursuant the authority in 46 U.S.C. 6301 requiring the board to convene as soon as practicable to inquire into all aspects of this casualty. The National Transportation Safety Board (NTSB) conducted a concurrent investigation of the incident and issued seven safety recommendations to the Coast Guard in its October 20, 2020, Marine Accident Report.[1] Two safety recommendations were issued to associations that have members operating small passenger vessels with overnight accommodations, and one safety recommendation was issued to the operator of the *Conception*, Truth Aquatics, Inc.

The Creation of Operation Trident Oar

Immediately following the Conception tragedy, the Coast Guard completed a concentrated inspection campaign on small passenger vessels with overnight accommodations. The service continues to take deliberate steps to improve the safety of small passenger vessels and prevent future loss of life.[2] These steps focus on firefighting, mitigation, and ensuring those aboard have a means of escape in the event there is a fire on board the vessel.

Amidst the campaign, it was noted that District 11 had the greats of all overnight small passenger vessels nationally at 30 percent. Subsequently, the District issued the highest number of deficiencies—559 deficiencies out of 1074 total–during the concentrated inspection campaign.[3] The breakdown of deficiencies issued within the District include the following:

- 36 percent electrical
- 30 percent berthing/emergency escape requirements/roving patrol
- 18 percent firefighting equipmet/smoke detectors/drills
- 11 percent miscellaneous
- 5 percent life saving

District 11 determined the current paradigm of only conducting announced shoreside inspections on small passenger vessels was not enough, especially for those with overnight accommodations. Thus, it pursued an initiative named Operation Trident Oar (OTO) to ensure compliance with safety requirements while underway. The symbology behind 'Trident Oar' is the combination of the prevention and response operational insignias and represents the need for both these specialties to execute this operation. The trident, a symbol associated with the Coast Guard's prevention operational specialty,

represents the marine inspections and investigations efforts. The oar, associated with the service's response operational specialty, represents the Coast Guard's cutter, boat, law enforcement, and search and rescue operations.

When preparing for this initiative, the Coast Guard developed and disseminated key documents, conducted outreach to marine industry and public/governmental entities to raise awareness and clarify regulatory expectations. Additionally, the Coast Guard conducted two days of trainings and exercises. The first part of these efforts included of classroom training and small group work to practice and reinforce the principles of this operation and ensure consistency of Coast Guard actions when interacting with the public and with mariners. The second part consisted of scenario-driven, hands-on training aboard a local small passenger vessel contracted by the Coast Guard. Part of the training was conducted underway at night to simulate nighttime operations, which was no easy feat as it challenged the status-quo of how we oversee and enforce small passenger vessel safety.

Initially executed in early September 2021 to coincide with the two-year anniversary of the Conception tragedy, OTO is achieving the desired effect of encouraging greater awareness of rules and regulations among small passenger vessel operators. The operation's success depended on leveraging cross-specialty operational coordination from intelligence—awareness and cueing—inspections, which are traditionally done pier side, and enforcement of underway safety compliance checks.

We had internal buy-in at the district and field unit levels, as well as from our external stakeholders. OTO's

Members of Coast Guard District 11's boarding team talk with the captain of the *Excalibur*, Chuck Taft, to ensure his vessel's documents are valid during a 2021 training exercise in the San Diego Harbor. Coast Guard photo by Petty Officer 1st Class Adam Stanton

A Coast Guard boarding team approaches the fishing vessel *Excalibur* after being unable reach the vessel's captain during a 2021 training exercise in the San Diego Harbor. The goal was to establish communications and verify the watch was being stood. Coast Guard photo by Petty Officer 1st Class Adam Stanton

focus continues to be on required items that cannot be verified during traditional shore-side inspections. Items such as verifying the night watchman roving patrol, timeliness and effectiveness of safety briefings, passenger count, proper manning and licensing, validity of lifesaving and firefighting equipment, and checking for unsafe conditions to include electrical overloading and blocked egress routes. Looking beyond OTO towards the regulatory framework, the Coast Guard has taken additional action to further ensure fire safety of small passenger vessels through the Coast Guard Authorization Act of 2020.

Coast Guard Authorization Act of 2020

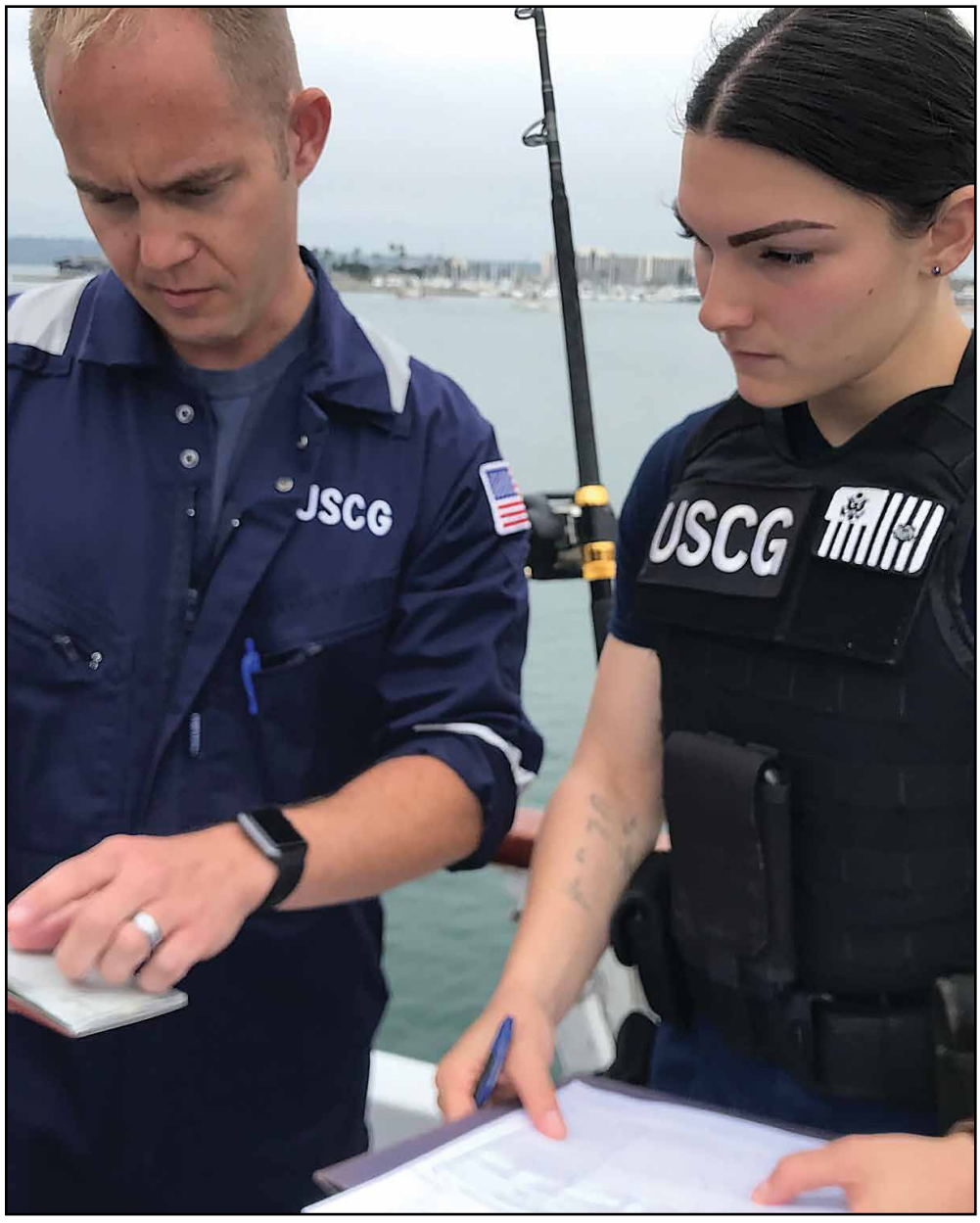
Section 8441 of the Elijah E. Cummings Coast Guard Authorization Act of 2020 (2020 CGAA) amended Title 46 of the United States Code (U.S.C.), section 3306. The Act added paragraph n, to section 3306 which requires the Department of Homeland Security secretary to issue interim requirements to cover the following eight provisions:

- marine firefighting training programs to improve crewmember training and proficiency, including egress training for each member of the crew
- interconnected fire detection equipment and additional fire extinguishers and firefighting equipment in all areas on board where passengers and crew have access
- installation and use of monitoring devices to ensure wakefulness of the required night watch, for covered small passenger vessels with overnight passenger accommodations
- increased fire detection and suppression systems in unmanned areas with machinery or areas with other potential heat sources
- no less than two independent avenues of escape for all general areas accessible to passengers, that are constructed and arranged to allow for unobstructed egress, located so that if one avenue

of escape is not available, another is available, and not directly above, or dependent on, a berth for covered small passenger vessels with overnight passenger accommodations
- improved handling, storage, and operation of flammable items, such as rechargeable batteries, including lithium-ion batteries
- requirements for passenger emergency egress drills for covered small passenger vessels with overnight passenger accommodations
- providing all passengers a copy of the emergency egress plan for the vessel for covered small passenger vessels with overnight passenger accommodations

The Fire Safety of Small Passenger Vessels Interim Rule was the Coast Guard's first step to implementing the statutorily mandated requirements in response to the fire and loss of life on the dive boat *Conception*. This interim rule added additional fire safety requirements for small passenger vessels, including fire detection and suppression systems, avenues of escape, egress drills, crew firefighting training, watchmen monitoring devices,

Coast Guard Petty Officer Dostart talks with Chuck Taft, captain of the *Excalibur* to see if his documents are valid and within law during a 2021 training exercise in the San Diego Harbor. Coast Guard photo by Petty Officer 1st Class Adam Stanton



A Coast Guard Sector San Diego inspection team conducts an enhanced underway inspection on a small passenger vessel in the San Diego Bay, in July 2021. The underway inspections focus on fire hazards, safety equipment, and emergency exits aboard small passenger vessels to prevent loss of life at sea. U.S. Coast Guard photo by Chief Petty Officer Brandyn Hill

and the handling of flammable items such as rechargeable batteries. Effective March 28, 2022, the interim rule requirements have all since been implemented except for the new requirements for means of escape which are due December 27, 2023.

Conclusion

Both the creation of OTO and the mandates in 46 U.S.C. 3306(n) are an outcome of the fire and loss of life aboard the *Conception*, the worst maritime disaster in modern California history. District 11 challenged the status quo of how we oversee and enforce small passenger vessel safety, and nationally the Coast Guard has implemented new regulations for fire safety. As we hold the overnight accommodation small passenger vessel fleet to this higher standard and conduct OTO boardings, we keep those who perished aboard the *Conception* in mind. Safety of life at sea is fundamental to the core of our mission and we continue to prioritize the safety of all passengers and crew aboard the small passenger vessel fleet and strive to prevent future loss of life.

About the authors:

CDR Rebecca Sheehan is currently serving as the Inspections and Investigations Branch Chief at U.S. Coast Guard's District 11. Prior to assuming those duties, she joined the faculty of the World Maritime University on secondment. She has 16 years of professional experience with a mission focus on maritime safety.

LCDR John Botti is assigned to the Inspections and Investigations branch of the Coast Guard's District 11. He has served as a deck watch and boarding officer aboard USCGC Dallas, *International Port Security Program liaison officer, marine inspector/investigator at Sector New Orleans, and supervisor of Marine Safety Team Maui.*

LT Anthony Solares, a prevention officer in the Coast Guard's District 11 Inspections and Investigations Branch in Alameda, California, brings over a decade of experience to the Maritime Prevention Program. His prior assignments include Sector San Francisco, Marine Safety Detachment Dutch Harbor, Alaska, Marine Safety Unit Portland, Oregon, and Sector Miami.

Endnotes:

1. National Transportation Safety Board. Marine Accident Report "Fire Aboard Small Passenger Vessel Conception Platts Harbor, Channel Islands National Park, Santa Cruz Island, 21.5 miles South-Southwest of Santa Barbara, California September 2, 2019" ww.ntsb.gov/investigations/AccidentReports/Reports/MAR2003.pdf

2. United States Coast Guard. Chief, Inspection Division Notes 09-2019. September 2019.

3. United States Coast Guard. Chief, Inspection Division Notes 11-2019. November 2019.

Developing Beyond the Shore of the Pacific Coast

The Coast Guard's Pacific Coast Port Access Route Study

by LT Miranda Brumbaugh
Cutter Operations Officer
District 11 Waterways Management
U.S. Coast Guard

LT Gabriel LaMartina
Apprentice Marine Inspector
Sector Los Angeles-Long Beach
U.S. Coast Guard

LT Nicholas Buch
Apprentice Marine Inspector
Sector Puget Sound
U.S. Coast Guard

The Pacific Coast is a vibrant, dynamic space that is home to a range of activities from energy production and shipping to commercial fishing and tourism. While these uses can bring significant economic and social benefits, they can also create competition for space and resources leading to conflicts that negatively impact maritime navigation. These events have the potential to displace or directly obstruct shipping lanes, creating navigational hazards for vessels. Additionally, the maintenance and support of these activities could indirectly complicate navigation within the region.

The Coast Guard has several tools to assess the level of risk, find potential solutions, and implement methods to mitigate these risks, including the Pacific Coast Port Access Route Study (PAC-PARS). The study, necessary to ensure safe and efficient navigation is maintained into the future, was announced in July 2021, and officially began a collaborative process involving a multitude of offices across the Coast Guard. The study assessed traffic patterns along the Washington, Oregon, and California coasts out to 200 nautical miles, as well as 10 ports in District 11 and District 13's areas of responsibility. Those ports included San Diego, Los Angeles/Long Beach, Morro Bay, San Francisco, Humboldt Bay, Coos Bay, Yaquina Bay, Columbia River, Grays Harbor, and Puget Sound.

Dominant Uses of Ocean Space

Renewable energy, environmental protections, space launches, military operations, and the increase in overall vessel traffic are just five of the notable demands for space in our oceans.

Renewable Energy

A growing push for renewable energy at the federal and state level is encouraging the rapid development of the offshore wind industry in the United States. This requires significant ocean space to develop the fixed and floating wind turbine structures meaning the Bureau of Ocean Energy Management (BOEM) is continuously researching new areas to establish these operations. Many previously identified areas have already been leased to industry, including California's Morro Bay and Humboldt Bay wind energy lease areas. Part of BOEM's process for developing a lease area is early, active engagement with potentially impacted government agencies and interested user groups. This ensures the interests of the maritime users are protected, balancing safe and efficient navigation with the developing offshore wind industries on the West Coast.

Environmental Protection

The safeguarding of vital ecological and cultural resources off the Pacific Coast serves as another crucial component in the overall conversation of safe navigation. The National Oceanic and Atmospheric Administration is an active agency with many missions, including the protection of coastal and offshore marine resources. This mission currently includes expanding the boundaries of existing national marine sanctuaries in the Channel Islands and developing new and novel culturally significant national marine sanctuaries with tribal partners. The agency is also developing aquaculture feasibility areas for safe, sustainable seafood, as well as implementing speed restrictions to protect certain species of marine mammals. Each of these actions has the potential to change or displace maritime activity.

Military Operations

In addition to renewable energy development and

environmental protections, there is a growing frequency of military training activity within the U.S. Navy's Point Mugu Sea Range off the coast of Southern California. These activities require advanced notice to mariners of hazardous operations that often cover large areas, including heavily trafficked shipping routes and fishing areas. The Coast Guard works directly with the Navy and private industry to ensure these activities minimize impact to navigation and maritime safety.

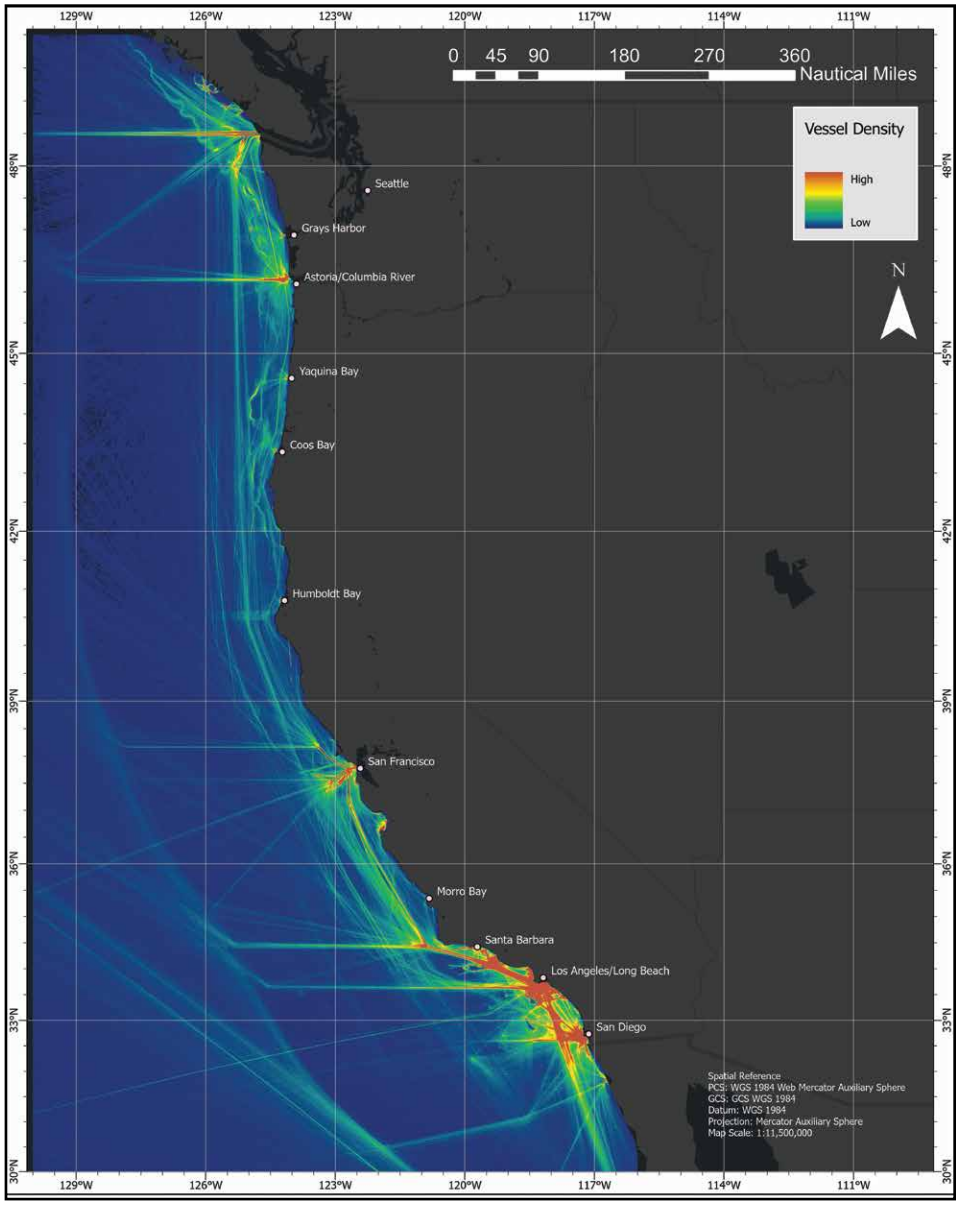
Space Launch Activities

Vandenberg Space Force Base is the inaugural Space Force Base on the West Coast which operates the Western Range. It is a bustling epicenter of space launch activities within sight of the busiest maritime traffic corridor in the scope of the PAC-PARS.

The significant increase in frequency of space launch operations in recent years mirrors industry growth on the Pacific Coast which brings the airspace over the ocean into play as an area of concern for safety and security. Many of these operations occur close to shore to mitigate risk to recovery vessels but are often near increasingly busy sea routes. This development has introduced not only a diverse array of demands upon maritime traffic, but also safety challenges ranging from falling debris to potential waterborne obstructions. This calculated approach hinges on robust, continuous risk assessments that give space launch providers an opportune window to initiate their operations.

While many risks can be mitigated strategically, there may come a point where it is functionally difficult to accommodate all users in U.S. waters awithout significant conflict. As many industries grow in relevance, the Coast Guard will have to expand involvement in the facilitation of all waterways uses in the limited maritime environment.

Annual AIS Vessel Density: Average of All Vessels (2017-2021)

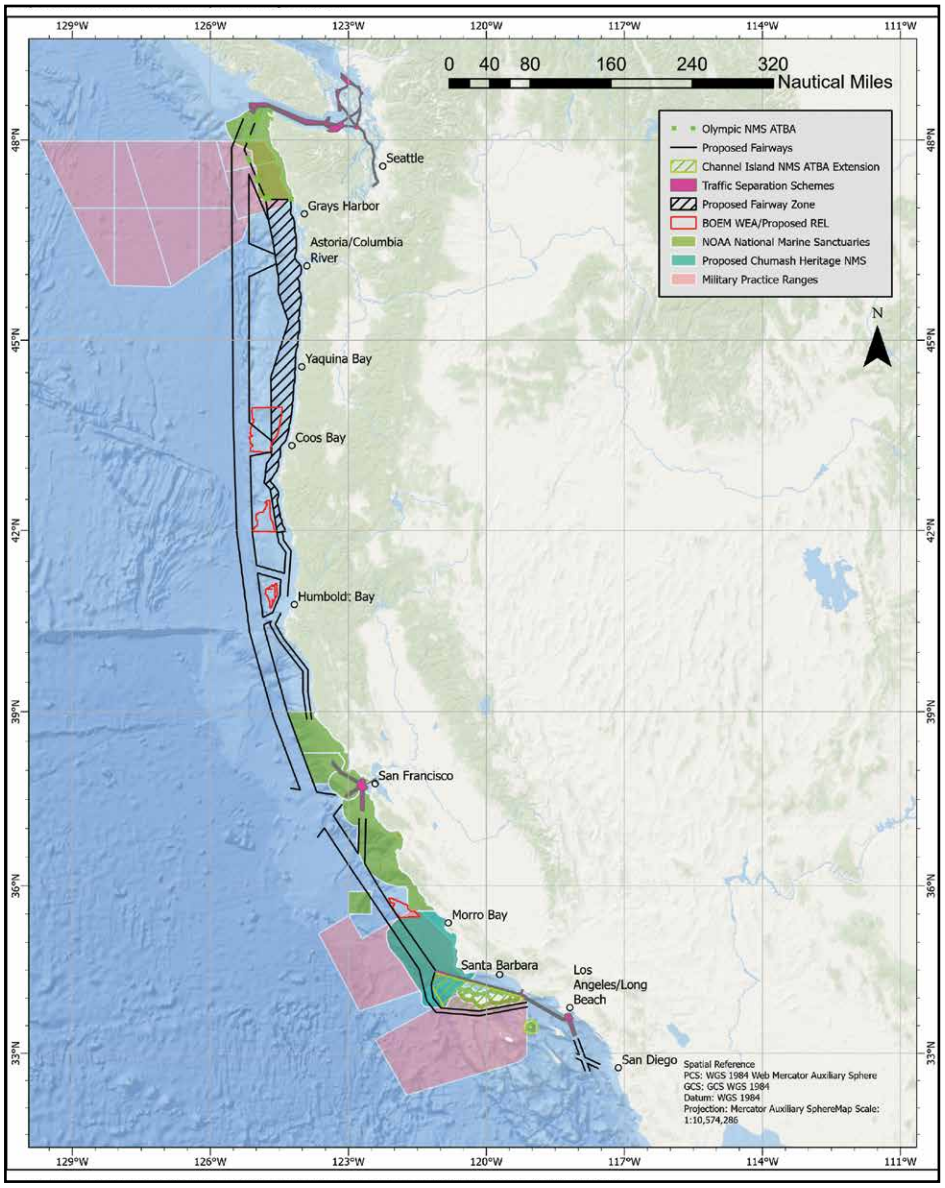


Coast Guard map by LT Nicholas Buch

Assessing Risk and Finding Solutions

Each of the above demands for ocean space inherently increases the risk to mariners. These factors led to the decision to initiate a Port Access Route Study (PARS) spanning the entire Pacific coast from Washington to California. The Ports and Waterways Safety Act requires the Coast Guard to conduct one of these studies before establishing or modifying any fairway or traffic separation scheme. Additionally, the service periodically conducts a PARS to evaluate a port entrance or coastal route's suitability for safe and efficient navigation given existing and foreseeable circumstances. These studies are resource intensive and oftentimes require years to complete. However, the rapidly developing demand for ocean space meant the Coast Guard had to complete the PAC-PARS as soon as possible.

