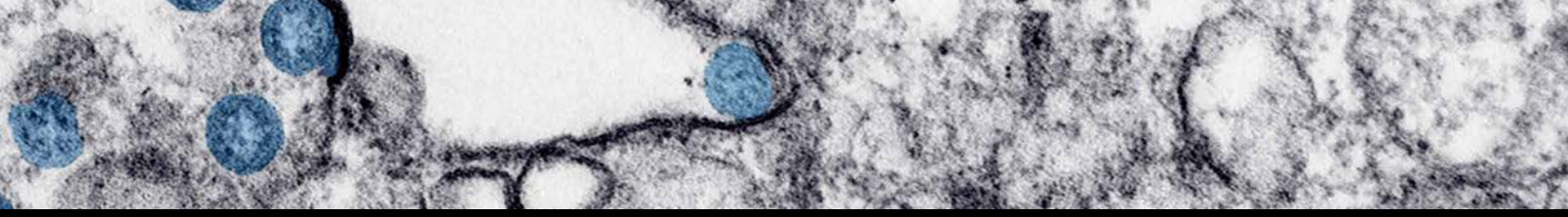
The Coast Guard Journal of Safety & Security at Sea
PROCEEDINGS
Spring 2020 of the Marine Safety & Security Council

National Security

Defending the Homeland

We're In This Together

The Coast Guard responds to the COVID-19 crisis



See full photo captions on inside back cover

In response to the COVID-19 crisis in the United States, the Coast Guard is living its motto: *Semper Paratus*—Always Ready. The service has maintained day-to-day operations, providing a security escort for USNS hospital ships *Comfort* and *Mercy,* delivering supplies, and overseeing the disembarkment of more than 250,000 from cruise ships, but its members are going above and beyond to do their part for the communities they serve. Aviation survival technicians from Coast Guard Sector North Bend, Oregon, are sewing face masks for local first responders. Similarly, Chief Petty Officer Bob McCormick, operations chief of Coast Guard Cutter *Joseph Gerczak,* has made and distributed about 100 face shields for health care professionals from his Joint Base Pearl Harbor-Hickam, Hawaii, home. Nearby, Coast Guardsmen from District 14 assisted the Hawaii FoodBank in packaging food for those who could not shop for themselves, and across the nation, Coast Guardsmen are donating blood. During this unprecedented crisis, the Coast Guard has certainly proven itself not only ready and relevant, but extremely responsive.

PROCEEDINGS

Spring 2020 Vol. 77, Number 1

Strategic Environment

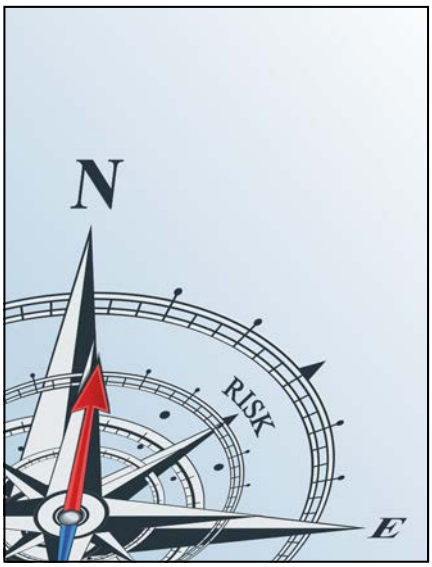
Strategic Partnerships

Mission Excellence Anytime, Anywhere

Anthony Hensen, a ScanEagle operator, prepares to launch the device from Coast Guard Cutter *Stratton* in the West Pacific Ocean. ScanEagle is a small unmanned aircraft system has a maximum speed of 60 knots and can fly more than 16 hours. Coast Guard photo by Petty Officer 2nd Class Jasmine Mieszala

On Deck

On the Cover: *National security is an ever-changing reality challenging the daily mission of defending the homeland. The Coast Guard is responsible for overseeing a dynamic maritime security environment and this requires always being ready–*Semper Paratus. *Training is constantly underway in order to move in an upward direction towards nationwide security while mitigating risk. Fostering working relationships throughout the world helps advance security standards and policies between nations.*



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Assistant Commandant's Perspective

by Rear Admiral Douglas M. Fears
Assistant Commandant for Response Policy
U.S. Coast Guard

Over the past two centuries, the man-made and natural threats to our nation have evolved in both frequency, complexity, and severity. The risk to the homeland and our global allies and partners are numerous. In some instances, threats have taken revolutionary steps that challenge the very core of our country. From protecting the sovereign interests of the United States to combating exploitation of natural resources such as illegal, unreported, and unregulated fishing, and safeguarding critical cyber infrastructure, and using cyber effects

Champion's Point of View

by Captain Clinton S. Carlson
Director of Law Enforcement, Maritime Security, and Defense Operations Policy
U.S. Coast Guard

It has been a true honor and pleasure to champion this edition of *Proceedings*. As you read the articles you will no doubt be struck by the variety of Coast Guard operational communities they span. That was a conscious decision on our part, as the theme of this edition is "Coast Guard, Defending the Homeland." Under that umbrella it's hard to imagine a time in our history where each one of our 11 statutory missions is as equally relevant as they are now. Each community provides another thread in the tapestry illustrating how we as an instrument of national power work together internally, as well as externally with one singular and very specific goal in sight—to keep the citizens of our nation safe.

That goal of protecting our citizens has assumed a renewed sense of urgency

to accomplish our mission, our challenges are great. However, our Coast Guard is evolving with these threats in relentless pursuit of mission readiness.

The emerging uncertainty and opportunities associated with the ubiquity of cyber connectivity and the "internet of things" keep our personnel persistently challenged to assure the Coast Guard's ability to operate effectively in all domains, at all times. In addition to the capability and capacity to operate in all domains, at all times, we are enabled by a broad suite of authorities under U.S. Code Titles 10, 14, and 50, in addition to others. We will continue to challenge our nation's best workforce to apply these authorities in this complex and ever-changing environment with the Coast Guard's evolving capability and capacity. We will continue to operate with our global allies as well as our state, local, tribal, and territorial partners to ensure maximum effect and relevance.

As stated in the Coast Guard's Strategic Plan, "the magnitude and complexity of our global operations and mission support activities … necessitates a workforce possessing diverse backgrounds, different perspectives, unique experiences, and original ideas." Our people truly are our greatest asset. It is their knowledge, continual training, education, expertise, resiliency, and partnerships that keep the Coast Guard relevant in today's ever-changing global environment. We have the ability to deliver Coast Guard personnel worldwide, in support of our national objectives, as part of a globally integrated force. The Coast Guard's success is predicated on a highly trained, highly adaptive workforce. It is essential that we have the most capable people with modern technology and tools in order to stay competitive and rise above today's modernized threats.

As a renowned maritime leader, it is the sum of our unique authorities, capabilities, and capacities that distinguishes the Coast Guard as a globally relevant force. This edition, and the articles within, highlight the uniqueness of the Coast Guard from the perspectives of our people.

over past decades as the relative stability of a monopolar post-Cold War world view has been fractured. The rise of transnational criminal organizations, violent extremist organizations, and a seemingly limitless host of other non-government entities, as well as the return of a great power competition not seen since the mid-1980s, have all contributed to this fracture. Fractured as well with the return of a great power competition not seen since the mid-1980s. Gone are the days when we could simply focus on saving lives, stopping bad guys, or protecting the environment. Now