Proposed Pacific Coast Post-Adjudication



Coast Guard map by LT Nicholas Buch

Normally, the Coast Guard's Navigation Center (NAVCEN) acts as the centralized source for vessel tracking data, analyses, and subject-matter expertise. Due to the scope of the study, the analytical work was split between NAVCEN and District 11 in Alameda, California. In addition to the analytic tasks, both District 11 and District 13 in Seattle had members step into new roles. They were charged with providing public notice of the study and its progress to panels and committees. Additionally, they worked directly with interested groups to address and document their concerns. This division expedited the timeline, allowing for the first draft of the study to be published to the Federal Register in August 2022. After review at the Coast Guard Headquarters level and an additional comment period, the final study was published in June 2023.

The skill and expertise within the Coast Guard, in combination with government agencies' cooperation and communication, resulted in expedited recommendations from the PAC-PARS to add safety fairways off the Pacific coasts of Washington, Oregon, and California. The safety fairways were developed with input from all industries and organizations willing to provide comment, creating a comprehensive solution to maintain safe, efficient navigation.

Although the study is closed, the Coast Guard's work in this sphere is far from over. Districts will continue to openly collaborate with, and provide comment to, industry leaders on plans which may impact navigability of federal waterways. As the pressures of offshore development timelines continue to mount and the frantic competition for ocean space charges on, the Coast Guard's north star remains the same: Safety.

About the authors:

LT Miranda Brumbaugh was commissioned from the U.S. Coast Guard Academy in 2017 with a degree in civil engineering. She has served three tours on Coast Guard cutters out of Honolulu, Hawaii, Key West, Florida, and Newport, Rhode Island, and is currently serving as the cutter operations officer at District 11 Waterways Management Branch, overseeing coastal and ocean-going buoy tender cutters.

LT Gabriel LaMartina enlisted in the Coast Guard in 2012. He has served in the boatswain's mate and yeoman ratings, and at Coast Guard Headquarters in the Office of Audit Remediation and Policy. Commissioned in 2018 as a deck watch officer aboard CGC Terrell Horne, he served as the space operations officer at the District 11 Waterways Branch before going to Sector Los Angeles/Long Beach as an apprentice marine inspector.

LT Nicholas Buch was commissioned from the U.S. Coast Guard Academy in 2018 with a degree in marine environmental science. His first assignment was as a deck watch officer on CGC Cypress out of Pensacola, Florida, before being assigned to the District 11 Waterways Branch, where he was a project managers for the Pacific Coast Port Access Route Study before transferring to Sector Puget Sound as an apprentice marine inspector.

Eliminating Sexual Misconduct on U.S. Vessels

District 11's committment to improving martime community safety

by CDR Rebecca Sheehan
Inspections and Investigations Branch
District 11
U.S. Coast Guard

LT John Lawrence
Staff Attorney, District Legal
District 11
U.S. Coast Guard

Sexual misconduct has no place in the maritime industry. It harms mariners, interrupts safe operations, and often leads to accidents, lost careers, and a lifetime of trauma for the survivors who endure the abuse. Congress has tasked the U.S. Coast Guard with the responsibility of safeguarding the Maritime Transportation System, and Coast Guard District 11 (D11) is committed to improving the safety of the maritime community.

The National Defense Authorization Act for Fiscal Year 2023 included provisions expanding the requirements for reporting to the Coast Guard complaints and instances of harassment, sexual harassment, or sexual assault on U.S.-flagged commercial vessels. The requirements for SASH—Sexual Assault and Sexual Harassment Reporting in the Maritime Industry—are quite broad and apply to documented vessels engaged in commercial service. Vessel documentation is a national form of registration and provides conclusive evidence of nationality for the vessel. Generally, U.S. vessels larger than 5 net tons engaged in trade are required to be documented.

The law requires the responsible entity—the owner, master, managing operator of a documented vessel engaged in commercial service, or the employer of a seafarer on such a vessel—to make the report when a complaint is filed alleging "harassment, sexual harassment, or sexual assault in violation of employer policy or law." A report to the Coast Guard should be triggered, when the responsible entity is made aware or gains knowledge of a complaint or incident that violates employer policy or law."

Challenges With Implementation

There are many challenges to eradicating sexual misconduct onboard U.S.-flagged vessels, including reducing the barriers and challenges of making a report. To embark on a whole of community approach, the Coast Guard has engaged in an education and outreach campaign to inform industry and mariners about the updated reporting requirements. As part of that education and outreach campaign, Officers in Charge, Marine Inspections (OCMI) at Coast Guard units across D11 are participated in a yearlong, nationwide education campaign to increase awareness of reporting options and

To make a report

The Coast Guard encourages the reporting of all crimes, or attempted crimes, to CGIS.

Reports can be made to CGIS by:

1. **emailing CGISTIPS@uscg.mil**
2. **calling the National Command Center 24-hour watch at 202-372-2100**
3. **via the Internet at https://www.uscg.mil/Units/Coast-Guard-Investigative-Service**
4. **contacting a local CGIS office**
5. **scanning the QR code with a smart device to access CGIS Tips where reports can be delivered anonymously**

reporting requirements. The goal is to improve awareness and accelerate the cultural change needed to eradicate sexual misconduct from the maritime industry.

The education campaign began with training for the three sectors with OCMI authority within D11. The Coast Guard Investigative Service (CGIS) joined D11's Inspections and Investigations Branch to provide this training for all marine inspectors and investigators, and waterways management personnel with a focus on how to effectively engage with marine industry personnel on sexual misconduct prevention and reporting protocols.

Since the start of the campaign, educational outreach has been conducted during all prevention activities. D11 has worked diligently to distribute Marine Safety Information Bulletin 01-23 highlighting recent changes to the law requiring vessels' responsible entities to report to the Coast Guard any complaint or incident of harassment, sexual harassment, or sexual assault.[4] The Coast Guard is available to receive reports 24/7, and can initiate a criminal investigation anywhere in the world for a report of a sexual crime occurring on a U.S.-flagged commercial vessel. This effort was necessary as it has been discovered that knowledge of the reporting process has been identified as a major barrier.

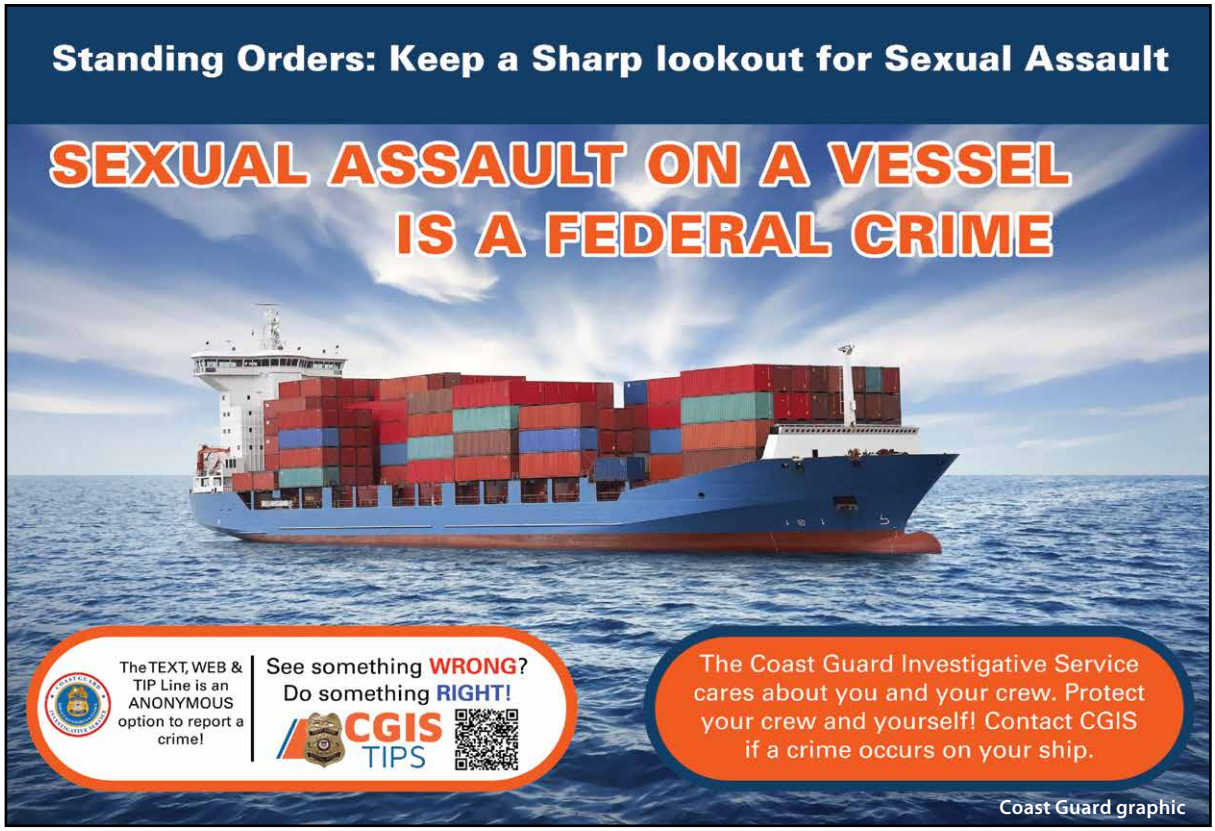
D11, and all of the sectors within the district, have all contributed to the important goals of the education campaign to ensure awareness of the reporting requirements and options for reporting to the U.S. Coast Guard. At the end of this campaign, the District expects the requirements and preferred mechanisms for an individual or responsible entity to file a report will be understood by all within our maritime community.

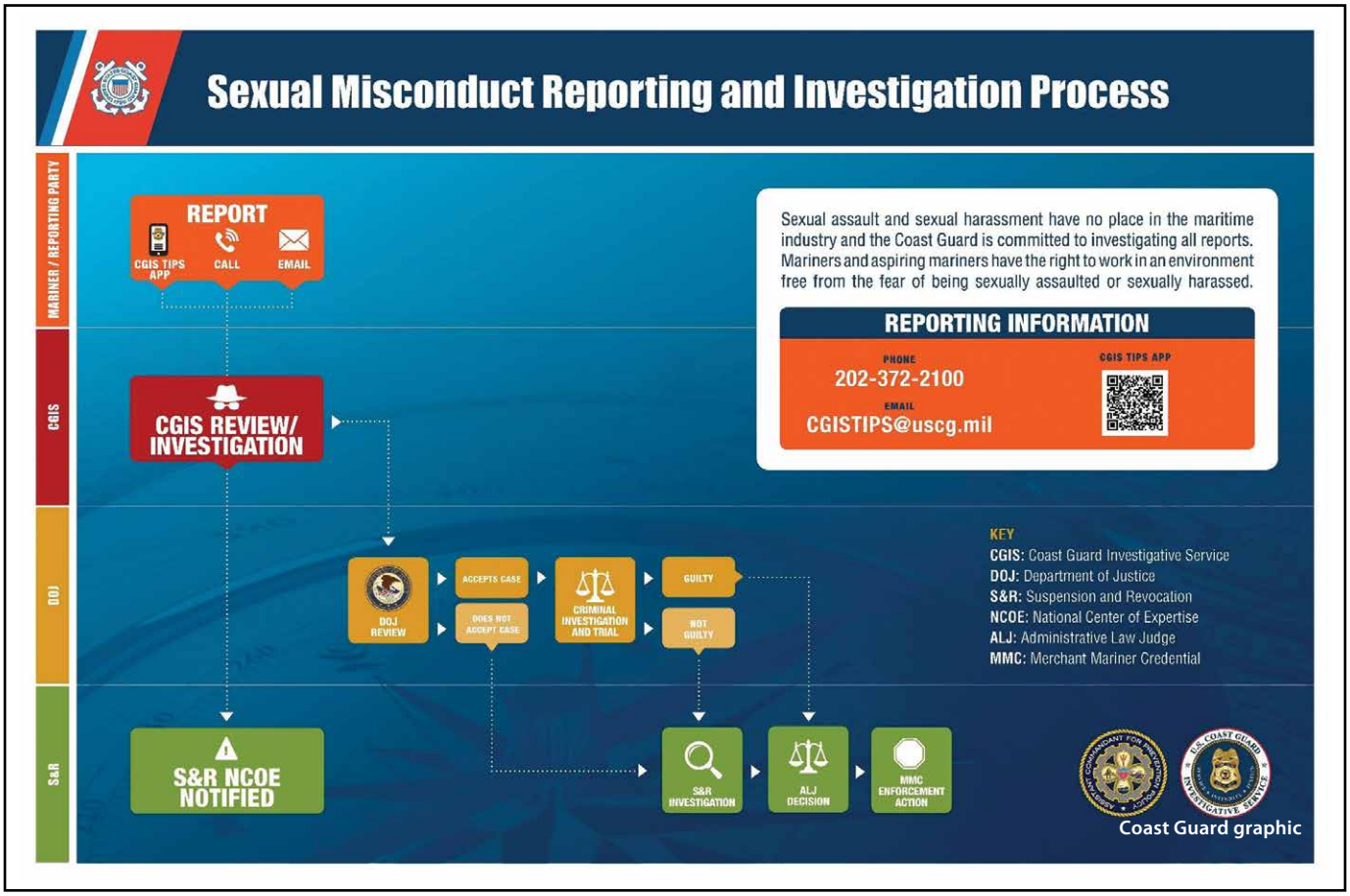
What happens after a report is made?

The Coast Guard-issued Marine Safety Information Bulletin, 01-23 explains how to make a report to the CGIS, the Coast Guard's criminal investigations division, regarding sexual misconduct on U.S. vessels. CGIS takes reports and conducts subsequent investigations into the allegations of sexual misconduct.

If a responsible entity is aware of sexual harassment or assault and fails to report it, it can potentially face a civil penalty of up to $50,000. The perpetrator of the alleged harassment or assault can also be held accountable in two ways, including criminal prosecution by the state or federal government and/or license or credential

Download to display on your vessel
https://bridgedeck.org/download-the-uscg-poster/





revocation by the U.S. Coast Guard. Depending on the facts, sexual assault onboard a U.S. flagged vessel can be a federal or state crime, and CGIS can refer a case to the United States Department of Justice for a decision about criminal prosecution.

With regard to license or credential revocation, sexual harassment can serve as the grounds for the Coast Guard to suspend or revoke a merchant seamen's license or merchant mariner's credentials. Sexual assault will result in revocation of licenses or credentials. Mariners who are officers must maintain a license to work in the merchant marine, and those who rated as a seaman must maintain a credential. Revoking a merchant mariner credential effectively prohibits the offender from working onboard U.S.-flagged commercial vessels.

Sexual misconduct is a serious concern in the maritime sector and the Coast Guard will not stand for this behavior. A safe working environment is free of harassment, sexual harassment, and sexual assault. This is especially true for mariners onboard commercial vessels who are working and living in close quarters for months at a time. The Coast Guard is committed to eliminating sexual misconduct within the U.S. Merchant fleet and will continue to support survivors while holding offenders accountable.

The Coast Guard encourages the reporting of all crimes or attempted crimes to CGIS. Reports can be made to CGIS by emailing CGISTIPS@uscg.mil; calling the National Command Center 24-hour watch at 202-372-2100; via the Internet at https://www.uscg.mil/Units/Coast-Guard-Investigative-Service/ by contacting a local CGIS office; or by scanning the below QR code with a smart device to quickly access CGIS Tips. Reports made to CGIS Tips can be delivered anonymously.

About the authors:

CDR Rebecca Sheehan is currently serving as the Inspections and Investigations Branch Chief at U.S. Coast Guard District 11. Prior to assuming those duties, she joined the faculty of the World Maritime University on secondment. She has 16 years of professional experience with a mission focus on maritime safety.

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Endnotes:

1. These requirements are codified at 46 U.S.C. § 10104
2. See 46 U.S.C. § 12102
3. 46 U.S.C.A. § 10104(a)(1)
4. MSIB-01-23_Sexual_Misconduct_Reporting_Requirements.pdf (uscg.mil)
5. See 18 U.S.C. § 2241
6. 46 U.S.C. § 7704a

Navigating Complexity and Redefining Success

The American Challenger's impact

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Numerous factors contribute to an incident's complexity, however very few incidents rise to the level that taxes the very systems, policies, and frameworks developed to address them. These crises are usually events of magnitude, such as Hurricane Katrina, Deepwater Horizon, and other large-scale disasters. Every so often there are incidents that seem innocuous or even routine on the surface but combine so many layers of complexity that when compounded become insidious, testing even the most experienced crisis leaders.

This describes the case of the *American Challenger*, which grounded in California's Bodega Bay while being towed. The period between March 2021 and August 2022 thoroughly tested the National Contingency Plan and the United States Coast Guard's pollution response capabilities. It not only challenged the definition of success for the unified command, but also highlighted several key lessons learned and take-aways for crisis leaders. By exploring the complexity of this incident, the challenges faced during the response, and the strategies employed to overcome them, this case study provides valuable insights that can enhance the Coast Guard's preparedness and response capabilities for future pollution response operations.

Background

The incident occurred during a 'dead ship' tow of the Motor Vessel (M/V) *American Challenger*, a 90-foot steel-hulled, former commercial fishing vessel, from Seattle to Mexico for recycling. A dead ship tow involves a towing vessel pulling or pushing another vessel that lacks its own means of steering or propulsion. This is, itself, a hazardous condition requiring advance planning, additional towing resources, and special attention to avoid accidents.

During the transit, the tow line fouled in Tow Vessel *Hunter*'s propeller, leading to a loss of propulsion and the eventual loss of the tow line with the *American Challenger*, and its ultimate grounding on the rocky coast of Bodega Bay. The result was an initial potential pollution estimate of 7,000 gallons of diesel and 55 gallons of lube oil.

The vessel's grounding posed a substantial threat to the environment and prompted the establishment of a unified command, comprising federal, state, and local agencies. The substantial threat determination by the Coast Guard Federal on Scene Coordinator (FOSC), the Sector San Francisco commander, was predicated primarily on the uncertainty over the amount of oil remaining onboard the vessel. Additionally, its location within the Greater Farallones National Marine Sanctuary, posed a significant threat to the extremely sensitive marine environment and habitat.

Bodega Bay's harsh sea and weather conditions consistently halted operations, as high surf and dense fog posed a danger to workers. Additionally, the vessel's location along the rocky shoreline only complicated matters, since the only access onto and off the vessel was via helicopter, posing another significant safety risk. Political interest from stakeholders and landowners near the wreck site also influenced the case, requiring immediate and transparent public communication through a joint information center. Due to the complexity of these factors and the inaccessibility of the fuel tanks, combined with the many alterations to the vessel and lack of accurate blueprints/schematics, the unified command made a tough decision. The only way to truly mitigate all

the pollution threats posed by the *American Challenger* was removal of the vessel in its entirety.

In September 2021, Sector San Francisco submitted a Request for Removal/Destruction of the M/V *American Challenger* to the Commandant of the Coast Guard. In accordance with Coast Guard policy and the National Oil and Hazardous Substances Pollution Contingency Plan, the FOSC directs appropriate actions to mitigate the effects of an actual or substantial threat of an oil discharge and/or hazardous substance release. However, only the Commandant of the Coast Guard has the sole authority to destroy a vessel under these statutes. The Commandant approved the *American Challenger*'s destruction in December 2021. However, by that point, winter storms and weather conditions surrounding the vessel had deteriorated to the point that work onboard the vessel was impossible.

By the time suitable weather windows emerged, the vessel's condition demanded a novel salvage approach. Collaboration between the hired contractor, the Coast Guard's Salvage Engineering Response Team (SERT), District 11's District Response Advisory Team, the Pacific Strike Team, and the unified command yielded a plan involving pulleys and chains attached to the surrounding cliffs. The goal was to drag the vessel ashore and deconstruct it before removing it from the shoreline. Despite herculean efforts, only a 50-foot movement was achieved, prompting the decision to leave the vessel's remnants in place due to insurmountable forces.

Obviously, this was not the desired outcome and was extremely disappointing due to the level of work, and literal blood, sweat, and tears that had gone into this response. But a clean, simple outcome cannot be designed just because it is the desired outcome. When faced with a complex incident, an incident commander must devise several outcomes immediately, simultaneously, and objectively. This means not getting attached to an outcome because it is good or bad, or viewing it as a success or failure. Rather, outcomes are ultimately a culmination of trade-offs that represent where stakeholder and resource trustees' input and acknowledgement are critical. Again, this does not imply all stakeholders will be satisfied with the outcome, that can be too subjective or unrealistic. An incident commander's biggest takeaway is understanding what and how the trade-offs impact resources and interests. In the months following the conclusion of mitigation and removal efforts for *American Challenger*, reflection on the event resulted in the following policy, processes, and leadership lessons.

Revamping Dead Ship Tow Processes

A standardized inspection checklist for dead ship tows and a clear handoff protocol between Captain of the Port zones should be established. This will ensure information validation, assist in risk-based determinations, and cultivate confidence between Coast Guard units and other government agency partners during responses. The lack of specificity and detail in the dead ship tow plan, specifically related to the amount of fuel potentially on-board, raised doubt with our partners that lingered as a sticking point among the unified command.

Federal, State, and Local Responsibilities

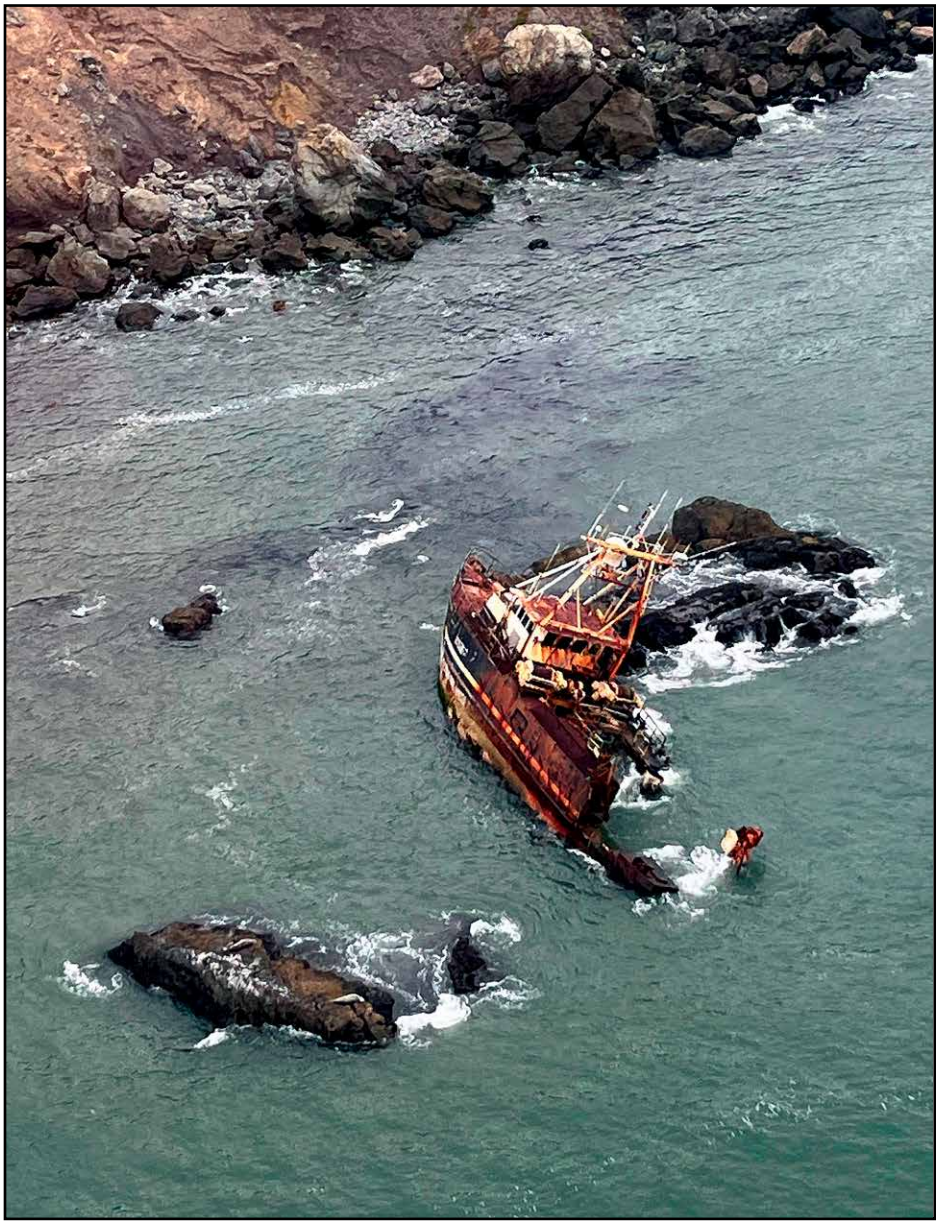
To avoid future complications, it is vital to clearly define and communicate the respective responsibilities of federal and state entities involved in pollution response operations, especially when federal representatives from overlapping jurisdictions assume nontraditional roles. Equally important is establishing guidelines for information sharing, communication protocols, and coordination requirements. Coast Guard FOSCs should also collaborate with their Environmental Protection Agency counterparts to delineate their roles and responsibilities in the coastal zone, including operational support and tactical plan development. This information should be incorporated into the comprehensive guide mentioned above.

Unified Command

Unfortunately, not every person designated by their agency or organization will have extensive experience in pollution response operations , or knowledge of their role in the unified command. They may even be unfamiliar with the use of the Incident Command System (ICS)—the interagency response framework mandated by the National Contingency Plan for Oil and Hazardous Substances. Shortfalls in knowledge and experience among unified command entities with jurisdiction over pollution response and marine salvage, combined with an inability to make unilateral decisions, impacted the decision-making processes, and created a lack of clarity regarding operational goals and milestones.

As a best practice, there should be an established formalized interagency cooperation framework detailing roles, responsibilities, and communication and coordination processes for overlapping jurisdictions within the National Contingency Plan and National Response Framework. This should be exercised regularly to enhance collaboration and improve efficiency during pollution response operations.

When establishing a unified command, the FOSC should assess stakeholders' roles in pollution response operations and assign them as technical advisors if they cannot contribute assets, funds, or direct resources. However, not every agency or organization is set-up or staffed to provide this level of authority or empowers its employees to make these types of decisions autonomously. This can create time delays when approving plans or making decisions. In this case, it made it difficult



A fly-by of M/V *American Challenger* during initial contractor assessments reveals the complexity of the situation. Photo courtesy of American Challenger Unified Command.

to hold unified command members accountable and to adhere to approved incident action plans and other key decisions to move the response forward.

One of the biggest challenges faced by the unified command was that the majority of communications and interactions were virtual throughout the response due to the ongoing COVID-19 pandemic. The San Francisco Bay Area COVID-19 restrictions were particularly strict, and the state of California, as well as many of the federal agencies and local jurisdictions, prohibited their employees from meeting in person and mandated virtual communications. This not only impacted communications vital for meetings, but also impaired the unified command's ability to build trust with one another from the beginning. Misinformation, which is rampant during the initial hours and days of a response, was difficult to validate with every unified command member.

This lack of a strong foundation between the members caused strain and impeded the group's timely and effective decision making. During responses where the primary meeting platform is virtual, FOSCs are advised to adopt best practices for virtual communication hygiene, including periodic one-on-one check-ins and "always on" camera availability for non-verbal communication. These measures will strengthen working relationships and improve coordination among unified command members. Additionally, bringing on a deputy incident commander to focus on unified command engagement and facilitate communications between the members—even sometimes acting as a mediator—proved very valuable for this protracted response.

External Engagement

The unified command faced obstacles and challenges related to external relationships and engagements, particularly with landowner interests and the required external agency consultation process. Working with their legal counsels and contracting representatives, FOSCs should develop clear guidance and best practices for engaging landowners as early as possible and leverage their liaison officer for continuous, streamlined communications to get ahead of any land use and access issues.

Consultations

Throughout the course of the response, Sector San Francisco initiated multiple consultations like those required by the National Historic Preservation Act, Endangered Species Act, and Marine Mammal Protection Act. This included geological surveys that required consultation with multiple federal, state, local, and tribal entities, as well. While daunting and cumbersome, these processes proved instrumental in determining

stakeholder buy-in and agreement to proposed paths forward.

FOSCs should initiate consultations early to prevent delays and streamline the consultation process by identifying potential bottlenecks and establishing protocols to address them efficiently. A process should be implemented for FOSCs to guide contractors in obtaining "best estimates" for response footprint and duration to improve communication and decision-making. During this incident, the regional response team was integral in identifying a historic preservation specialist from the Department of the Interior who, along with the liaison officer, was able to facilitate the numerous consultations and acquire needed documents, as well as assessments and communications with the stakeholders.

A contractor with the unified command preps a container for potential pollution during a pollution assessment operation on the *American Challenger* in Bodega Bay, California, in April 2021. Courtesy photo

Developing and Executing a Salvage Plan

The location, surf conditions, and response scope presented challenges related to logistics, complex salvage engineering problems, and potential impacts to important tribal and historical locations and resources. Commercial salvage and response contractors employ in-house or subcontracted naval architects and marine engineers. In complicated situations where the vessel is aground and its structure is no longer intact, the engineering analysis necessary to ensure a safe operation includes both science and an element of art based on experience. The Coast Guard's Director of Commercial Regulations and Standards and Director of Emerency Management should clearly define SERT's roles and responsibilities in the salvage planning process and vessel removal/destruction operations, including plan review of analyses done by external entitites, while providing advice to the unified command, to ensure stakeholders understand the SERT's skills and limitations. With regard to contractor assessments, the Coast Guard should enhance training for marine environmental response personnel to develop in-house expertise in remote and inaccessible operations, and encourage collaboration between contractors, the Coast Guard, and partner agencies for accurate assessments.

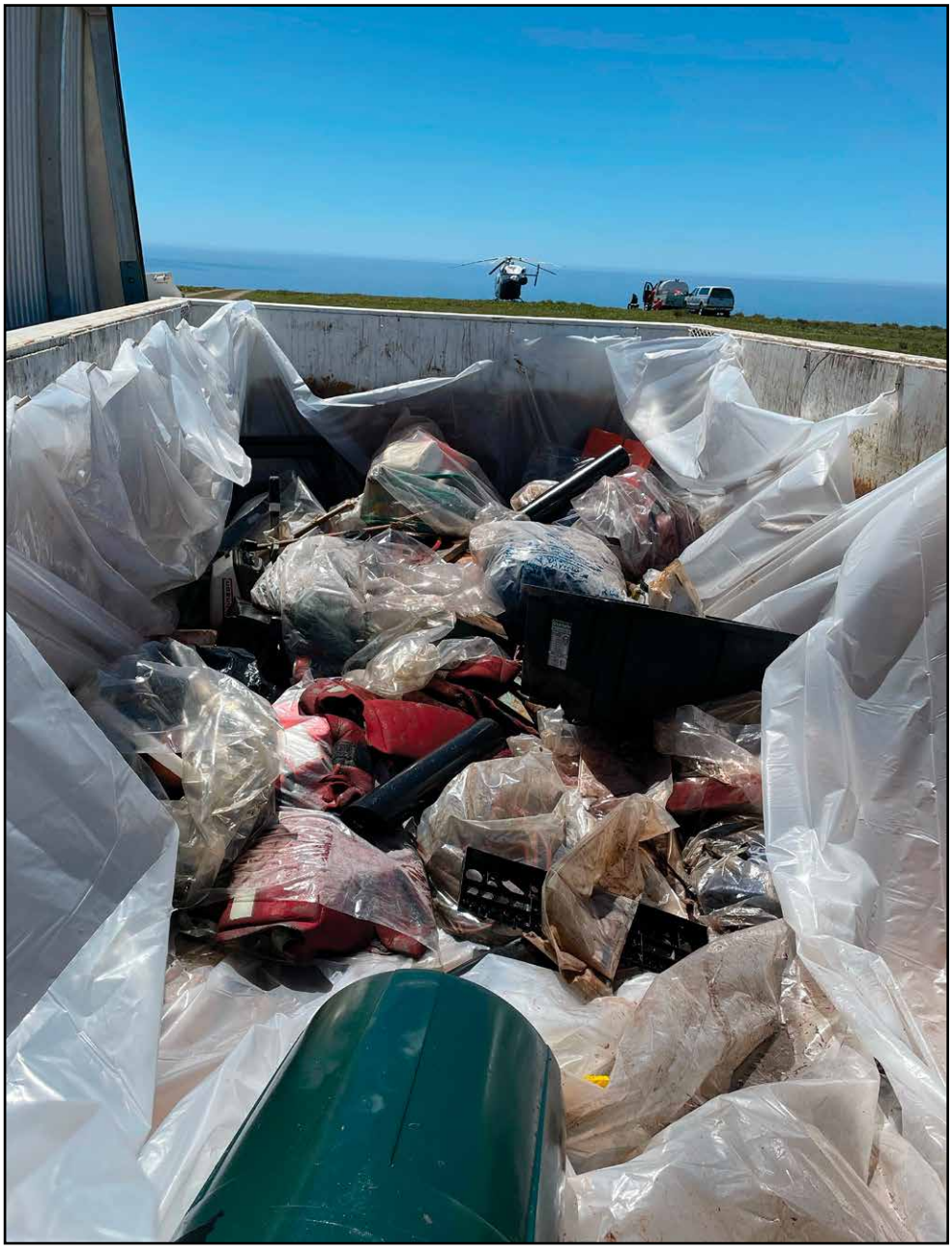
Incident Command System Challenges

The protracted duration of the response and the COVID-19 pandemic posed unique challenges within the ICS framework, including rotating general staff positions and virtual environment issues. FOSCs should develop guidelines for scaling ICS planning structures based on incident size; provide familiarization training for personnel outside the area of responsibility; establish a standardized information management system; and encourage crisis communications training for FOSCs and Coast Guard personnel.

A Shoreline Cleanup and Assessment Technique team member from Sector San Francisco conducts initial shoreline assessments following the March 5, 2021, grounding of the M/V *American Challenger*. Coast Guard photo

Contingency Plans Review and Suggestions

Clarity in the area, regional, and national contingency plans is essential for defining the division of work among local stakeholders, as well as establishing roles, responsibilities, and requirements for resolving disagreements within the unified command. Furthermore, identifying additional resources to manage complex responses within a specific area of responsibility can significantly enhance contingency planning. FOSCs should assess regional salvage capabilities and invest in resource expansion, enhance Coast Guard and partner agency training for MER personnel, and advocate for increased funding for salvage operations and community education programs.



A container holds debris collected from the A*merican Challenger* during a pollution assessment operation in Bodega Bay, California, on April 28, 2021. The contractors were lowered to install air monitors, blowers, and safety lines during the pollution assessment on the vessel. Courtesy photo

Abandoned and Derelict Vessels and Salvage Funding

More funding for salvage operations should be allocated to other federal and state agencies. There should be permanent legislation and funds at the federal and state levels to address abandoned and derelict vessels (ADV) and educate communities on the roles and authority of federal, state, and local agencies. Other federal state agencies, as well as the Coast Guard, should advocate for increased funding to support salvage operations, promote permanent legislation and dedicated funding to address ADVs and salvage-related issues. The Coast Guard and our port partners should develop community education programs to inform the public about agencies' roles and authorities in pollution response operations.

Conclusion

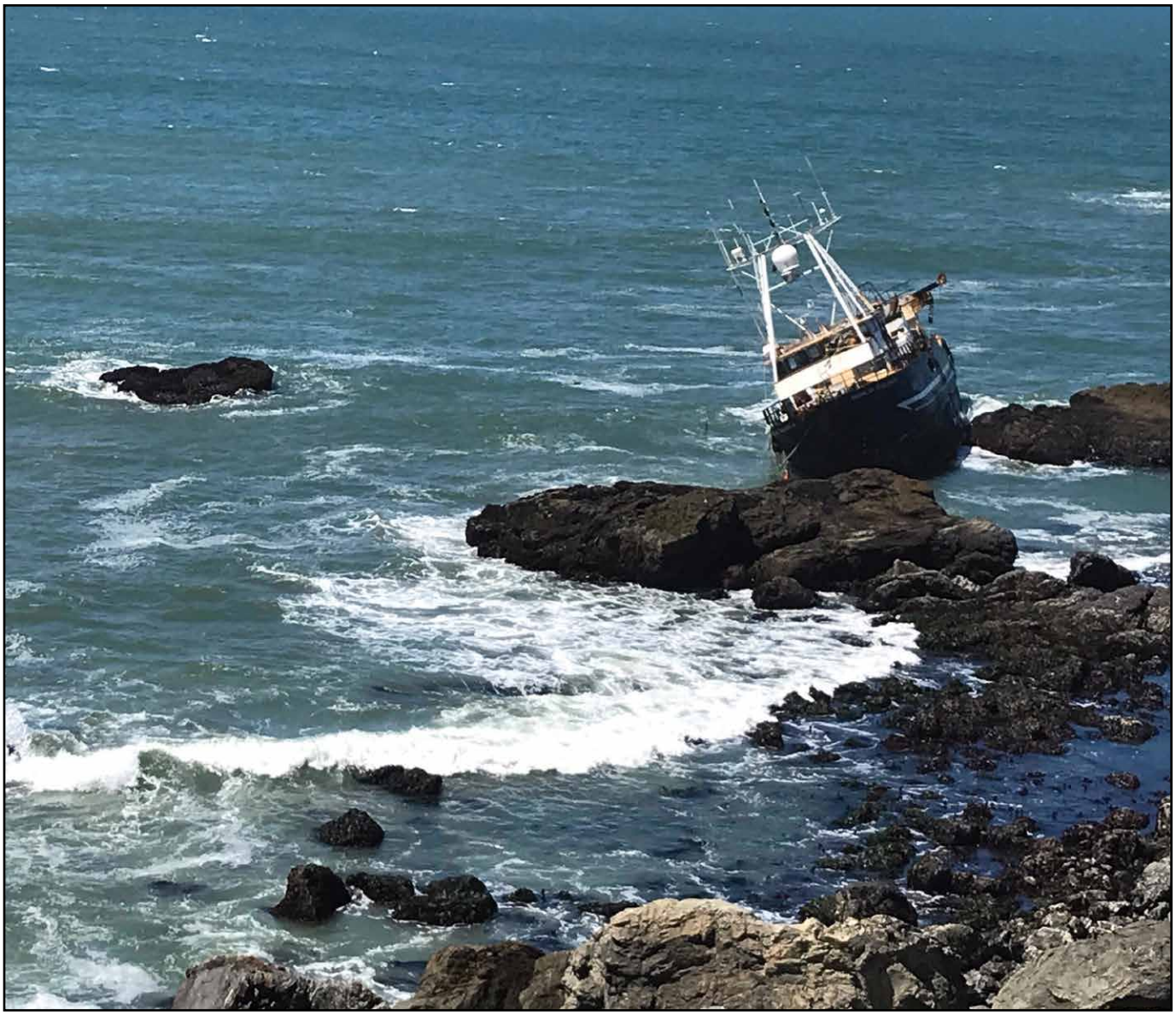
The American Challenger incident provided valuable insights and lessons learned that can be used to enhance the Coast Guard's preparedness and response capabilities for future pollution response operations. While the challenges faced were significant, the dedication and collaboration of all parties involved ensured a successful outcome in mitigating the pollution threat and protecting the sensitive marine environment. The recommendations provided here aim to address areas identified for improvement while contributing to the ongoing development of best practices within the Coast Guard and its partner agencies.

The key areas highlighted in this report, such as enhancing the Incident Command System; improving

information management and documentation; strengthening remote communications and technology; and refining contingency plans and policies, all contribute to a more resilient, effective response framework. By implementing the suggested changes and investing in training, resources, and technology, the Coast Guard and its partners will be better equipped to handle complex and challenging pollution incidents in the future.

As the Coast Guard continues to work alongside federal, state, and local agencies, fostering strong relationships and clear communication channels will be vital to ensuring a unified and coordinated response. This incident serves as a testament to the importance of collaboration and adaptability in navigating the challenges of pollution response operations. By embracing the lessons learned from the *American Challenger* and actively pursuing improvements, the Coast Guard reaffirms its commitment to safeguarding our nation's marine environment and upholding the highest standards of excellence in maritime safety and environmental protection. Through continuous evaluation, adaptation, and collaboration, we can strengthen our capabilities and better protect our important marine resources for generations to come.

About the authors:
Each of the authors was serving at Sector San Francisco and involved in the response. CDR Rhianna N. Macon was the Response Department head; CDR Yvonne C. Yang was the Incident Management Division chief; and CWO2 Joshua M. Lane was a Federal on Scene Coordinator's representative and planning section chief.



The *American Challenger* is seen in Bodega Bay, California, in May 2021, during an overflight pollution assessment operation. The contractors were lowered to install air monitors, blowers, and safety lines prior to pollution assessment on the American Challenger. Courtesy photo

CG-IMAT Tackles the Complex

by CDR Timothy Brown
Joint Staff
U.S. Coast Guard Reserve

Established in 2013, the Norfolk, Virginia-based Coast Guard Incident Management Assist Team (CG-IMAT) is the service's only full-time, standing Type 1 and 2 Incident Management team (IMT) capable of responding to the most complex emergencies. Although based on the United States' East Coast, the CG-IMAT is prepared to respond to emergencies worldwide. The unit is made up of 26 active duty and civil service personnel, augmented by 10 drilling reservists. The unit maintains a six-person ready team on a 6-hour standby for deployment. When not deployed on an actual response, the CG-IMAT's staff conducts IMT workshops for Coast Guard operational commanders and supports field units as Incident Command System (ICS) coaches in a variety of drills and exercises.

CG-IMAT is part of the National Strike Force (NSF), which provides highly trained, experienced personnel and specialized equipment to Coast Guard and other federal incident commanders. The NSF's area of responsibility covers all Coast Guard Districts and Federal Response Regions. The NSF is also one of the special teams available to federal on-scene commanders established under the National Contingency Plan (NCP).[1] It totals more than 200 active duty, civilian, reserve, and auxiliary personnel, and includes the National Strike Force Coordination Center (NSFCC); the Public Information Assist Team (PIAT); the Atlantic Strike Team; the Gulf Strike Team; the Pacific Strike Team; and CG-IMAT. Based in California, the Pacific Strike Team provides expert rescue, oil, and hazardous materials response capability throughout the western United States and Pacific.

In the Eleventh District, CG-IMAT recently provided crisis leadership to Coast Guard and interagency incident commanders for responses to the Gold King Mine hazardous materials release in Colorado, the *Refugio* oil spill, the USS *Bonhomme Richard* fire, the fishing vessel *American Challenger* grounding and wreck removal project, Environmental Protection Agency hazardous waste clean-up projects after wildfires, and the Huntington Beach pipeline oil spill. In addition, CG-IMAT routinely conducts IMT workshops and assists as ICS coaches in the Sector San Diego, Los Angeles/Long Beach, San Francisco and Humboldt Bay areas of responsibility for National Preparedness for Response Exercise Program and Area Maritime Security Training and Exercise Program events.

A CG-IMAT workshop facilitator reviews an Incident Command System Open Action Tracker with Sector San Francisco personnel during a CG-IMT workshop in November 2023. Coast Guard photo by Vince Williams

In Fiscal Year 2023, CG-IMAT responders spent more than 600 days deployed in support of operational commanders on actual emergencies and disasters. In coordination with the other NSF teams, CG-IMAT can create a tailored force package capable of standing up a full IMT, filling gaps in an operational commander's team, or providing ICS coaching and best practices to an existing IMT.

National Incident Management System (NIMS) is the culmination of more than 40 years of efforts to improve interoperability in incident management. This work began in the 1970s with local, state, and Federal agencies collaborating to create a system called Firefighting Resources of California Organized for Potential Emergencies (FIRESCOPE). FIRESCOPE included ICS and the Multiagency Coordination System (MACS). In 1982, the agencies that developed FIRESCOPE and the National Wildfire Coordinating Group (NWCG) created the National Interagency Incident Management System (NIIMS), in part to make Incident Command System (ICS) guidance applicable to all types of incidents and all hazards. Under Homeland Security Presidential Directive 5 (February 2003), the Federal government created the National Incident Management System (NIMS). This system directed the creation of a comprehensive, national approach to incident management. Recognizing the value of these systems, communities across the Nation have adopted NIMS. The most current revision of NIMS was released in October 2017.

—Federal Emergency Management Agency[2]

What is CG-IMAT?

CG-IMAT is a crisis response and preparedness unit under the National Strike Force (NSF). They assist Coast Guard operational commanders in preparing for, responding to, recovering from, and mitigating the effects of all-hazard incidents and complex events in support of all Coast Guard missions. CG-IMAT is a specialized team per the National Contingency Plan consisting of Incident Command System (ICS) experts within the National Incident Management System (NIMS).

When not deployed for emergency response operations, CG-IMAT provides coaches for unit-conducted ICS workshops and for national and regional large-scale exercises. As ICS subject matter experts, they also provide assistance to Coast Guard and interagency leaders as requested.

To request the CG-IMAT for Response, call the IMAT Operations Officer at (757) 567-8622

ICS Competencies:

- Incident Commander
- Safety Officer
- Liaison Officer
- Agency Representative
- Operations Section Chief
- Air Ops Branch Director
- Division/Group Supervisor
- Planning Section Chief
- Resources Unit Leader
- Situation Unit Leader
- Logistics Section Chief
- Supply Unit Leader
- Finance Section Chief
- Communications Unit Leader (Limited capability)

In addition to ICS expertise and experience, CG-IMAT deploys with personal go kits, standard laptop computers, and high-tech communication equipment that allows them to function in any environment.

The Incident Command System (ICS) provides an all-hazards framework for responding agencies to organize their efforts. Focusing on unity of effort, unity of command and management by objectives, ICS is a common framework, terminology, and methodology that public and private sector entities use to manage a variety of disasters and emergencies. ICS can also be leveraged to bring together commanders with overlapping authorities and responsibility to respond into an integrated Unified Command. During IMT workshops held at all Coast Guard sectors on a three-year cycle, Coast Guard personnel and local partners are given an opportunity to hone their skills in a controlled environment while responding to a simulated oil spill or security incident.

The three-day IMT workshop held at Coast Guard sectors begins with an ICS refresher and position specific training on day one. On days two and three, one complete cycle of the ICS "Planning P" is executed. The IMT uses the Incident Commander's objectives to develop field tactics, respond to injects throughout the day, and to compile a written Incident Action Plan (IAP) for incident commander approval. The IAP and ICS planning process move the IMT from a reactive posture to a more proactive one guided by the input and expertise of the entire team. Following the IMT workshop, CG-IMAT and qualified local personnel will review Personnel Qualification System (PQS) task completion and hold oral examination boards for any personnel that have completed all assigned tasks for a particular IMT position.

CG-IMAT's IMT workshops and a strong drills and exercises program develops the expertise of individual IMT members, but more importantly builds the important relationships between echelons within the Coast Guard's chain of command and between the Coast Guard, the federal interagency, maritime stakeholders and port partners, and other public and private response organizations. It also provides an important opportunity to test and improve contingency plans, including area maritime security plans, marine transportation system recovery plans, and area contingency plans. Taken together, this substantially improves the readiness of the port and the effectiveness of responders when an actual emergency occurs.

About the author:
CDR Tim Brown is a action officer assigned to the Joint Staff, Joint Force Development Directorate (J7). He has been mobilized to active duty and deployed on more than a dozen responses with CG-IMAT.

Endnotes

1. 40 Code of Federal Regulations (CFR) §300.145
2. ICS Review Document EXTRACTED FROM - E/L/G 0300 Intermediate Incident Command System for Expanding Incidents 300, https://training.fema.gov/emiweb/is/icsresource/assets/ics%20review%20document.pdf

Sector San Francisco personnel conduct an operation brief during a CG-IMAT IMG workshop in November 2023. Coast Guard photo by Vince Williams.

The Multi-Mission Eastern Pacific

Competing demands in an evolving space

by CDR Jeff Padilla
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U.S. Coast Guard

LT Devon Zych
Section Chief, Domestic Enforcement and Fisheries
District 11
U.S. Coast Guard

The Eastern Pacific is not what it used to be. It is an area the whole of U.S. government should attend to in a much broader sense than the Coast Guard's legacy "Western Hemisphere Strategy." This situates the Coast Guard's District 11 (D11) as a broadly enabled, yet under-resourced, operational commander to drive broad initiatives and strategic objectives.

In general, if a ship—Navy or Coast Guard—was allocated to the Eastern Pacific, it would spend that time under Joint Interagency Task Force South tactical control as part of a unified effort to detect and monitor maritime narcotics trafficking. As soon as law enforcement action was imminent, control of the ship would normally shift to D11 so that we could interdict and apprehend the smugglers. It also takes more than just Navy ships and Coast Guard cutters with law enforcement detachments to stop smugglers. A network of investigative efforts, surveillance and reconnaissance capabilities, and redundant surface presence is necessary to bring smugglers to trial. Even with those complexities, it is still a single mission: reduce the supply of drugs flowing into the United States, which has been an element of the national drug control strategy for decades.

D11 became the hub of activity for a large array of interagency partners, including:

- prosecuting U.S. attorneys
- Department of Justice Narcotics and Dangerous Drug Section
- Drug Enforcement Administration
- Customs and Border Protection
- Coast Guard Investigative Services
- Homeland Security Investigations
- components of the Department of Defense's U.S. Southern Command
- Joint Task Force North within U.S. Northern Command

D11's Law Enforcement Duty Officers, known as LEDOs, have been empowered to continue serving as the hub of such activity 24/7. This is especially necessary as the the drug smugglers, described as 'narco-terrorists,' have had violent and politically destabilizing effects cross the Americas, from Mexico through Ecuador, and continuing south.

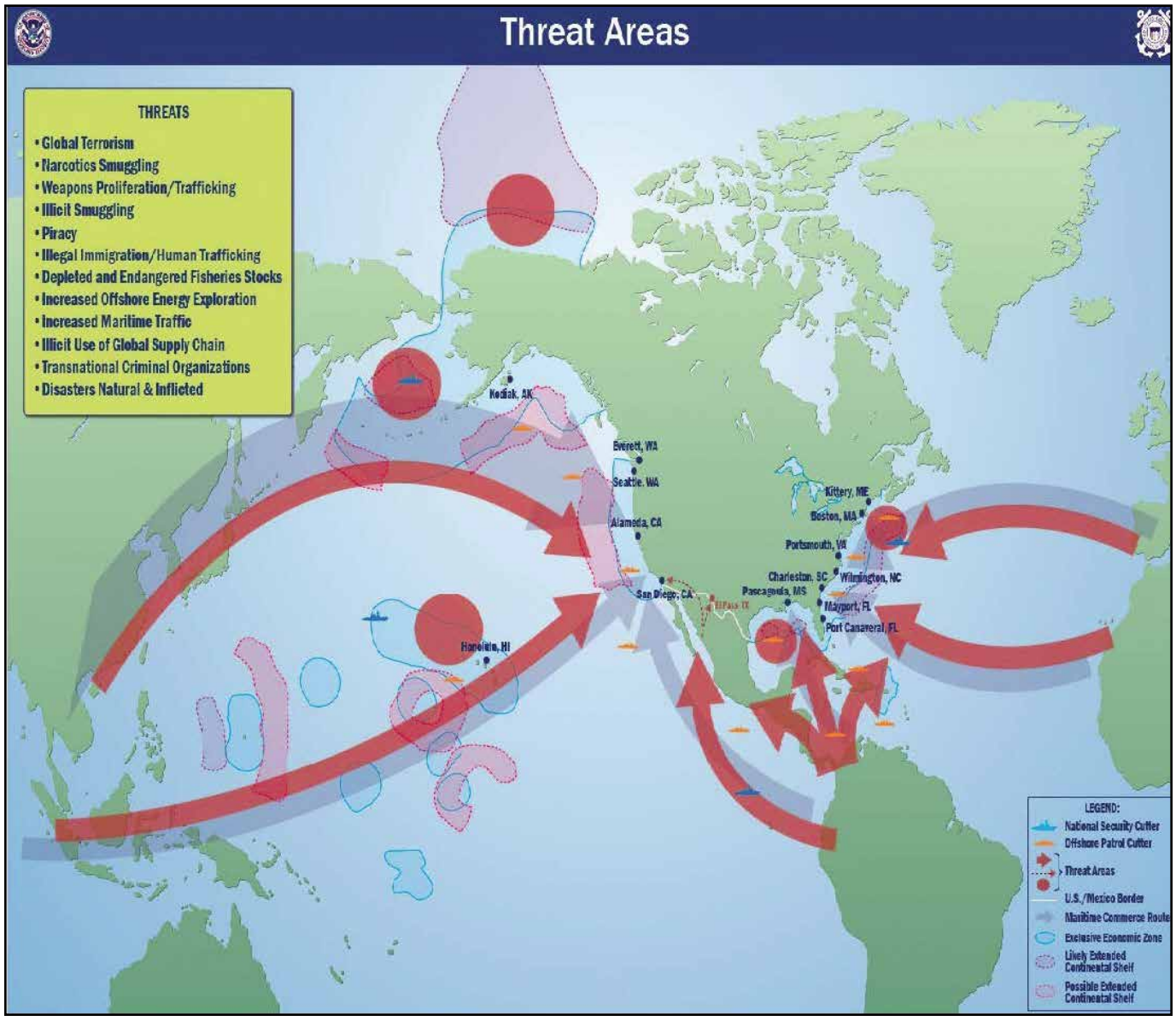
The need to continue and expand counter drug operations is still present. Drug flows are growing in quantity and distance from shore while our capability and presence is not keeping pace. The Interagency—those vested in this issue—has not solved the fentanyl problem, which presents many jurisdictional barriers that the United Staes would first need to overcome in order to stem the flow of precursors into source countries, or break into the networks trafficking the lethal drugs into the United States. Even so, the Coast Guard remains on the leading edge of maritime operations in the Eastern Pacific, day in and day out.

While the drug trafficking organizations exploit the environments they operate in, the resulting instability invites other competitors to try and gain an advantage.

Countering Illegal, Unreported, and Unregulated Fishing in the Eastern Pacific

As the sun rises and sets over the vast expanse of the Eastern Pacific, a dark, clandestine operation unfolds beneath the waves. Far from public scrutiny, a group of distant water fishing fleet vessels engages in illegal, unreported, and unregulated (IUU) fishing practices. Distant water fishing fleets, hundreds of vessels that stay at sea for years harvesting fish from the waters hundreds of miles offshore, scour the waters surrounding Eastern Pacific countries' exclusive economic zones. These fishing operations often over-exploit the ocean's resources, jeopardizing marine biodiversity and undermining the livelihoods of coastal communities that rely on sustainable fishing. The alarming rise of IUU fishing in the Eastern Pacific and immense challenges faced in enforcing regulations on these elusive vessels has become a significant problem for the D11 Enforcement Branch.

One of the world's most ecologically diverse and productive marine regions, the Eastern Pacific has attracted fishing fleets from around the globe, some of which have little regard for sustainability of these resources. Weak oversight and governance in some nations can lead fishing operations to resort to illegal practices in their pursuit of profits. Recently, the countries of Ecuador, Colombia,



Coast Guard graphic

Panama, and Costa Rica joined to create a broad marine protected area, known as the Eastern Pacific Tropical Marine Corridor (CMAR), which connects the tropical islands in each country's claimed exclusive economic zones. This multinational effort is backed by the United States to counter the vessels that may fish in protected areas, exceed quotas, or employ banned gear that wreaks havoc on marine habitats and 'by-catch' species. Other IUU fishing operations in or near the CMAR may underreport their catch or falsify data to evade monitoring systems, bypassing laws meant to prevent overfishing and safeguard the health of the ocean ecosystem.

Under-resourced authorities in the region continually struggle to patrol the vast expanse of these waters and detect suspicious vessels engaged in IUU fishing. Further, these malign vessels often fly "flags of convenience" from countries with weak regulations, allowing them to evade scrutiny. Closing this loophole demands international cooperation and accountability among flag states.

As technology evolves, so do the tactics of IUU fishing vessels. Some employ advanced radar and satellite systems to evade detection, requiring enforcement agencies to continually upgrade their monitoring capabilities. One of the most widespread issues law enforcement faces in this realm is illegal transshipment activity. The movement of distant water fishing fleets across multiple maritime borders complicates enforcement efforts. International coordination and information sharing are vital to effectively address this issue.

As D11 continues to operate in this area, the international partnerships made and maintained along the way

highlight the expansion of illicit maritime activity outside of the counter-drug sphere. It has become evident that the multi-mission nature of the U.S. Coast Guard is an increasingly relevant model for almost all the partner nations to our south. For example, the Coast Guard is paying closer attention to sister port agreements, especially in Mexico, and D11 often leads maritime participation in trilateral exercises between the United States, Canada, and Mexico under the North American Maritime Security Initiative. D11 also regularly collaborates with partner nations by leading the Eastern Pacific Search and Rescue Forum and expanded operations , such as Operation Southern Shield, with partner nations to counter IUU fishing.

These developments don't take place on their own. It takes dedicated efforts in a wide range of military operational specialties, cooperation with partner nations, a willingness to share information, and allowing partner-nation led operations to achieve success. It also takes flexibility in our existing partnerships.

D11 received a request for information from Aquatic Resources Agency of Panama about a tuna fishing vessel registered to another country that was operating within 200 NM of the southern Panamanian coast. A Coast Guard cutter under the control of Joint Interagency Task Force South (JIATF-South) was diverted to approach the fishing vessel and inquire about its activity. Shared with Panama and the Inter-American Tropical Tuna Commission, the information collected led Panama to sanction the vessel. Additionally, the vessel was also entered into JIATF-South's databases.

Months later, the same vessel was determined to be connected with potential drug trafficking operations, allowing for a counter-drug boarding that helped further investigative efforts into the vessel and crew's connections to transnational criminal organizations. The work we do that is not specifically counter-drug in nature might not have the same satisfaction as "putting drugs on deck" however, we are able to advance an interconnected network of governance to combat transnational criminal networks and, in the long run, that will be more impactful. JIATF-South now has an agreement with Coast Guard operational commanders that facilitates pre-planning of counter-IUU fishing operations as well as the incidental collection of information by assets allocated for counter-drug operations that might be of value in an IUU fishing context.

The Coast Guard faces the continued challenge of recognizing that the Eastern Pacific, an area it has long operated in, is changing and all supporting commands

The Necessity of International Coordination

In 2020, Ecuador requested assistance from the United States to identify potential incursions into their 200-nautical mile zone surrounding the Galápagos Islands. Coast Guard Cutter *Bertholf* became the leading edge on Operation Kuartam, a precursor to our current standing operation Southern Shield, and named for named for a frog from Ecuadorian folklore. It was primarily aimed at countering IUU fishing in the Eastern Pacific.

Bertholf's crew identified several vessels incurring on Ecuadorian jurisdiction and worked directly with Ecuadorian naval assets to bolster relationships and build combined experience to counter IUU fishing threats.

In 2022, Coast Guard Cutter *James* deployed about 600 miles west of the Galápagos Islands to build on *Bertholf*'s progress. As a result, on-scene information was shared with the flag states that regulate the hundreds of fishing and support vessels encountered in the convention area of the South Pacific Regional Fisheries Management Organization. This information was also conveyed directly to Ecuador, Colombia, Panama, and Costa Rica as the neighboring jurisdictions to the high seas fishing operations.

Panama's Aquatic Resources Agency publicly denounced many vessels in the distant water fishing fleet registered under the Panamanian flag; revoking fishing licenses, imposing fines, and removing Panamanian registration for 157 vessels that both fished and supported these operations. While many of the vessels simply re-registered with other countries, operations to shed light on these activities and extend governance through a combination of diplomacy and information sharing continues.

Ultimately, vessels observed deviating from the conservation management measures that apply to their fishing and transshipment operations can be identified as designated IUU vessels, prohiting interactions with the rest of the vessels in the distant water fishing fleets. Short of that, D11 has demonstrated, as we did with Panama, that the activities of the fleets require additional regulatory attention. A presence is still required to find these IUU fishing activities which, at D11, has become increasingly complex considering logistical issues, interagency stakeholders, and other agency ambitions that might not fully align in a whole-of-government sense.

must adjust. This need often out-paces the ability to keep them updated. At D11, we continually reevaluate and update our briefing products, intelligence requirements, and reports. Additionally, we seek out and bring together the resources needed to support evolving operations, like Operation Southern Shield. Risks are often taken on operational missions to achieve the desired strategic effects. For example, putting a high seas boarding and inspection presence in the distant water fishing fleet as soon as new conservation management measures go into effect for that same fleet is a months-long planning effort that recently began.

This costs D11 critical resources to deter and prevent asymmetric maritime migration along the southwest border and delayed critical maintenance of high priority maritime mobility infrastructure. However, we are able to do things that might otherwise have seemed impossible before, such as aligning our presence in the Southern Hemisphere with Ecuador, Brazil, and Peru at the Galapagos exercise led by Ecuador as an exercise of authority.

Protecting Information

Ensuring control of information when conducting joint operations is also critical. For example, the South Pacific Regional Fisheries Management Organization requires that participating nations do not publicly divulge commercial trade information. Items like vessel names and registry, when and where they operate, and other information all could be used by commercial competitors to undermine fishing activities.

When information has value in other contexts, it can put the United States at odds with the conservation measures being taken to build international adherence and multinational governance. As the operational commander for these missions, D11 needs to exert influence across the whole of U.S. government to ensure the information we uncover is both protected and put to best use. That way we can create maximum effect with the limited resources and authorities available. Even with support from the Atlantic Area staff, our small staff in the D11 Enforcement Branch often is hard-pressed to continually educate others to prevent missteps that might seem like an incremental victory to some but are actually a setback for international relations.

Conclusion

The illegal, unreported, and unregulated fishing occurring in the Eastern Pacific Ocean by distant water fishing fleet vessels represents a formidable threat to the region's

Left: CGC *Alder* hosted multiple observers from Ecuador, Peru, and Brazil during the 'GALAPEX' multinational exercise near Ecuador's Galapagos, including a group female officers from Peru, Ecuador, and the Coast Guard. **Above:** The larger group included the joint multinational forces that participated in the 'GALAPEX' exercise. Coast Guard photos by Petty Officer Kenneth Honore

The USCGC *James* boarding team found Humboldt Squid drying on a South Pacific Regional Fisheries Management Organization-registered fishing vessel during a 2022 high seas boarding and inspection. These squid are the world's most heavily fished squid species. Coast Guard photo by Coast Guard photo by Petty Officer 2nd Class Justin Upshaw

marine biodiversity and coastal economies. The United States must balance growing demand from our partner nations to cooperatively counter IUU fishing threats and mandates under the Maritime SAFE Act with the need to counter the continued proliferation of narcotics and broad destabilizing effects from transnational criminal organizations.

Overcoming these regional governance challenges demands a collective and resolute effort from both the global international community and U.S. Interagency. Gaining cooperation from both trusted partners and geopolitical adversaries through the transparency of high seas boardings and inspections, as well as our combined operations, exercises, and activities throughout the multi-mission Eastern Pacific, can improve global stability and prevent future conflict.

About the authors:

A 2005 graduate of the U.S. Coast Guard Academy, CDR Jeff Padilla has served in the U.S. Coast Guard for 18 years as a specialist of search and rescue, multi-mission maritime law enforcement, and defense operations at three different Sectors. He has served two tours at District 11, and one tour at Coast Guard Headquarters.

A 2017 graduate of the U.S. Coast Guard Academy, LT Devon Zych has served in the U.S. Coast Guard for 6 years with USCGC Forward, Sector Northern New England, and District 11 Enforcement Branch as the section chief of Domestic Enforcement, Living Marine Resources, and Illegal, Unreported, and Unregulated Fishing Operations.

Crunchtime!

Southwest border challenges and life aboard a District 11 fast response cutter

by LT Amy Ross
Commanding Officer
CGC Robert Ward
U.S. Coast Guard

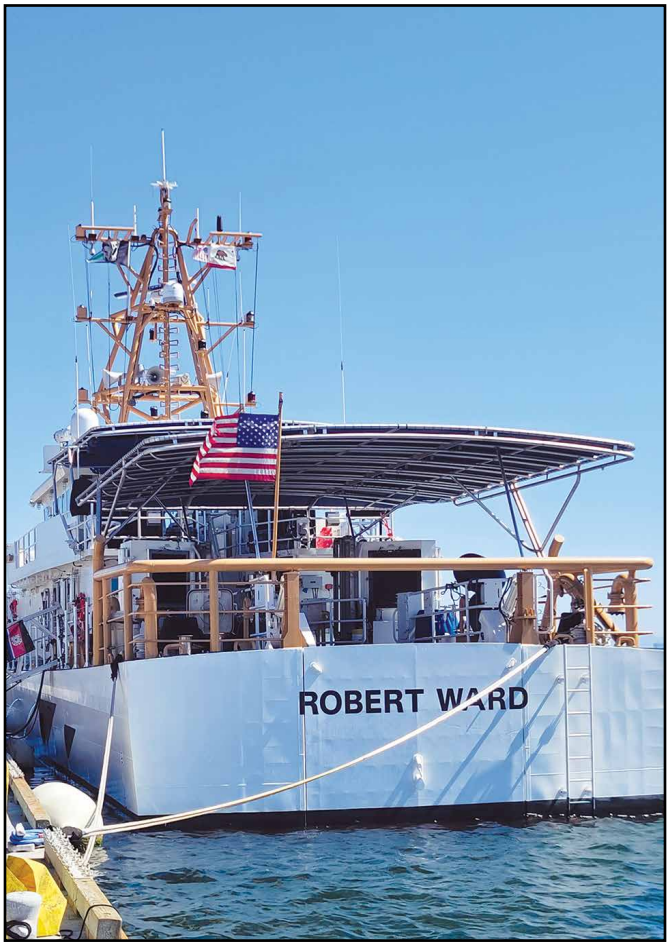
In the dim glow of the ship's instruments, the crew of the Coast Guard Cutter *Robert Ward* worked with tireless, unwavering dedication. The vast expanse of the Pacific Ocean off the coast of California was both their workplace and their battleground. As their commanding officer, I had the privilege of witnessing firsthand the tenacity, teamwork, and sheer determination of these 21 individuals over a grueling 48-hour period. Their commitment and expertise are emblematic of the broader legacy and tradition of the U.S. Coast Guard's fast response cutter (FRC) fleet.

The first FRC was commissioned in 2011, and there are currently 52 in service, with 66 planned to be built by Bollinger Shipyard. An FRC's commanding officer is either a chief warrant officer, lieutenant, or lieutenant commander, and the crew size is just 24, allowing for a tight-knit crew and a relaxed "patrol boat" mentality. However, labeling the FRC a patrol boat would be a misnomer due to the multi-mission capabilities of the cutter and crew.

The *Robert Ward*'s crew, my crew, is responsible for countering drug and migrant smuggling, regulating fisheries, and conducting search and rescue operations within Coast Guard District 11's area of responsibility, running from the California-Oregon border to waters south of Cabo San Lucas, Mexico. Within this AOR lies the Southwest maritime border where illegal migrant and drug smuggling continues to be an issue of concern.

The crew of the *Robert Ward* got underway from San Pedro, California, at approximately 10:30 a.m. on May 18, 2023, for a two-day patrol near San Diego. Although FRCs can operate up to seven consecutive days, due to a limited number of Officers of the Deck (OOD), as well as an anticipated high operational tempo, District 11 and Sector San Diego agreed that a 48-hour patrol would be sufficient.

Shortly after sunset, the OOD verified the nighttime communications plan and checked in with the U.S. Customs and Border Protection Air and Marine Operations' airborne multirole enforcement aircraft (MEA) personnel. Around 9:30 p.m., the MEA reported a radar contact south of the maritime boundary line (MBL) traveling on a course and speed consistent with smuggling operations. The MEA said they were running out of flight time and had no plans to relaunch. The *Robert Ward*'s crew quickly turned and steamed south at 30 mph to locate the target of interest (TOI). Arriving on-scene, the crew had about 10 minutes to find the TOI before their air support departed.



CGC *Robert Ward* is homeported in San Pedro, California. Coast Guard Photo by LT Amy Ross

The atmosphere on the bridge was one of taut concentration. The quartermaster of the watch (QMOW) intently

scanned the radar while a secondary watchstander conducted scans of the water with the gun camera. The OOD conducted safety scans and plotted the TOI's position, which was being fed to them by the CBP air support, and a break-in watchstander wrote any pertinent information on the windows. Five minutes later, the team spotted and verified the vessel using relative bearings.

Using the gun camera, the crew determined the vessel had at least six persons aboard and was continuing to head northwest at 30 mph. The crew issued the 'Go-Fast Bill,' meaning the entire cutter was on high alert. Like responding to an emergency, this gives most of the crew a job and the goal is to provide a close-to-immediate response. The electronics technician reported to the bridge to prepare communications with District 11 and personnel within the deck department dressed out to prepare to launch the cutter boat while the pursuit team prepared to pursue the target.

Matching the TOI's course and speed, *Robert Ward* shadowed them, remaining approximately 2 NM away and positioning themselves between the target and the U.S. coast to avoid being outrun by the target. Additionally, the crew also waited for the vessel to cross into the United States' jurisdictional waters. While it waited, the crew gathered information needed to verify with the District 11 commander that they were clear to use reasonable force to stop the vessel if it attempted to flee.

As the TOI continued north, U.S. jurisdictional waters grew closer. After ensuring the pursuit crew and boarding team were briefed and ready to go, the crew launched the over-the-horizon cutter boat about 1.5 hours after setting the Go-Fast Bill. The FRC's speed saved the pursuit crew a 90-minute boat ride that would have exposed them to cold winds, sea spray, and a rough ride. This cutter boat launch was the safest launch of all the pursuit scenarios—launching with permission to use force already in hand and getting the cutter boat close to the target. With everything lined up, it was time for the crew on the cutter's bridge to guide the cutter boat crew to the target.

With less than 1 percent moonlight, visually locating the vessel can be tricky and frustrating. To alleviate that stress, the QMOW continuously fed the cutter boat crew magnetic courses to steer until they were about a mile away from the vessel and able to spot it. I gave the order to interdict the vessel, and the cutter boat crew fired up its blue lights and ordered the vessel to stop; an order, which was ignored. The pursuit team switched tactics and employed flash bang warning shots.

The crew aboard the bridge heard the distinctive 'Pop pop,' but the TOI continued on its path. Switching tactics again, the pursuit crew positioned its vessel to use disabling fire on the engines while providing the bridge

A watchstander aboard CGC *Robert Ward* conducts scans of the water with gun camera. Coast Guard Photo by Petty Officer 1st Class Richard Brahm

with live updates. One update noted that people aboard the TOI were too close to the outboard engines for a clear shot with a copper sabot slug, but the recommendation to use an M4 would require additional permissions. The additional permissions became unnecessary as the pursuit crew subsequently notified the bridge that they now had a clear shot with copper sabot slug. I verified they were good to go and, with the radio still in hand, heard, "expended one copper sabot slug round, disabling fire effective, vessel has stopped." The pursuit concluded just shy of 1 a.m.

The crew turned on the navigation and blue lights and issued 'LE Phase Three,' migrant embarkation and processing. Had anyone still been sleeping, they were up now. Each member of the 21-person crew has a job during migrant processing. The boarding team reported 15 migrants, all claiming Mexican nationality. We brought them onto our cutter five at a time, processing them on the weather deck forward of the pilot house.

By 3:30 a.m., 15 migrants had been processed, and we needed to figure out what to do with the vessel. It

Law Enforcement Phase Three

Migrant embarkation and processing, involves the crew setting up to receive migrants, thus a boat crew and boat deck are needed to launch/recover the small boat, as well as to transfer migrants from their vessel onto the cutter. Other people on deck assist the migrants with getting safely on board. The emergency medical technician verifies there are no immediate medical concerns.

A pursuit boat launches from CGC *Robert Ward*. Outfitted with a stern launch set-up, the pursuit and boarding teams quickly get in the boat and are launched by a boat deck captain and boat deck seaman. Coast Guard Photo by Lieutenant Amy Ross

As represented by this image created using artificial intelligence software, CGC *Robert Ward* narrowly avoided colliding with a fast-moving sport fisher recreational vessel just before 9 p.m. on May 9, 2023. Coast Guard image by Petty Officer 1st Class Richard Brahm

had no suitable tow points and sixteen 25-gallon fuel canisters on deck, posing a potential environmental hazard. Sinking the vessel was not recommended due to our proximity to sensitive environmental areas and land. Instead, we transferred all 16 fuel cans to our cutter. This required three additional cutter boat launches and recoveries due to the sheer volume and weight of the fuel. Marking the vessel "USCG OK," with yellow spray paint, we were authorized to leave it adrift. By 4:30 a.m., we had recovered the boarding team and were headed to Oceanside Marina in Oceanside, California. The transit would take roughly two hours as we slowed our speed out of concern for the migrants' safety. In addition to standard watchstanding requirements, we then had two additional crew members dedicated to caring for the migrants.

Arriving at Oceanside around 6:30 a.m., we waited 30 minutes for the sector to verify border patrol agents were in position, giving us time to conduct a boat brief. At 7 a.m., we commenced the transfer of 15 migrants and their personal effects to waiting border patrol agents. Like before, the migrants were transferred five at a time; though the pursuit boat had to pull into the marina, while the cutter remained 1 NM offshore and outside of restricted waters. The transfer was complete by 8:40 a.m., closing out a case that lasted about 12 hours.

Back onboard, our law enforcement job was far from done. The pursuit crew, boarding team, and QMOW had six hours to write a statement documenting the events.

In addition to a lack of sleep, our internet connectivity slowed us down and uploading large photos was an uphill battle. By 4:41 p.m., we had confirmation that our operations officer had sent all the necessary documentation and we were headed south to get into our nighttime operational position.

No Rest for the Weary

After verifying the nighttime communications plan and checking in with our CBP air support, at around 8:30 p.m., the break-in QMOW reported a fast-moving contact on a collision course with the Robert Ward just as we crossed south of the MBL. The contact was small, traveling about 31 mph, and approximately 2 NM away. It was headed northwest from south of the border and would be hitting our bow in less than 2 minutes.

The OOD visually verified the contact and, with no deviation from their course, slowed the engines and turned on the blue law enforcement lights. The vessel narrowly avoided hitting us, passing roughly 100 yds off the bow. As the contact slowed down, we got our spotlight and used the gun camera to gather additional information, identifying two people onboard. At 8:45 p.m., the crew set 'LE Phase One,' allowing the crew to prepare for law enforcement action. The OOD informed the vessel a boarding team would be arriving shortly. Communications with the occupants of the vessel led us to believe they were from San Diego and returning from a day trip.

Again, we had the luxury to fully brief the boarding team before launching the cutter boat. Although, technically, it was a different boarding team from the night before, the boat crew and boarding team together were still mostly the same people, just in different roles. Shortly after 9 p.m., the cutter boat came alongside and verified the nationality of the vessel. Due to being in international waters, the boarding team could only establish jurisdiction with a legal claim of nationality. The U.S. claim made the vessel subject to our jurisdiction and the boarding team then commenced a recreational boat safety boarding. It quickly became apparent to the boarding officer that the operator had consumed alcohol, and a breathalyzer test confirmed him to be over the legal limit. For safety reasons, the boarding officer made the call to terminate the vessel's voyage and get the operator off the water. In these situations, the boarding team, plus a boat engineer, must take full responsibility for the boat and drive it to the nearest harbor. From talking to the operator, the boarding officer recommended Shelter Island in San Diego Bay, as the operator confirmed his spouse could pick him and the vessel up there.

After briefing Sector San Diego on the event at 10:30 p.m., *Robert Ward*'s crewmembers drove all three vessels—the TOI, the Cutter, and the pursuit boat—to Shelter Island. The cutter remained offshore while the cutter boat and vessel transited into San Diego Bay. By about 12:40 a.m., the spouse arrived, and the boarding team helped trailer the vessel and provided the boarding and termination paperwork to the operator. All Coast Guard personnel returned to the *Robert Ward* and learned that at midnight, the U.S. Attorney's Office accepted the previous night's case for prosecution.

As the sun rose, the *Robert Ward* began its transit back to San Pedro. Giving the crew a few minutes to wake up after piping revile, we announced a special sea detail. After mooring up at homeport, the OOD granted liberty to the crew, allowing everyone except our watchstander to go home and get some well-deserved rest.

In typical Coast Guard fashion, a handful of the crew stayed to tie up loose ends. The boarding officers stayed to submit their law enforcement paperwork, and the pursuit team's boarding officer began working on the full case package that superseded the preliminary paperwork previously submitted. The cook went grocery shopping for the next leg of the patrol and the engineers stayed to investigate what pending parts, if any, had finally arrived. Finally, about three hours after liberty had been granted, only the OOD, two cadets, and maybe a trainee remained onboard.

I write this not just to showcase the cases a FRC experiences, or to demonstrate the cutter's prowess as a multi-mission unit, but to highlight how instrumental every one of the 21 crewmembers was during those 48 hours. The mission required each crew member to work together.

Typically, FRCs have a 24-person crew, including a junior commanding officer, and the camaraderie is high. Just the summer before, in 2022, all four FRCs homeported in San Pedro received new commanding officers. In addition, the changeover rate at District 11 was high that year. For better or worse, the four new commanding officers and the District 11 leadership had to get to know each other quickly. Admirably, the units and District all respected the Coast Guard missions, the units' concerns, and differing leadership styles. I cannot stress how important it was for me, as a junior officer, to converse with various senior officers comfortably, stressing unit fatigue concerns. Support from District and Sector for a two-day leg allowed me to care for the crew.

The people who serve in the U.S. Coast Guard are amazing. With the current retention and funding issues, our enlisted work force and junior officers shoulder incredible pressure to meet lofty goals and complete demanding missions. Without deliberate care for each other, or the ability to candidly raise concerns to senior leaders, we could easily break under that pressure. In return, they've got our backs threefold.

About the author:
LT Amy Ross has served 8 years in the US Coast Guard. Having served as a District 11 staff officer, she has also completed three operational tours. These tours have been aboard a medium endurance cutter, a national security cutter and, most importantly, as the commanding officer of a fast response cutter.

After being up all night interdicting a vessel that was attempting to bring in suspected undocumented migrants into the United States, the pursuit team writes statements to document the interdiction and assist prosecutors with future legal action. Coast Guard Photo by LT Amy Ross

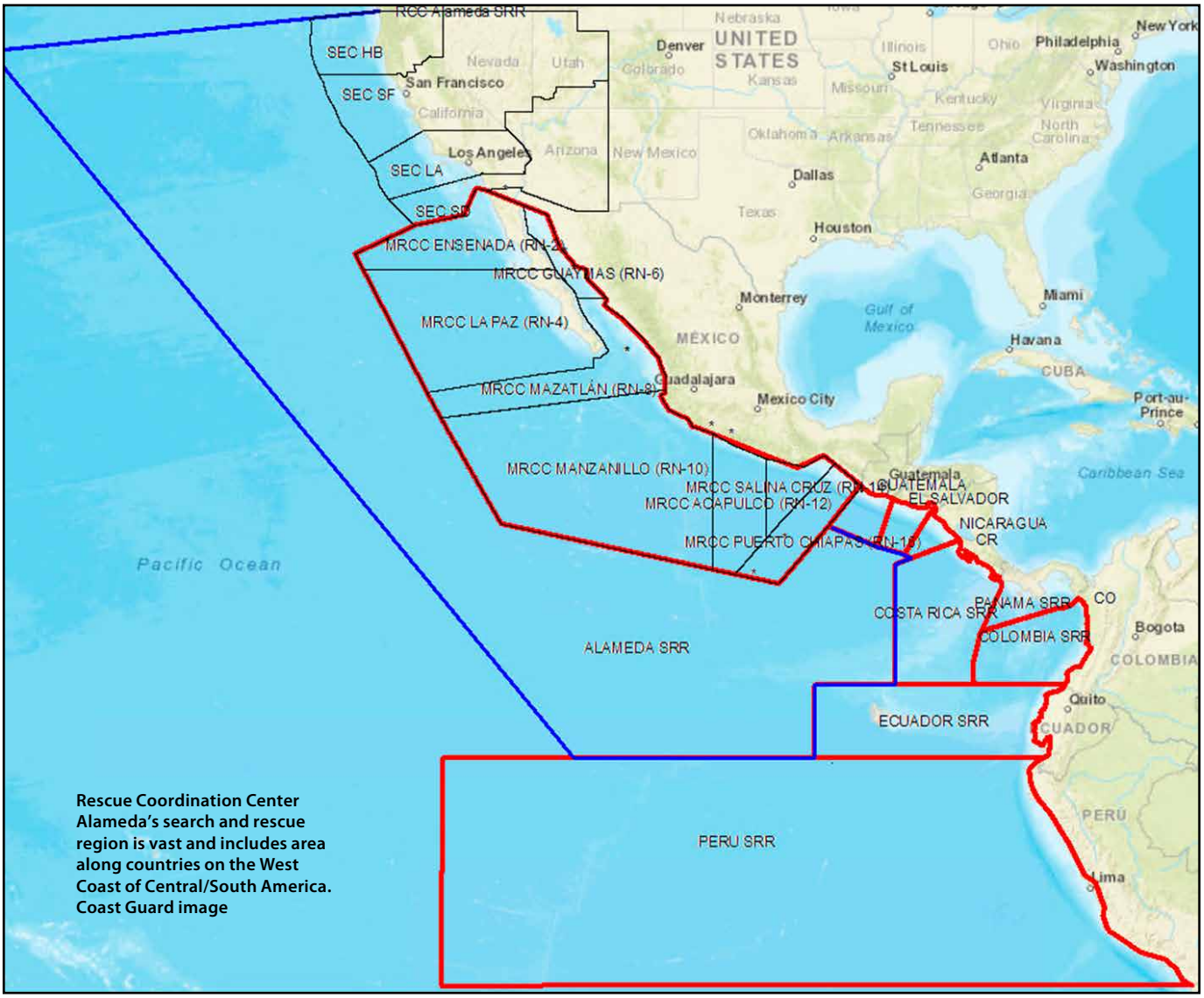
Long-range Search and Rescue

District 11 pushes the limits for distressed mariners

by LT Ryan McNeil
Command Duty Officer
District 11 Command Center
U.S. Coast Guard

U.S. Coast Guard District 11's Area of Responsibility (AOR) encompasses 74 million square nautical miles of largely open ocean from the California-Oregon border down to the border of Peru's search and rescue (SAR) region. Due to South America's geography, Peru's SAR region is much larger than its neighboring countries to the north, extending 2500 NM west of the country's coastline. The size variations of search and rescue regions are commonplace in the Eastern Pacific due to the vast area to be accounted for in relation to the small countries and territories that dot the area.

Speaking to the mariners occupying these waters, commercial and sport fisherman alike flock to the warm water and excellent fishing conditions found along the



Rescue Coordination Center Alameda's search and rescue region is vast and includes area along countries on the West Coast of Central/South America. Coast Guard image

California and Central American Coastlines. Depending on the time of year and targeted species, the range of these ventures varies greatly, extending to 1000 NM offshore. District 11 (D11) is also home to a wide array of maritime commerce flowing from South and Central Asia and Australia, boasting three of the 10 most heavily trafficked ports in the United States.[1] In addition to commercial shipping traffic, the District typically favorable weather draws an avid sailing and recreational boating community, and transpacific races and voyages are commonplace.

Long Range SAR Response

The first line in management of this massive sea area and the traffic within is the Coast Guard's Pacific Area and D11 Command Centers. Also known as Rescue Coordination Center (RCC) Alameda. This joint unit ensures information dissemination and response to situations occurring in both the Pacific Area and D11 AORs.

The vast AOR and the composition of the maritime community presents D11 with unique SAR operational challenges. It is certainly unlike SAR conducted by nearshore Coast Guard sectors. The high volume of commercial traffic from Asia, as well as the recreational voyages, also makes SAR operations different from those on the East Coast, though the AOR is similar in size.

The majority of D11's SAR operations occur within the boundaries of subordinate Sectors Humboldt Bay, San Francisco, Los Angeles/Long Beach, and San Diego. But when SAR incidents occur in D11's AOR, they are typically already at the outer limits of the Coast Guard's most capable rescue assets—helicopters. Depending on the location and situation, Coast Guard cutters may not be a feasible response asset, due to the vast distances required to transit in relation to the urgency of the case. Coast Guard fixed wing aircraft often have the endurance required to reach mariners in distress and deploy lifesaving equipment far offshore but are unable to affect an extraction. With these assets out of play, District 11 relies on unconventional SAR tools to effectively conduct long-range SAR; tools like the Automated Mutual-Assistance Vessel Rescue System (AMVER).

Developed by the Coast Guard and commercial shipping representatives in 1958, AMVER is often a primary means for commercial vessels who have opted into the program to be notified of other mariners in distress and aid in response efforts. Today, more than 22,000 ships participate in AMVER and the program is credited with

Pararescueman of the 129th Rescue Wing prepare to execute rescue operations in support of District 11, in May 2022. Air National Guard photo by Senior Airman Duane Ramos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saving 2,800 lives since 2000.[2]

During offshore SAR response, rescue coordination centers with the associated equipment and software can generate a surface picture of the area near the incident, providing information on AMVER vessels near enough to respond. These vessels are generally larger commercial ships that often have medical capabilities which are crucial in responding to injuries far offshore. When distances exceed the reach of Coast Guard crews via aircraft, cutter, or boat, AMVER vessels can be extremely helpful in transporting injured patients, providing higher levels of medical care, or both.

They are also often dispatched to aid search efforts when the location or nature of the distress scenario is unknown. The response of AMVER vessels is crucial when it would otherwise be impossible to get eyes on scene at a potential distress location outside the range of Coast Guard assets. When commercial vessels are not in the area, are unable to respond, or the situation dictates a more immediate solution, District 11 SAR planners must look for other means to conduct long-range SAR.

In addition to AMVER, the frequency of transpacific and other recreational transits within District 11 have resulted in communities which closely track mariners or race participants and can be the first notice of a distress situation at sea. Race managers or members of groups such as BoatWatch, keep a close eye on situations or missed communications with participating vessels and can provide a more immediate distress notification than District 11 would otherwise receive. Some groups have had a hand in the successful SAR outcomes thousands of miles from shore. The tightknit nature of the maritime community means mariners are often in close communication with one another and are eager and determined to assist others in need, making the maritime community effective in self-rescue, outside the scope of standard RCC-directed options.

As risky as they are flashy, long distance 'endurance' voyages are far more closely tracked today than they were in the recent past. This is thanks to social media and recent developments in offshore communications technology. Before social media, one might hear of an ambitious adventurer departing the mainland in their rowing vessel via the nightly news, but people not involved with the voyage would hear little more. Now these voyages are highly promoted with thousands of people tracking the trips every step of the way via social media posts. For RCCs, this represents both a great opportunity for more immediate notifications of distress, as well as a difficult situation to navigate in the form of limited and/or flawed information. For District 11, this leads to a sifting process in which SAR authorities must effectively differentiate real distress from perceived. Overall, the increased information represents added value, but sometimes at the cost of misdirection and confusion.

Members of the 129th Rescue Wing, supported by mid-air refueling from the 940th Air Refueling Wing, execute rescue operations in support of District 11, in May 2022. Air National Guard photo by Senior Airman Duane Ramos

Highly Capable Partners

When time-sensitive medical emergencies occur outside the reach of Coast Guard resources, SAR planners and operational commanders must get especially creative when developing solutions. AMVER vessels often are a great resource but, depending on the nature of the injury, response time or medical capabilities can be insufficient. For a more immediate response, District 11 routinely calls on its highly trained and capable partners of the California Air National Guard's 129th Rescue Wing. The 129th is a combat search and rescue unit, comprising the 129th, 130th, and 131st rescue squadrons.

When all other mission planning scenarios fall short, the highly trained airmen of the 129th are equipped to respond to more urgent, complex long-range SAR cases. One of several dual-functioning units, the 129th is charged with conducting combat search and rescue for deployed troops and allied partners, while supplementing civil search and rescue missions in peacetime. The latter serves to further enhance their combat readiness. Equipped with HC-130J fixed wing aircraft, HH-60G helicopters, and the Air Force's Guardian Angel pararescuemen, the 129th Rescue Wing makes for a highly effective rescue force package.[3] With the capability for in-flight helicopter refueling, their range is greatly extended making time-sensitive MEDEVAC possible. Alternatively, and based on the situation, their pararescuemen can be deployed directly from the HC-130J to give higher level medical care for patients while vessels make best speed toward land.

International SAR Partnerships

When conducting long range SAR, cases and vessels routinely cross regional SAR boundaries or require foreign navy or coast guard support. For this reason, positive international relations are crucial to ensuring positive outcomes. District 11 maintains agreements with governments that we frequently interact with to expedite approvals for execution of SAR cases. In particular, the U.S.-Mexico SAR Treaty of 1935, 1936, 1989

Representatives of the Mexican Navy welcome a Coast Guard Air Station Sacramento C-27 aircrew and District 11 staff memers upon their arrival in Tapachula, Mexico, for a joint exercise. Coordination with the Mexican Navy is critical to District 11's ability to conduct long-range SAR along Mexico's Baja coast and within the Eastern Pacific. Coast Guard photo by Petty Officer 2nd Class Zackery Snow

is an agreement District 11 relies on when conducting SAR cases that cross international boundaries. One of the Treaty's primary achievements is the ability for Coast Guard assets to enter Mexican territorial seas to assist U.S.-flagged vessels in distress. Once the nature of distress and location are reasonably well known, the Coast Guard can deploy its resources as soon as the Treaty is enacted via verbal and written communication from District 11 to the corresponding Mexican Naval Region. This authority also allows Coast Guard assets to conduct searches for U.S. persons and vessels if not immediately located. Under the Assistance Entry authority, initially codified by the United Nations' Convention on the Law of the Sea and supported by the U.S.-Mexico SAR Treaty, U.S. assets are encouraged to enter Mexican waters to assist vessels, including non-U.S. vessels. Both parties are encouraged to assist in SAR response in each other's search and rescue regions outside of territorial seas, as well. While not always a seamless practice in process, the overarching goals and spirit of this agreement have paid dividends for many mariners.

For countries with which District 11 does not have SAR agreements, professional, reliable operations are at the front of Pacific Area and District 11 leaders' minds. Within the region, the Pacific Area and District 11 commands maintain a leadership stance and frequently assist other nations. Open communication lines between U.S. and foreign rescue coordination centers have proven beneficial when requesting information or offering assistance in response to long range SAR cases when managed by other countries' RCCs. While strong international partnerships are the goal, language barriers, differing perceptions of distress urgency, and scant communications can result in challenging scenarios.

Distress Beyond the Horizon

Approximately 1,350 nautical miles (NM), or 1,554 statute miles, Southwest of Cabo San Lucas, Mexico, a fisherman aboard a 195-foot tuna seiner had just entered a harrowing situation. As a support vessel approached to refuel, his left ankle and foot were caught between the two vessels and crushed, resulting in near amputation of his foot. The fisherman was lucky that his vessel had an EMT on board, who quickly applied a tourniquet and began administering fluids. The fisherman still needed to seek higher care if there was any hope of saving his injured foot and, at minimum, preventing him from contracting a life-threatening infection.

Awareness and Initial Actions

A representative of the commercial fishing company placed a call to District 11, informing watchstanders of their severely injured crewmember and requesting assistance. RCC Alameda got to work collecting the necessary information, briefing the appropriate SAR authorities, and determining response options. District 11's on-call flight surgeon, a qualified military doctor, was briefed so they could provide their assessment of the injuries, and most importantly their recommendations on how quickly the patient needs to receive a higher level of care. They can also recommend any medications or provide instructions for in-transit care. In this case, there were no vessels in the area that had the necessary medical capabilities to assist the fisherman and there were not any resources to get him to a surgical theatre in sufficient time. The flight surgeon, highly concerned with the patient's overall stability and the possibility he would lose the ankle and foot, recommended a medical evacuation, or MEDEVAC.

Planning

After considering all available options, the SAR team at District 11 determined the 129th represented the most effective and expedient MEDEVAC option. The SAR team briefed the 129th SAR duty officer, who began mission evaluation and planning. After careful deliberation of the situation, their capabilities, and the risk involved, the 129th accepted the mission and began mobilizing resources. The initial plan was to deploy pararescuemen from an HC-130J in the vicinity of the fishing vessel, where they would parachute into the water with all the necessary gear to include a small Zodiac inflatable boat. From there, they would board the vessel and provide increased medical capabilities while in transit to a more suitable location for MEDEVAC of the fisherman. Once on board, the pararescuemen would continue evaluating the patient's condition to help inform future courses of action and the decision about whether to MEDEVAC him.

As the case progressed, District 11 watchstanders got to work coordinating logistics and clearances in Cabo San Lucas and Isla Socorro, Mexico, with representatives from the Mexican navy.

> As with many cases crossing international boundaries, D11 was never officially notified of the patient's final status, a result of language and information-sharing barriers.

Air Force planners decided to forward deploy an HC-130J from the 79th Rescue Squadron and three HH-60G helicopters from the 55th Rescue Squadron to Cabo San Lucas. These assets and crews were standing by to learn whether a MEDEVAC by helicopter hoist was feasible as the vessel continued to close distance to Isla Socorro, Mexico.

Operations

Approximately 30 hours after the initial injury, pararescuemen of the 129th arrived on scene and made their way to the fishing vessel. Once safely aboard, they assessed the patient's condition, administered medications, and redressed the patient's wound. The patient has been stabilized, but had lost all sensation in the foot, which was also without pulse. Overnight, his condition remained stable; however, the limb was likely a loss and the SAR planners with the Coast Guard and 129th Rescue Wing agreed the risk to crews deploying 600 NM offshore of Mexico was too great. A strategically positioned HC-130J and HH-60G's were stood down. Pararescuemen remained on board to continue providing aid to the patient, who was ultimately transferred to a commercial air ambulance on Isla Socorro for final transport to appropriate medical services on the mainland. District 11's quick response, the professionalism of the 129th, and the intergovernmental coordination were crucial to getting the patient the highest possible level of treatment on an impressive time frame, given the location.

As with many cases that cross international boundaries, District 11 never received official word on the final status of the patient; a result of language and information-sharing barriers. While it is frustrating for SAR responders and planners, what is certain, is the prompt and efficient planning and execution delivered an outcome the patient would not have received otherwise.

— LT Ryan Mc Neil

When District 11 receives notice of a distress situation in a foreign nation's search and rescue region, it is forwarded to the proper foreign party. Depending on that nations' interpretations and policies surrounding the situation, the actual SAR response can vary and is especially complicated if U.S. citizens are involved. Invariably, families and friends of those lost, disabled, or injured at sea reach out to the Coast Guard in hopes the service can prompt the responsible party to act, or launch assets to support the response. Balancing the Coast Guard's forward-leaning posture on SAR with respecting international relationships can be difficult to navigate. The nature of the scenario, our relationship with the nation in question, and the availability of resources will determine the level of Coast Guard involvement.

Conclusion

Year after year, long-range SAR has accounted for most of the confirmed distress scenarios encountered by District 11. Some of these were resolved through creative use of Coast Guard resources alone. Others required deployment of Air Force partners or the professionalism of nearby AMVER vessels or mariners. Regardless, the vast distances involved were overcome by the competence and ingenuity of SAR authorities, professionalism of responders, and coordination between domestic and foreign partners. The watch team, staff, and senior leaders at District 11 continually embrace these challenges and maintain this high standard.

About the author:
LT Ryan McNeil has served in the U.S. Coast Guard for 7 years, with roles in the Afloat, Deployable Specialized Forces, and Response Ashore communities. He currently serves as a Command Duty Officer at the Pacific Area/District 11 Command Center.

Endnotes:

1. Zahra Ahmed, "Top 10 Largest and Busiest Container Ports in the United States," Marine Insight, 2023
2. "History of the AMVER System," amver.org
3. "Guardian Angel" Fact Sheet, af.mil/About-Us/Fact-Sheets/Display/Article/104472/guardian-angel/

A California Air National Guard crew chief marshals an HC-130J Combat King II aircraft at California's Moffett Airfield. District 11 often uses the HC-130J for deployment of pararescuemen in support of rapid medical treatment of mariners at sea. Air National Guard photo by Master Sgt. Ray Aquino

Building Awareness

Project Bear Trap

District 11's maritime domain awareness program

by CDR Oscar A. Carbajal
Maritime Domain awareness Program Manager
Eleventh District Intelligence Division
U.S. Coast Guard

Brandon Lum
Maritime Security Coordinator
California State Threat Assessment Center
California Governor's Office of Emergency Services

In effort to counter maritime threats within the California Coastal Region (CCR), the Coast Guard's District 11 (D11) took a whole of government/coalition of the willing approach to improve maritime domain awareness (MDA) by launching Project Bear Trap (PBT) in April 2021. This project aims to establish a sustained effort to seek out and evaluate MDA solutions and rapidly prototype, test, and permanently integrate them into a centralize database for use by CCR stakeholders in a joint operational environment. This process encompasses academic research, research, development, test & evaluation (RDT&E) efforts, as well as fielding fully operational capabilities to identify a system or combination of systems that will provide persistent MDA coverage in District 11's area of responsibility.

Project Bear Trap is District 11's maritime domain awareness program. Coast Guard image

Enhancing MDA and Filling Mission Gaps

D11 launched the initial PBT Working Group in January 2021. The goal was to enhance MDA with regard to vessels transiting through and around the waters along the southwestern border between the U.S. and Mexico and in the ocean and coastal waters of Southern California. Additionally, it aimed to identify operational gaps impeding the District's ability to meet missions with existing assets. This initial push included identifying the most critical MDA coverage gaps within the region, as well as industry and partner agencies who produce, test, and use technology solutions to improve MDA. Other objectives included identifying:

- systems to provide persistent coverage to detect, classify, and alert appropriate parties of potential incursions across maritime boundaries
- systems mature enough to provide the Coast Guard with enhanced MDA
- systems that leverage partnerships

Initial members of the working group included Coast Guard Sector San Diego and other Department of Homeland Security (DHS) partners. D11 and the Coast Guard Research and Development Center, in partnership with U.S. Customs and Border Protection (CBP) Innovation Team and CBP Air and Marine Operations Division staff, provided joint oversight of PBT.

Centralizing Data

In April 2021, PBT proposed partnering with the Navy to acquire a form of data as a service. This would provide a radar data feed directly into the Sector San Diego Joint Harbor Operations Center originating from a soon-to-be-upgraded surface search. This radar data feed is expected to provide critical information sharing between the Department of Defense and DHS that could enable 24/7 joint awareness for security, defense, and law enforcement. Future plans included additional CCR stakeholder sensor data feeds that would fill MDA gaps in the region, with the intent that all data feeds would eventually be integrated into a centralized repository. The D11 commander approved this recommendation,

Data as a service is a management strategy using the cloud to deliver storage, processing, and/or analytics services via a network connection.

and in May 2021, the PBT Working Group initiated acquisition of data from the Navy's San Clemente Island radar system.

Project Bear Trap Initiatives

PBT currently consists of 15 initiatives supporting MDA in the coastal region. A primary initiative of PBT was that of the DHS MDA Levels of Awareness. In May 2021, District 11 Response, Intelligence, and Enforcement staff-initiated efforts to identify and define CCR MDA zones and levels of awareness. Capitalizing on a national-level working group effort led by the National Maritime Intelligence-Integration Office to define levels of MDA, Sector San Diego developed a framework for applying five defined levels of MDA across the region.

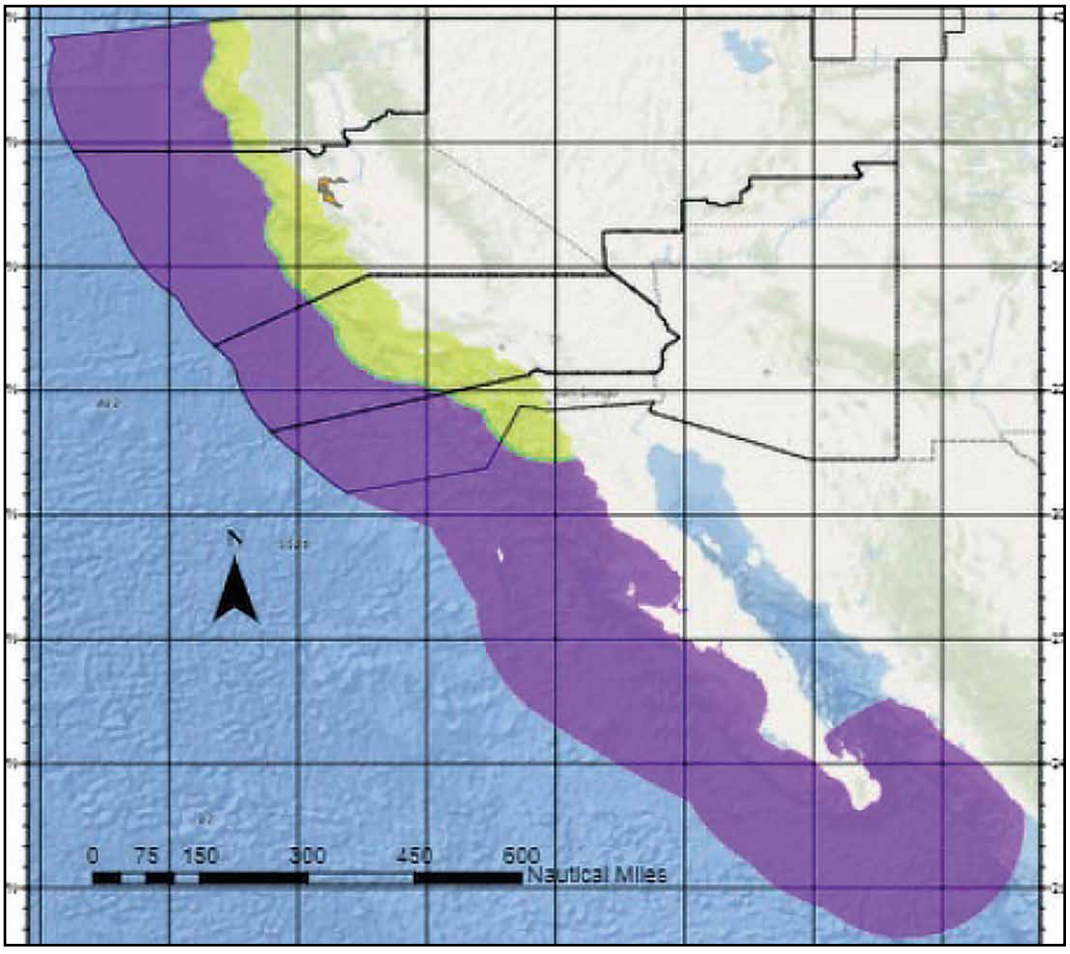
This framework applied MDA zones and levels of awareness to each D11 sector and the entire CCR. The result was a color-coded maritime chart that can be used to define the types of maritime intelligence, surveillance, and reconnaissance capabilities needed and locations where they are most critically needed. This product formed the basis for the documentation of D11's operational needs which were used to develop operational requirements documents and set parameters on how to field MDA capabilities across the Coast Guard.

CCR COP

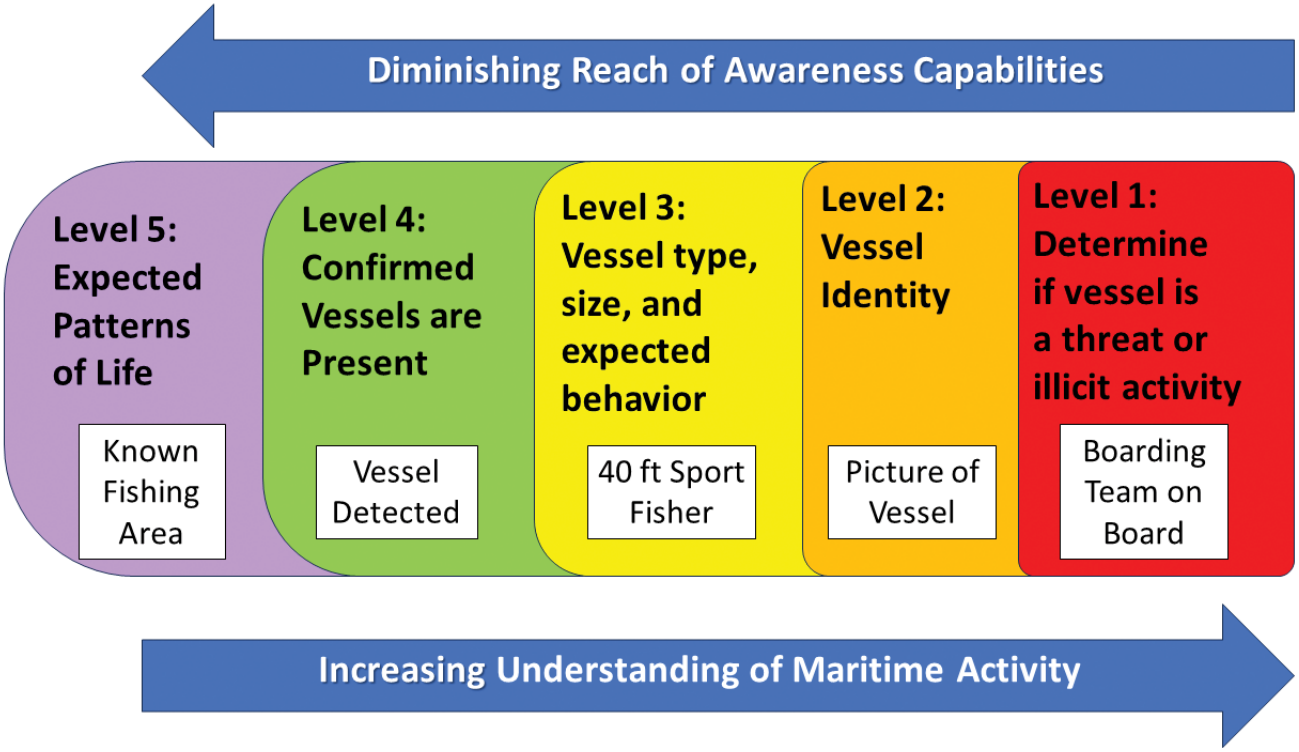
A primary initiative of PBT is the development and implementation of a centralized common operating picture (COP) to expand visibility on activity in the CCR. In collaboration with state and federal entities, a CCR COP has been developed to identify and inventory sensor platforms, identify and link existing data feeds, and provide a mission case management tool to expand MDA and support joint operations within the CCR.

California Maritime Security Council MDA Subcommittee

In November 2021, the D11 commander began



District 11's area of responsibility encompasses the state of California, Arizona, Nevada, and Utah, as well as the ocean area to the outermost extent of the Exclusive Economic Zone bound by a line from the California-Oregon border to the border between Mexico and Guatemala. Coast Guard map



collaborating with the California Maritime Security Council (CMSC), which voted to establish the California Maritime Security Council Maritime Domain Awareness Subcommittee (CMSC MDA) to further execute MDA objectives outlined in the state's maritime and homeland security strategies. Both strategies have objectives to develop and support MDA through a COP making it a priority for the Subcommittee to enhance federal MDA objectives with state and local considerations.

The CCR COP is an application focusing on entities supporting operations near the U.S.-Mexican border and within the CCR. It provides users a broad set of geospatial resources and capabilities through a web-accessible interface in a Sensitive but Unclassified/For Official Use Only/Law Enforcement Sensitive (SBU/FOUO/LES) environment.

Developed as an all-hazards approach to MDA, the CCR COP is a centralized data and information-sharing repository that uses geospatial information system (GIS) technology to obtain real-time, or near real-time, data. This data includes:

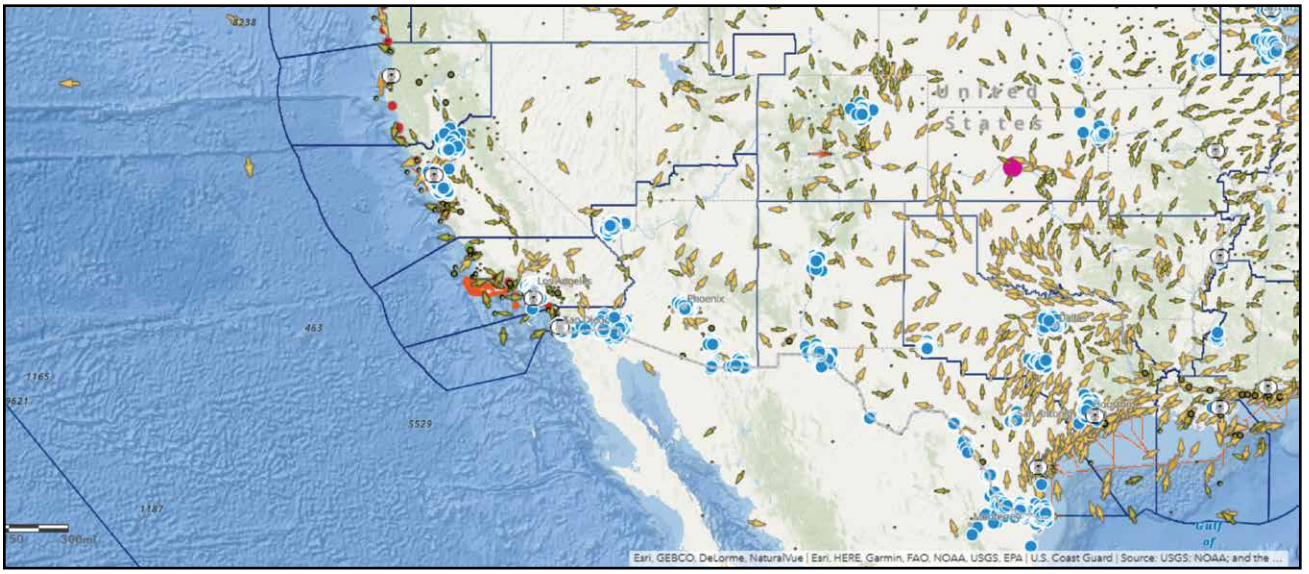
- actionable information
- enhanced contextual understanding of MDA critical infrastructure
- natural hazards
- aerial imagery
- points of interest
- spatial analyses
- querying
- geocoding (translating data onto a map)
- proximity functionerial imagery

Currently, the CCR COP is under development, management, and testing by Subcommittee members using the Homeland Security Information Network (HSIN)/DHS GMO Geospatial Information Infrastructure (GII) platforms. As a proof-of-concept, several active data feeds and layers are being ingested into the CCR COP, including radar and sensor feeds, real-time coastal camera systems, and critical infrastructure dashboards. Memorandums of Understanding/Agreement (MOU/MOA) and Interconnection Security Agreements (ISA) allow data sharing between various partners, and GII consumer data is approved through DHS GMO and managed within the HSIN platform.

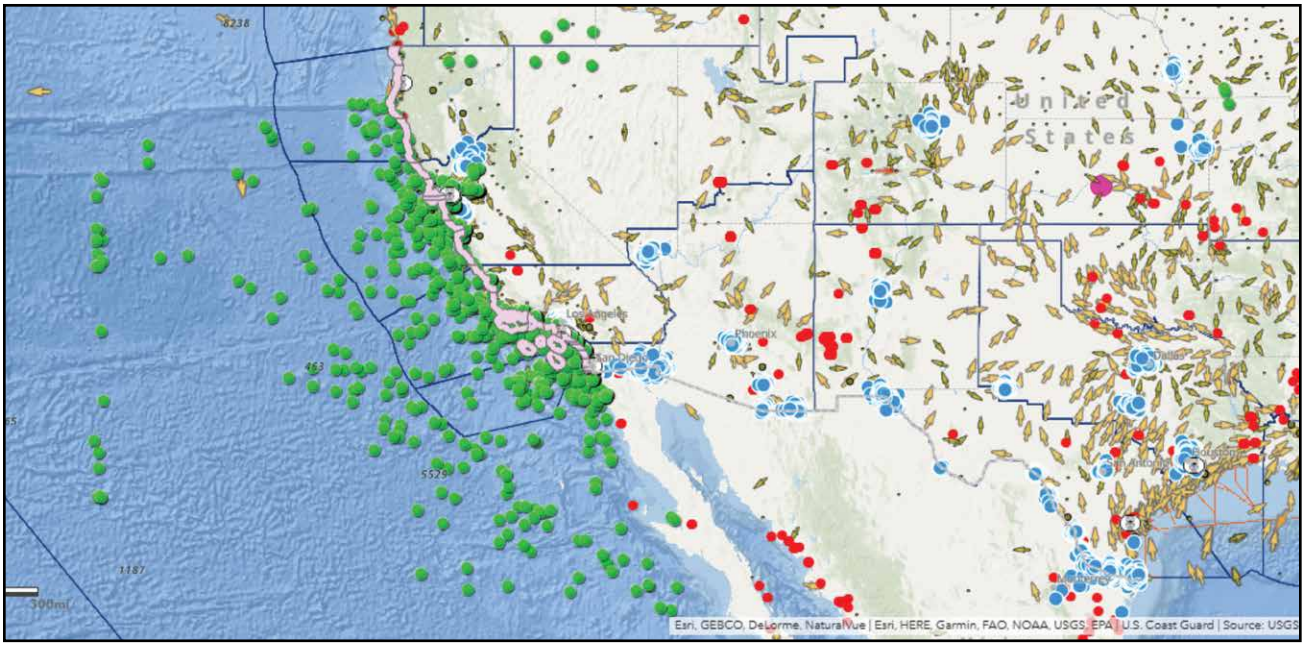
The CMSC MDA Subcommittee is continuing the design and development of the CCR COP platform, policies, and standard operating procedures and has implemented MOU/MOAs/ISAs and surveys to identify and better understand the needs of partner agencies within the region. For the CCR COP to further promote and facilitate secure information sharing between governmental, international, and non-government partners who support CCR/CMSC missions, the CMSC MDA Subcommittee is researching state and federal funding opportunities to institute the CCR COP.

This proof-of-concept was successfully executed in the incident command post for San Francisco Fleet Week 2022 and received an Environmental Systems Research Institute (ESRI) Special Achievement in Geographic Information Systems (SAG) Award in 2023 for its efforts.[1]

California Coastal Region Common Operating Picture 2021



California Coastal Region Integrated Common Operating Picture



Coast Guard maps

Thirteenth District (D13) MDA Levels of Awareness supports the extension of D11 MDA Levels of Awareness into its area of responsibility along with the development of a supplemental DHS mission needs statement specific to the District. This serves to synchronize the southwestern and northwestern borders on a standard framework.

DHS Science & Technology MDA Sensor Project aims to support DHS Science & Technology's RDT&E efforts by providing testing environments and logistical support to existing research projects. DHS Science & Technology is currently supporting the development of the CCR COP through its Integrated Multi-Domain Enterprise (IMDE). This information-sharing architecture enables DHS to meet mission-critical information sharing, domain awareness, and multi-agency operational coordination needs.[2]

California Maritime Security Council's Maritime Domain Awarness Subcommittee meets at the Naval Post Graduate School on May 2023. Coast Guard photo by Brandon Lum

Coast Guard Research & Development Center supports RDT&E efforts by providing test environments and logistical support to existing/future research projects. The Center also provides subject matter expert.

Naval Post-Graduate School (NPS) Student Thesis Project supports NPS student theses by providing points of contact, resources, testing environments, and networking opportunities in the California Coastal Region. This includes site visits and logistical support from various regional partners and entities.

CCR Unmanned Aircraft Systems Support aims to identify UAS capabilities and resources in support of CCR operations. Current efforts include DHS Small Unmanned Aircraft Systems available for testing and use by various DHS agencies within the

Maritme Domain Awareness Subcommittee

The California Governor's Office of Emerency Services Maritime Domain Awareness Subcommittee was formed under the leadership of the California Office of Emergency Services with representatives from the following agencies meeting biweekly to develop the CCR COP:

- California Office of Emergency Services Maritime Unit
- California State Threat Assessment Center
- Coast Guard District 11
- Coast Guard Sector San Francisco
- Port of Long Beach
- Port of San Diego
- U.S. Maritime Administration
- U.S. Department of Transportation
- Maritime Coordination Center
- National Oceanic and Atmospheric Administration
- National Maritime Intelligence-Integration Office

CCR.

CBP Tactical Maritime Surveillance System aims to provide logistical aid and local area knowledge in support of future deployment of the CBP Tactical Maritime Surveillance System at San Clemente Island.

Vandenberg Space Force Base Radar Network aims to ingest Vandenberg's Ocean Surveillance System radar data feed into the CCR COP.

Point Mugu Sea Range Radar Network aims to ingest the networks radar data feed into the CCR COP.

San Clemente Island Radar Data Feed Ingestion aims to ingest the Navy's radar data feed into the CCR COP

NOAA Protected Seas Marine Monitor Radar Network successfully ingested the radar's data feed into the CCR COP in February 2023.[3]

Saildrone Data feed successfully integrated into the CCR COP in June 2023.[4]

CCR MDA Summit, a CCR MDA meeting with all stakeholders, is held annually to provide updates regarding new and ongoing MDA initiatives within the CCR and identify future objectives in support of CCR operations.

Conclusion

Project Bear Trap and California Coastal Region stakeholders continue to use academic research; research, development, test & evaluation; and available maritime domain awareness technologies to develop existing operational capabilities and help fill identified gaps. Through collaboration and initiatives with the California Maritime Security Council Maritime Domain Awareness Subcommittee and other regional stakeholders, the project continues to advance awareness with lines of efforts that synchronize a whole of government approach.

About the author:

LCDR Oscar Carbajal is a member of the Coast Guard Reserve with 28 years of combined military service, including more than two years on active duty with District 11 as the maritime domain awareness officer. His civilian employment includes 19 years of federal law enforcement service, and he is currently serving as a criminal investigator for Homeland Security Investigations.

Brandon Lum is a Petty Officer 1st Class in the Coast Guard Reserve and has 13 years of military service. He is currently serving at Port Security Unit 312 as a boatswain's mate 1st class tactical coxswain. His civilian employment is currently with the Critical Infrastructure Protection Unit at the California State Threat Assessment Center.

Endnotes:

1. https://www.esri.com/en-us/about/events/uc/plenary/awards/sag-awards
2. https://www.dhs.gov/science-and-technology/news/2018/04/17/snapshot-how-coastal-surveillance-could-benefit-enterprise
3. https://m2marinemonitor.com/
4. https://www.saildrone.com/

U.S. Coast Guard VADM Andrew Tiongson tours the incident command post established for San Francisco's Fleet Week held in October 2022. These command posts are essential for many of the events District 11 hosts. Coast Guard photo

HC-27J Spartan Operators

Becoming a young aircraft commander in a young aircraft

by LT J.G. Austin Brown
HC-27J Spartan Pilot
Air Station Sacramento
U.S. Coast Guard

Eighty nautical miles off the rocky coast of California, a sailor's life is in danger. This sailor needs an immediate medical evacuation to the nearest onshore medical facility. Reaching for hope, the sailor's command turns to the United States Coast Guard to transport their shipmate and save his life. Soon after, the booming sound of an MH-60 Jayhawk rolls in from the distance and relief begins to permeate through the ship's crew. They shipmate is going to be alright.

For the crew of the famous Jayhawk helicopters, the mission is just beginning. But this article is about the mighty HC-27J Spartan and its crew, which had been on scene and orbiting and assisting the vessel in preparations for the Jayhawk's arrival. The Spartan crew paved the way for the Jayhawk's success, ensuring the vessel knew exactly what course to steer, how to prepare its sailor for a hoist, and where to clear the deck.

Even as the Jayhawk disappeared over the horizon with the injured sailor aboard, the Spartan crew's night was not over. Eighty nautical miles is a long way from shore and the Jayhawk might need assistance before reaching land, so it is up to the Spartan to escort it safely to shore, seeing the mission through from start to finish.

Often the limelight goes to the crews directly involved with saving those in need of help, but there is myriad teams, crews, individuals, and assets that contribute to the safe completion of any mission. The HC-27J Spartan, a fixed-wing aircraft, is one of those assets supporting the missions of multiple agencies, as well as multiple Coast Guard districts and units. While the Coast Guard has only had this aircraft online for 10 years, it certainly turns heads when flying overhead or touching down at an airport. Often compared to the C-130, which has more than 30 years of service, this a very young aircraft. Such a young, capable aircraft, may give the impression that any mission is possible on Day 1. This may be the impression portrayed to the outside world, but an immense amount of training, teamwork, and effort goes into the successful operation and maintenance of the aircraft.

Depending on the mission, HC-27J flights consist of two pilots and an assortment of crew. Behind the controls sit the aircraft commander and a copilot. When a pilot joins the Coast Guard fleet of operators, they enter as a copilot and work diligently to gain the experience of an aircraft commander. Having earned the role and responsibility of an aircraft commander, the final decisions lie with them. Executing the mission and bringing the crew home safely rests on their shoulders.

Throughout the fleet, there is a wealth of experience and knowledge that come from individuals with thousands of hours in the aircraft. This knowledge and expertise are passed on through training and mentorship to the younger generation and new pilots. Since the Spartan is such a new platform for the Coast Guard, this experience and knowledge had to come from other platforms.

Supplementing book knowledge of the plane with their years of experience, a top-heavy wardroom of pilots training the new copilots was established in the Spartan's early years. This meant senior officers were training younger junior officers on-the-job to take over as aircraft commanders when the senior officers began leaving the fleet. Through this process, new copilots who had never flown other Coast Guard aircraft before, faced challenges while navigating their way to becoming aircraft commanders in a community with experience from other platforms.

Conversations With Young, Experienced Aircraft Commanders

Interviews with two of these young aircraft commanders shed light on the challenges, accomplishments, and sea stories that came along with their journey of becoming a HC-27J Spartan aircraft commander. For background, there are less than 100 qualified Spartan pilots to fly in the Coast Guard, and fewer than 10 aircraft commanders that came from flight school straight to the Spartan as their first Coast Guard aircraft. Many of these pilots are still on their first or second tours at air stations, but their short tenure has offered many chances to test their knowledge and decision-making abilities.

The pilots, LT Lopez and LT Collins,[1] reported to Air Station Sacramento in 2019, flying hundreds of hours and countless missions to become aircraft commanders in less than two years; a feat not often achieved thanks to today's longer process. Looking back at their training flights as copilots, they remember many flights through

CG-2711, an HC-27J Spartan fixed-wing aircraft, flies through the Cascade Mountains. The Spartan supports the missions of multiple agencies and Coast Guard districts and units. At 10 years online with the Coast Guard, it is a relatively young airframe. Coast Guard photo taken by LCDR Scott Handlin

the Cascade Mountains, cruising along the Pacific coast, or exploring all the airfields in the unit's area of responsibility. These flights were enjoyable but did not do much to prepare them for the difficult and dynamic situations they would face as an aircraft commander.

Their training relied on self-paced study and the mentorship of select aircraft commanders. Their studies, combined with handling malfunctions as a copilot, created a knowledge base that allowed them to become trusted aircraft commanders.

Even with his vast knowledge of the aircraft, the concept of being the final say in the cockpit did not click for LT Lopez until flying his first patrol. On an unexpected diversion to a coastal airfield for low fuel, he shut down the plane to take on fuel prior to returning home. Unfortunately, a safety pin for the landing gear was not removed before taking off again resulting in unsafe indications in the cockpit. As a result, LT Lopez dumped the fuel in air to reduce the aircraft's weight and safely returned to the same field. Finding the source of their issue on deck, one crew member felt responsible for the problem, but LT Lopez knew it was the job of all members including himself to check that pin was removed. The importance of crew resource management was plainly demonstrated to him as he took responsibility for an issue the whole crew should have caught. Crew resource management is a principle that Coast Guard aviators follow to promote safety of the aircraft by ensuring the

crew is used effectively. This includes, but is not limited to, genuinely listening to crew recommendations, making well-informed safety decisions, and being aware of all aspects of the flight from takeoff to landing.

For LT Lopez and all Coast Guard aviators, the concept of crew resource management is critical to flight safety and applies to everyone, no matter how many hours the pilots have. This is just one example of how critical continuous learning is for aviators at any level of responsibility.

Conclusion

In the early ages of the Spartan program, LT Lopez and LT Collins were around mostly senior Coast Guard aviators on their way out of the service. AAfter several years serving as aircraft commanders, they are now the senior pilots with expanded roles that include the instruction of new pilots; part of the new generation of aircraft commanders and instructor pilots. Now LT Lopez's biggest difficulty is not just accomplishing the mission or flying in difficult conditions, but rather teaching the new copilots the techniques to overcome those challenging situations. LT Collins distinguished himself by studying diligently to become a committed instructor pilot within his first tour and now uses his knowledge and skills to train both new copilots and seasoned aviators.

Through these new aircraft commanders and a positive command climate focused on the diverse training, proficiency, and safety of their pilots, the Spartan community has transitioned to training its successors for safe, effective operation of a plane that comes with its fair share of operational and maintenance issues.

With so few operators of the Spartan around the world and, like many of today's supply chains, parts inventory is often low due to the foreign manufacturer having little financial incentive to keep a heavy supply. This results in the original equipment manufacturer often supplying parts and information in an on-demand fashion. When this happens, maintainers are forced to either deal with extended waits or use parts from other aircraft to ensure the aircraft remains operational. This results in a single point of failure in operations, because if that part is needed again or in another aircraft, the wait time for it is much longer than the standard three to five business days of shipping.

Operators and maintainers continue to discover problems with the plane but work diligently to develop solutions. This is a prime example of the challenges faced with a relatively new aircraft platform, and each of these unexpected occurrences provide operators an opportunity to learn what to look for. This allows maintainers to develop a better sense of how to solve the challenges and what parts to stock.

Although other fleet aircraft have their issues, the Spartan' youth undoubtedly forces these young aircraft commanders to dive deep into their flight manuals, become intimately familiar with the machine's minute nuances, and learn details about it that other aircraft operators might take for granted. This situation, while undesirable, has continued to develop exceptional and professional aircraft commanders in a young aircraft, whose community continues to grow and take pride in as more knowledge and confidence is gained about the mighty HC-27J Spartan.

About the author:
LTj.g. Austin Brown is a 2020 graduate of the U.S. Coast Guard Academy and recently winged Coast Guard aviator. Air Station Sacramento, Califoria, where he flies the HC-27J on search and rescue missions, fisheries patrols, and other law enforcement missions along the Pacific coast, is his first Coast Guard unit.

Endnotes:

1. Names have been changed to protect identity within the small community.

Aviation Engineering Note

Since LTJG Brown wrote this article several months ago, the resiliency, creativity, and risk management of HC-27J "Spartan" aircrew and maintenance personnel have continued to be tested by multiple long-term, fleet-wide groundings and a highly constrained logistics system that is challenged to obtain, repair, and sustain critical parts. Despite these challenges, personnel across the HC-27J program have persistently addressed these obstacles with their dedication, professionalism, and personal ingenuity.

As the Coast Guard contemplates the future of this program, critical inquiries must be made. With decisive leadership, dedicated efforts of the aviation maintenance team supporting the HC-27J, and enhanced collaboration with the original equipment manufacturer, the Spartan has the potential to become one of the most effective and capable assets in the Coast Guard fleet.

Historical Snapshot

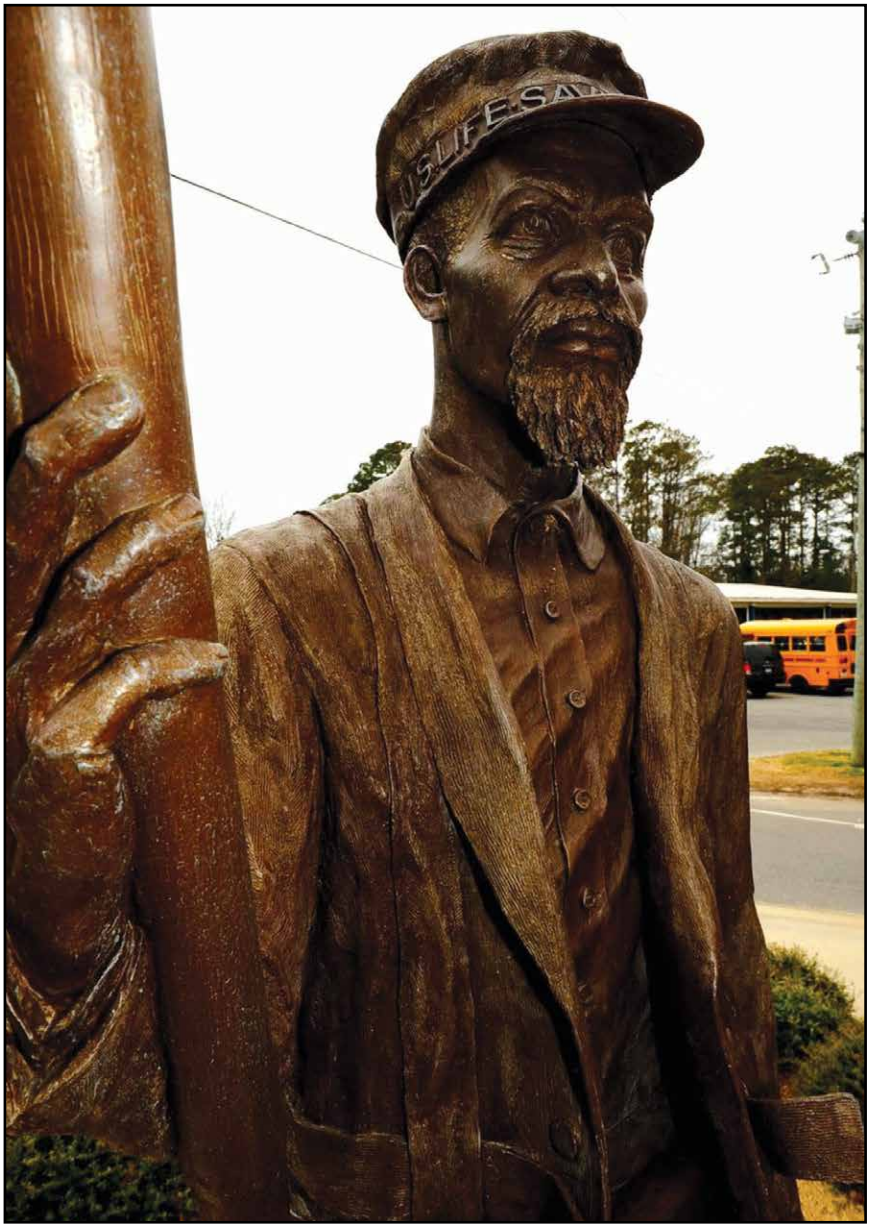
Keeper Richard Etheridge and the Gold Medal Lifesavers of Pea Island

by U.S. Coast Guard Historian's Office
U.S. Coast Guard

Richard Etheridge's tenure in the U.S. Life Saving Service rightfully holds a prominent place in Coast Guard history. As the commanding officer (Keeper) of the all-Black Pea Island Life-Saving Station, he cataloged many achievements as a leader, surfman, and color-barrier breaker.

In October of 1896, a shattered three masted schooner, the *E.S. Newman*, was blown off course and bottomed out on the shoals two miles south of Pea Island, North Carolina. It launched a distress flare that was sighted on the stormy horizon by Keeper Etheridge's crack surfmen. Etheridge ordered the crew into the ferocious surf rescuing nine souls. It would take 100 years to honor the Pea-Island surfmen with a Gold Lifesaving Medal.

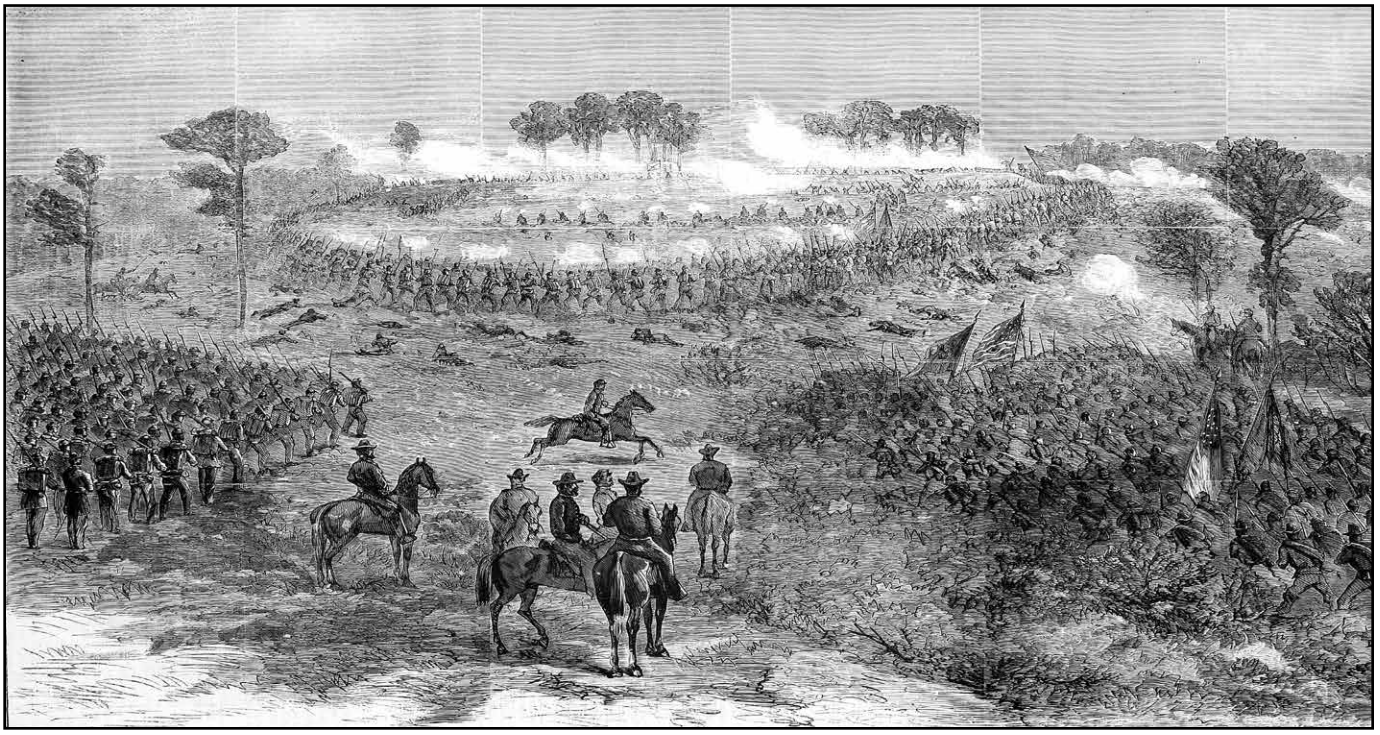
Today, Etheridge is heralded by the Coast Guard community for his professionalism and heroics in the U.S. Life Saving Service. Less explored, however, are his deeds 32 years earlier when, as a Union soldier, he and thousands of other former slaves demonstrated the valor of the U.S. Colored Troops, proving themselves equal to any other fighting force on Earth.



Keeper Richard Ethridge, U.S. Life-Saving Service

Beginnings

Etheridge was born to Rachel Dough, a slave, in 1842, and raised in the John Ethridge household on the Outer Banks of North Carolina. Unlike most slaves, he was taught to read and write and, at a young age, learned fishing and waterman trades.



Colonel Alonzo Draper led a brigade of the Union Army's 36th U.S. Colored Troops in the Battle of Chaffins Farm and New Market Heights near Laurel Hill, Virgina. Sketch by William Waud in 1864

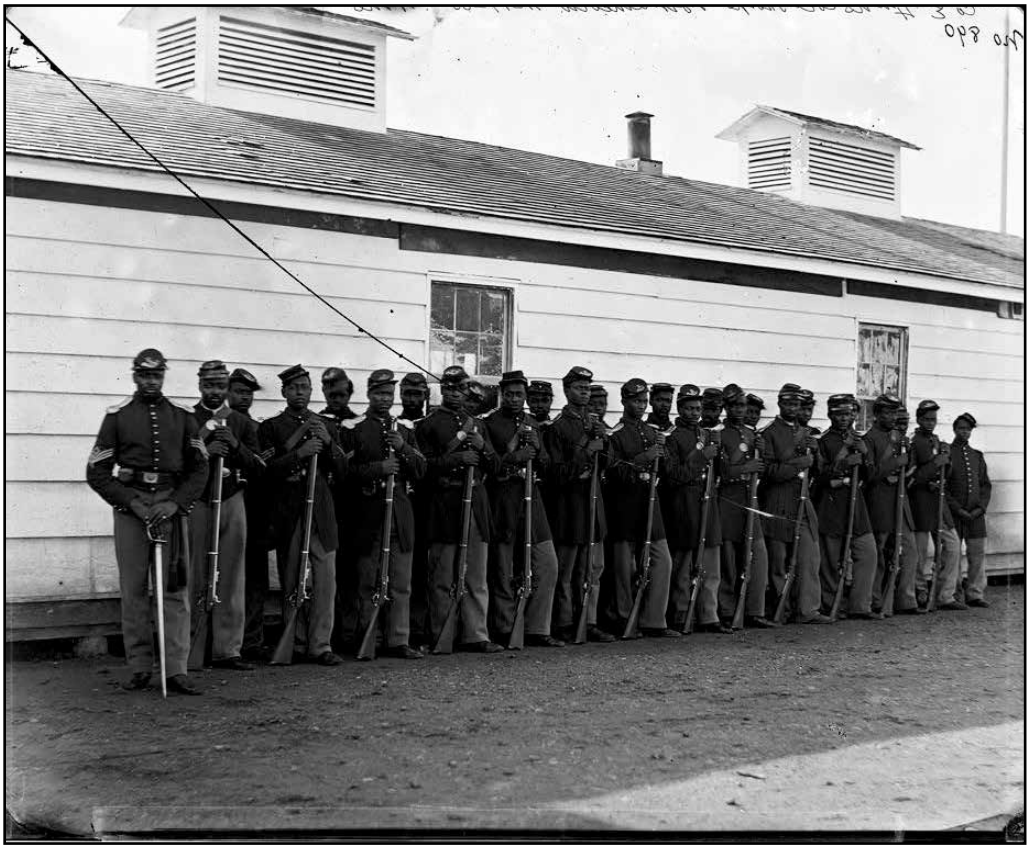
John Etheridge, his enslaver, and possible father—his paternal lineage remains a mystery—was a prominent local landowner and successful fishermen whose nine slaves, undoubtedly played roles in daily business operations and in the Etheridge family's accumulation of wealth. Through his time on aboard John's fleet of small fishing boats during his formative years, Ethridge developed a keen understanding of the sea and surf behaviors in the Outer Banks. This period would prove to be foundational for his future role as the Keeper of the Pea Island Life-Saving Service Station, but first the Civil War would test his mettle.

Army Service

In 1862, the region was occupied by the Union Army, and, by the summer of 1863, Union generals were recruiting hundreds of Black volunteers to form regiments of newly designated U.S. Colored Troops (USCT). Richard leapt at the chance to fight for his people's freedom and understood recruitment to be a mortal blow to the institution of slavery. Without permission or consultation from his enslaver, Ethridge walked out and joined the Union Army on August 28, 1863, as a member of the 36th USCT. Sergeant Etheridge would learn valuable lessons from his commanding officer, Colonel Alonzo Draper. A relentless disciplinarian and advocate for his men, the colonel knew that only constant drill and high standards could prepare the 36th USCT for battle.

By late fall 1864, the situation on the ground had devolved into trench warfare. Confederate General Robert E. Lee's Army of Northern Virginia had dug a series of fortifications and obstructions around Richmond and Petersburg, Virgina. Facing Lee, Union General Ulysses Grant deployed his two armies, the Army of the Potomac and the Army of the James, along a 50-mile front. A harbinger of the horrors of World War One, the landscape was a devastated snarl of abatis, chevaux-de-frise, earthworks, and artillery emplacements. Commanding the Army of the James, General Benjamin Butler had made several attempts to crack the Confederate lines at New Market Heights. Despite overwhelming superiority in manpower and materiel, the two attempts had little to show but 3,000 Union casualties. Undeterred generals Grant and Butler now looked to consolidate unused Union units in the area and prepare for another assault. Etheridge's 36th USCT was thus transferred to the Army of the James.

Even this late in the war, Northerners still held the USCT in low regard. Caused by rampant Northern racism, disinclination to inflame rebel opponents, and distrust of untested African American regiments, commanders generally did their best to keep the USCTs from participating in major battles. Until September of 1864, the 36th USCT was relegated to guarding Confederate prisoners, laboring on Union construction projects, and making low-level raids against unorganized rebel insurgents and supply targets. This unspoken racial barrier of keeping Black units from major Union combat



Company E, of 4th U.S. Colored Infantry is pictured at Fort Lincoln. Library of Congress photo

operations, led to a cycle of distrust. A cycle that could only be broken by military victory. Butler spoke of this:

> *My white regiments were always nervous when standing in line flanked by colored troops, lest the colored regiments should give way and they [white soldiers] be flanked. This fear was a deep-seated one and spread far and wide, and the negro had had no sufficient opportunity to demonstrate his valor and his staying qualities as a soldier.*

While the famed charge of the heroic 54th Massachusetts at Battery Wagner showed that Black units could fight and die with courage, there was yet to be a large strategic engagement displaying their ability to achieve a victory. In September 1864, this opportunity presented itself to Etheridge and the men of the 36th.

On the night of September 28, Butler divulged his plans to his subordinates—a three-pronged attack. General Edward Ord would hit Fort Harrison. Simultaneously 3,800 troops under Brigadier General Charles Paine, along with the 36th USCT, would seize New Market Heights, clearing the way for Brigadier General August Kautz's cavalry to strike rebel positions to the north. Opposing the Bluecoats were around 1,800 battle-hardened veterans from the elite Texas Brigade. This unit represented the best troops the South had, with years of fighting experience in nearly every major campaign in the Army of Northern Virginia.

The 36th USCT, about 450 men strong, moved out to New Market Heights. The assault began with a blunder when the 4th and 6th USCT, 1,100 men under Colonel Samuel Duncan, attacked the Confederate lines, unsupported by the rest of the task force. This piecemeal force approached the Southern lines and began hacking away at the abatis and, as the Union men paused to clear the obstructions, the Texans let loose. The Southern barrage that followed wiped out 10 men per minute. For nearly 40 minutes, the 4th and 6th held their lines until finally retreating.

With the survivors of the 4th and 6th USCT streaming to the rear, new orders were issued. Attacking in piecemeal would not be done. The enemy could not be offered the luxury of engaging in a fire fight; Colonel Alonzo G. Draper ordered his brigade into a metaphorical hammer, rather than stretch his force along a lengthy battle line, the 5th, 36th, and 38th USCT would be stacked one behind the other. The force would be ordered to charge the defending Texans with the bayonet, the 5th USCT would hurl themselves at the enemy, followed closely by successive hammering by the 36th and then 38th USCT. The goal was to split the enemy lines with a human cleaver. The successive attacks would overwhelm a single point in the Confederate lines, forcing the defenders into two frayed commands. The only hope depended on Etheridge and his men charging the veteran Texans as one single, unstoppable tide.

The command given and their fates decided, the charged would use fixed bayonets and Etheridge stepped off, shoulder to shoulder with his comrades of the 36th. As the three regiments moved through a forest of small pines, the sun began to burn off the fog layer that had obscured the battlefield all morning revealing the horror left from Duncan's initial assault. Blue-clad heaps lay in varying states of death, and destruction cluttered the approach. The Texans had made short work of the USCTs. Nearly 400 men from the 4th and 6th, almost

Soldiers of the 36th U.S. Colored Troops fight in a Civil War battle. Library of Congress photo

nearly 60 percent of their initial strength, had been cut down before the Confederate lines of New Market Heights. Etheridge and the 36th surged forward through the swampy terrain. Stepping over their shattered comrades, they began to take artillery fire. As exploding shell fragments raked the Union battlelines, the men of the 36th struggled to maintain formation as they slogged through Four Mile Creek.

Draper's Brigade began to fall into a state of confusion, exactly what the enemy had been waiting for. Confederate riflemen let loose a ferocious volley of lead, cutting gaps into the blue battle line. Forgetting their mandate to carry the fortifications by point of bayonet, the attackers bogged down. Soldiers dove for cover and fired back toward the enemy. Well situated behind their defenses the Confederates felt little effect from the Union volleys. Thirty minutes of deadly confusion reigned while Draper, his officers, and non-commissioned officers, cursed, shouted, ordered, and cried, extorting their men to reform and charge the earthworks. Slowly but surely, the men of the 36th clawed back their momentum. With the formidable Yankee battleline reforming and clambering over a second line of abatis, the outnumbered Confederate defenders began disengaging. The Southerners fled the field; some in orderly retreat and others in full panic.

The ground was seized, the defenders were in full retreat to Fort Harrison, and Confederate Forces had decisively lost ground that would never be retaken. Beyond the tactical gains lay an even more remarkable accomplishment; former slaves like Sergeant Etheridge had fought for their freedom as soldiers. In a world full of racism and doubt, these men shattered the false narrative of inferiority. Instead, the U.S. Colored Troops had proved themselves to be heroes to their country, and victors beyond reproach, earning 14 Medals of Honor.

After the battle, journalists like Thomas Cook from the New York Herald would report:

> *The colored troops of General Paine's division ... were directed to carry this position. Their charge ... was made with a vigor and determination that would have done credit to the best organizations of white troops in our armies. They never halted or faltered though their ranks were sadly thinned by the charge, and the slashing was filled with the ... (dead) and wounded of their number. The successful accomplishment of their task put the*

enemy to confusion and sent them in a rapid retreat up the round towards Richmond.

The price of this victory was high. Though Etheridge remained unscathed, nearly a quarter of the men in the 36th USCT were killed or wounded. Etheridge's unit served through the war's end in April 1865. Soon after the fall of the Confederacy, the 36th was shipped to Texas to enforce the final emancipation of slaves on June 19th, a day now known as Juneteenth.

Etheridge returned home a free man, a veteran, and became a leader of the African American community on the Outer Banks and began working as a Life-Saving Service surfman, first at the Bodie Island Station and then the Oregon Inlet Station. He met and married his wife, returned to fishing, and bought more than 100 acres of land. With the expansion of the U.S. Life-Saving Service under General Superintendent Sumner Kimball came the establishment of a series of lifesaving stations along the deadly Carolina coast.

A Return to Service

I examined this man, and found him to be 38 years of age, strong, robust physique, intelligent and able to read and write. He is reputed one of the best surfmen on this part of the coast of North Carolina.

—Lt. Charles Shoemaker, U.S. Revenue Cutter Service, 1879

This quote comes from an 1879 letter from U.S. Revenue Cutter Service Lt. Charles Shoemaker, Assistant Inspector of the U.S. Life-Saving Service, to Summer Kimball, then General Superintendent of the U.S. Life-Saving Service. In the letter, Shoemaker recommended African American Richard Etheridge assume the keepership at the Pea Island Life-Saving Service Station. Shoemaker also recommended that Keeper Etheridge retain two African American surfmen already at Pea Island (W.B. Daniels and W.R. Davis), select two blacks from a nearby station and appoint two more of his choosing.

Shoemaker wrote the letter to Kimball due to Etheridge's distinguished reputation as a surfman and the discharge of Pea Island's white keeper and two surfmen, whose failure to perform their duties resulted in loss of life in the wreck of schooner M&E Henderson. In the letter, Shoemaker wrote that he was "aware that no colored man holds the position of Keeper in the Life-Saving Service," however, he explained that Etheridge was such an excellent surfman that "the efficiency of the Service at the [Pea Island] station will be greatly enhanced." Revenue Cutter Service Lt. Frank Newcomb, another Assistant Inspector of the Life-Saving Service, also recommended Etheridge to Kimball. Shoemaker endorsed Newcomb's letter, which stated that Etheridge "had the reputation of being as good a surfman as there is on this coast, Black or White."

Coast Guard Cutter *Richard Ethridge*, the second of the service's Sentinel Class cutters, was delivered to the Coast Guard on May 26, 2012, in Key West, Florida, ahead of its commissioning the following August in Port Everglades. The cutter is homeported in Miami. Coast Guard photo

Ethridge was appointed Keeper of Pea Island Station on January 24, 1880, becoming the first African American station keeper in the service and first minority member of any kind to command a U.S. base of operations. Soon after his appointment, the station burned down. Determined to execute his duties to the fullest, Etheridge supervised the construction of a new station on the original site. He also developed rigorous drills that enabled his crew to tackle all lifesaving tasks. His station earned the reputation as "one of the tautest on the Carolina Coast," and he became well-known as one of the most courageous and ingenious lifesavers in the service.

Etheridge's training regimen

proved invaluable on October 11, 1896, when the three-masted schooner *E.S. Newman* was caught in a terrifying storm. En route from Providence, Rhode Island, to Norfolk, Virginia, the vessel was blown south, 100 miles off course, and slammed onto the beach two miles south of the Pea Island Station. The storm was so severe that Etheridge suspended the day's usual beach patrol. However, Surfman Theodore Meekins was on lookout duty and saw the Newman's first distress flare through the stormy darkness and immediately notified Etheridge.

Etheridge rounded up the Pea Island crew to brave the wind and weather. The determined lifesavers struggled to pull their surfboat to a point on the beach opposite the schooner, only to find there was no dry land. The daring, quick-witted Etheridge tied two of his strongest surfmen together and connected them to shore by a long line. The two men breeched the surf line, marched their way through the roaring breakers, and finally reached the grounded schooner. By rotating his surfmen fighting through the surf, Etheridge's Pea Island crew ventured into the perilous waters 10 times rescuing all nine passengers and crew.

As keeper of the Pea Island Life-Saving station, Richard Etheridge became one of the Coast Guard's minority trailblazers. He rose from slavery to serve his country, first in the Civil War and later in a white dominated Life-Saving Service rife with animosity toward blacks. He served as keeper of Pea Island Life-Saving Service Station for 20 years, longer than any other Pea Island keeper, and he died while serving at his post. He was the first minority officer-in-charge of any U.S. base of operations. Along with his crew, he was recognized as the first minority Coast Guardsman to receive a medal for heroism in the line of duty.

—LT j.g. Michael B. Sobelman contributed to this article

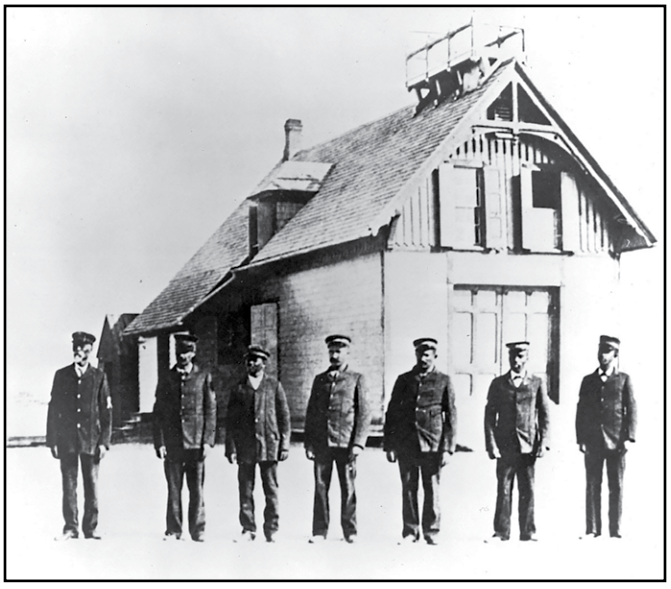
Honoring Heroes

For their heroic efforts, the crew of the Pea Island Life-Saving Station, including Richard Etheridge, Benjamin Bowser, Dorman Pugh, Theodore Meekins, Lewis Wescott, Stanley Wise, and William Irving were posthumously awarded the Gold Lifesaving Medal 100 years later. The medal citation reads:

The three-masted schooner E.S. Newman, *sailing from Providence, RI to Norfolk, VA ran into a hurricane. Pushed before the storm, the ship lost all sails and drifted almost 100 miles before it ran aground about two miles south of the Pea Island Life-Saving Station, North (NC) on 11 October 1896. The station keeper, Richard Etheridge, had discontinued the routine patrols due to the high water that had inundated the island. Surfman Theodore Meekins, however, saw what he thought was a distress signal and lit a Coston flare. He then called to Etheridge to look for a return signal. Both strained to look through the storm. Moments later, they saw a faint signal of a vessel in distress.*

Etheridge, a veteran of nearly 20 years, readied the crew. They hitched mules to the beach cart and hurried toward the vessel. Arriving on the scene, they found Captain S.A. Gardiner and eight others clinging to the wreckage. Unable to fire a line because the high water prevented the Lyle Gun's deployment, Etheridge directed two surfmen to bind themselves together with a line. Grasping another line, the pair moved into the breakers while the remaining surfmen secured the shore end. The two surfmen reached the wreck and, using a heaving stick, got a line on board. Once a line was tied around one of the crewmen, all three were then pulled back through the surf by the crew on the beach. The remaining eight persons were carried to shore in similar fashion. After each trip two different surfmen replaced those who had just returned.

In recognition of the various African American crews at the Pea Island Station, including Richard Etheridge and his lifesavers, the Coast Guard commissioned the cutter Pea Island in 1992. And, on Aug. 3, 2012, the Coast Guard Cutter Richard Etheridge *was commissioned in Miami, in honor of Keeper Etheridge.*



Keeper Richard Ethridge and North Carolina's heroic Pea Island Lifesaving Station crew. Coast Guard photo

Chemical of the Quarter
Understanding Blue and Green Ammonia

by Sandip Chattopadhyay, Ph.D.
Hazardous Materials Division
U.S. Coast Guard Office of Design and Engineering Standards

What is it?

Ammonia production processes are distinguished based on their carbon footprints—conventional, low-carbon dioxide (CO2), CO2-free, and carbon-free production routes, and are often referred as "grey," "blue," "turquoise," and "green," respectively. The conventional process for producing ammonia is energy intensive and responsible for nearly 2% of global CO2 emissions. Blue ammonia production combines traditional ammonia synthesis using natural gas feedstocks with carbon capture use and storage. For green ammonia production, green hydrogen must first be obtained through water electrolysis which decomposes water into hydrogen and oxygen using electrical energy generated from renewable sources. It is then combined with atmospheric nitrogen using the Haber-Bosch synthesis process, allowing hydrogen and nitrogen to react at high pressure and temperature in the presence of a catalyst to form ammonia.

Why should I care?

Green ammonia reduces dependence on fossil fuels resulting in lower greenhouse gas emissions and increased energy supply security. It also acts as an energy vector or hydrogen carrier (liquid hydrogen is formed at -253°C while ammonia requires cooling only to -33°C); and is a renewable energy deployment to meet future demand and the requirements set by the International Maritime Organization's (IMO) 2050 emissions reduction targets.

Buying time until green ammonia technology matures and becomes commercially viable, blue ammonia technology is a bridge towards a greener future. Thanks to lower electricity requirements per kilogram of ammonia produced—1kWh of electricity can produce 0.77 kg of blue ammonia compared to 0.09 kg of green ammonia—the process for creating blue ammonia is currently more efficient than that of the green ammonia process. Both ammonias have high energy density, enabling efficient energy storage and transportation. This quality is valuable for applications requiring large-scale energy storage or long-distance transportation, such as in the maritime transport sector.

Both ammonias come with challenges, including:

➤ *Toxicity*

High concentrations can cause severe burns and blindness, while long-term exposure at lower levels can lead to chronic respiratory problems.

➤ *Explosiveness*

Though ammonia is slow-burning, it can form an explosive mixture under specific conditions such as when a large amount of vapor is ignited in an enclosed or semi-enclosed space.

➤ *Corrosivity*

Factors dictating stress corrosion cracking of material in contact with ammonia include the yield strength of the material; residual stresses, like welding processes; as well as oxygen and water content. The preferred materials for ammonia are steel with relatively low yield strength. Air should be removed from the installation before starting, for example, by blowing in inert gas, and water content of ammonia should be controlled.

➤ *Onboard safety and operations*

Risk management, standardization and harmonization of design and specification for materials, location of units (e.g., storage tanks, fuel supply system), and assessment of safety management systems are essential.

➤ *Nitrogen Oxide, or NOx, Emissions*

While combustion of ammonia does not emit CO2, it can produce NOx, potent greenhouse gases. Improving combustion technologies and catalytic converters can help minimize emissions.

➤ *Infrastructure and Technology Challenges*

Electrolyzer technology, needed to produce green hydrogen as a feedstock for green ammonia production, has yet to be made available at commercial scale. While the transportation and storage infrastructure need expansion, the technology is presently inefficient and the overall process still requires more energy.

➤ *Fuel storage, logistics, and bunkering*

Port infrastructure, such as terminals and bunkering facilities, must be significantly expanded to handle potentially hundreds of millions of shipping tons per year. The new technologies and the IMO's maritime safety committee (MSC 105) interim guidelines require standards for hardware, bunkering, and safety procedures.

➤ *Regulation & Certification*

Appropriate regulatory bodies have not yet developed greenhouse gas quantification. Additionally, detailed prescriptive rules are not incorporated into the International Codes including Safety for Ships Using Gases or Other Low Flash-point Fuels (IGF Code) and the Construction and Equipment of Ships Carrying Liquefied Gases in Bulk (IGC), thus requiring design approved by the Flag State for current vessel design projects. Classification societies have released guidelines for vessels however, they need to be consistent or unified in their approaches or requirements.

From a lifecycle perspective, policies would impact climate chane ad energy efficiency.

What is the Coast Guard doing about it?

The Coast Guard Office of Design and Engineering Standards (CG-ENG) is responsible for the evaluation of hydrogen as a cargo and fuel.

About the author:

Dr. Sandip Chattopadhyay is the lead engineer of the Bulk Liquid Team, and has authored more than 64 peer-reviewed articles.

Nautical Engineering Queries

Prepared by NMC Engineering Examination Team

1. The factor contributing to the greatest effect on the ship's period of roll is the _____.

A. Vertical position of KB
B. Vertical weight distribution
C. Virtual rise in the center of gravity
D. Moment to trim 1 inch (MT1)

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2. V-12 four-stroke/cycle 500 horsepower diesel engine is operating under a normal load, the firing pressures are low and the exhaust temperatures are high. Which of the following problems is the most probable cause of this condition?

A. Fuel pump rack setting is too far out.
B. The air intake filter is missing.
C. The exhaust back pressure is too high.
D. The fuel pump rack setting is too far in.

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3. Excessive wear on a centrifugal pump shaft sleeve will _____.

A. Cause severe vibration when the pump is operating
B. Cause excessive leakage past the packing gland
C. Cause damage in the stuffing box
D. Allow interstage leakage in the pump casing glands

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4. What is the purpose of installing shading coils on AC full-voltage starters?

A. Eliminate contact chatter
B. Dissipate opening contact arcs
C. Delay current build up in the holding coil
D. Protect the motor windings from momentary starting current overload

Engineering Answers

1. A. Vertical position of KB — Incorrect answer

B. Vertical weight distribution — **Correct answer.** *"A ship's officer is concerned to keep his vessel from capsizing. Without sufficient stability in rolling motion, this goal would be in jeopardy. … A vessel has been loaded … and is top heavy. She has weak tendency to return to upright position and her stability is poor."*

C. Virtual rise in the center of gravity — Incorrect answer

D. Moment to trim 1 inch (MT1) — Incorrect answer

Reference: Stability and Trim for the Ship's Officer, 4th Ed., George, pages 34,35

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2. A. Fuel pump rack setting is too far out. — Incorrect answer

B. The air intake filter is missing. — Incorrect answer

C. The exhaust back pressure is too high. — **Correct answer.** *"The operating conditions causing this as given as: injection timing too late, injection nozzle dirty or high back pressure."*

D. The fuel pump rack setting is too far in. — Incorrect answer

Reference: Diesel Engine Operation and Maintenance, Maleev, page 350, Table 20-1

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3. A. Cause severe vibration when the pump is operating — Incorrect answer

B. Cause excessive leakage past the packing gland — **Correct answer.** *"Once sleeves are worn, the packing cannot be adjusted to prevent excessive leakage."*

C. Cause damage in the stuffing box — Incorrect answer

D. Allow interstage leakage in the pump casing glands — Incorrect answer

Reference: Centrifugal Pumps, Karassik & Carter, page 74

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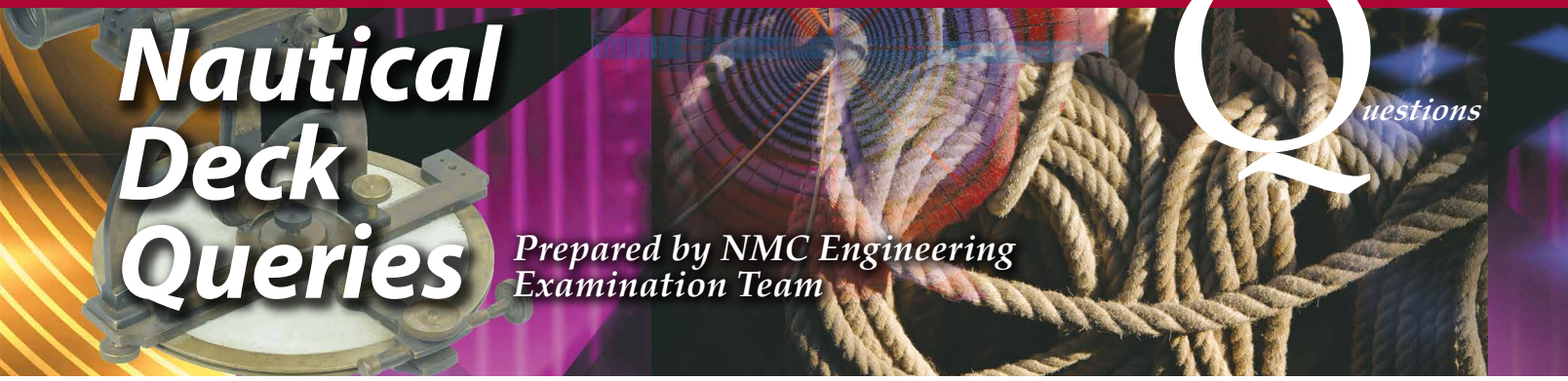
4. A. Eliminate contact chatter — **Correct answer.** *"In accordance with Lenz's law, the shading coil causes the flux in the shaded part of the pole face to lag behind the flux in the nonshaded part. This prevents the flux in the armature from falling to zero and thus reduces armature chatter."*

B. Dissipate opening contact arcs — Incorrect answer

C. Delay current build up in the holding coils — Incorrect answer

D. Protect the motor windings from momentary starting current overload — Incorrect answer

Reference: Operating, Testing, and Preventive Main. of Elec. Power Apparatus, Hubert, p. 463



Nautical Deck Queries

Questions

Prepared by NMC Engineering Examination Team

1. INLAND ONLY Two vessels in a crossing situation have reached agreement by radiotelephone. In this situation, which statement is TRUE concerning whistle signals?

A. required
B. not required, but may be sounded
C. required if crossing within half a mil
D. required when crossing within one mile)

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2. Inflatable liferafts shall be serviced at an approved servicing facility every 12 months or not later than the next vessel inspection for certification. However, the total elapsed time between servicing cannot exceed which time frame?.

A. 12 months
B. 15 months
C. 17 months
D. 18 months

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3. What form of ice is of land origin?

A. Shuga
B. Floe
C. Spicule
D. Bergy Bit

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4. What are the only magnetic compass correctors that correct for both permanent and induced effects of magnetism?

A. Quadrantal spheres
B. Heeling magnet
C. Athwartship magnetsl
D. Fore-and-aft magnets

Deck Answers

1. A. required — Incorrect answer

B. not required, but may be sounded. — **Correct answer.** *"A vessel that reaches agreement with another vessel in a head-on, crossing, or overtaking situation, as for example, by using the radiotelephone as prescribed by the Vessel Bridge-to-Bridge Radiotelephone Act (85 Stat. 164; 33 U.S.C. 1201 et seq.), is not obliged to sound the whistle signals prescribed by this Rule, but may do so. If agreement is not reached, then whistle signals shall be exchanged in a timely manner and shall prevail."*

C. Iequired if crossing within half a mile — Incorrect answer

D. equired when crossing within one mile — Incorrect answer

Reference: Inland Rule 34(h)3

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2. A. 12 months — Incorrect answer

B. 15 months — Incorrect answer

C. 17 months — **Correct answer.** *"(g) Servicing of inflatable lifesaving appliances, inflated rescue boats, and marine evacuation systems. (1) Each inflatable lifesaving appliance and marine evacuation system must be serviced— (i) Within 12 months of its initial packing; and (ii) Within 12 months of each subsequent servicing, except when servicing is delayed until the next scheduled inspection of the vessel, provided the delay does not exceed 5 months."*

D. 18 months — Incorrect answer

Reference: 46 CFR 199.190(g)(1)(ii)

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3. A. Shuga — Incorrect answer

B. Floe — Incorrect answer

C. Spicule — Incorrect answer

D. Bergy Bit — **Correct answer.** *""Where ravines or mountain passes permit flow of the ice, a glacier is formed." "When a glacier flows into the sea, the buoyant force of the water breaks off pieces from time to time, and these float away as icebergs." "Parts of it may break off or calve, forming separate small bergs. A relatively large piece of floating ice, generally extending 1 to 5 meters above the sea surface and normally about 100 to 300 square meters in area, is called a bergy bit."*

Reference: Bowditch 2002 Ed, Pages 453-454

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4. A. Quadrantal spheres — Incorrect answer

B. Heeling magnets — **Correct answer.** *"The heeling magnet is the only corrector which corrects for both permanent and induced effects."*

C. Athwartship magnets — Incorrect answer

D. Fore-and-aft magnet — Incorrect answer

Reference: Bowditch 2002 Ed, Page 85

In the News: Conducting Joint Fisheries Boarding

The crew of Coast Guard Cutter *Frederick Hatch* conducts joint fisheries boardings with members of the Papua New Guinea National Fisheries Authority and the Customs Service in the Papua New Guinea exclusive economic zone on November 5, 2023. The crew successfully concluded a routine 47-day expeditionary patrol covering more than 8,200 nautical miles under Operation Blue Pacific which was distinguished by a series of historic and strategic engagements across the Western Pacific and Oceania. The *Frederick Hatch* regularly patrols Oceania, fostering international cooperation and supporting maritime safety, security, and stewardship. The cutter returned to Guam on Thanksgiving. U.S Coast Guard photo

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Members of Coast Guard Cutter *Waesche's* law enforcement boarding team inspect a self-propelled semi-submersible in international waters of the eastern Pacific Ocean on November 20, 2023. The interdiction yielded more than 5,500 pounds of cocaine, just part of the approximately 18,219 pounds of cocaine seized by the crew in November during four separate suspected drug smuggling vessel interdictions or events off the coasts of Mexico and Central and South America. Coast Guard photo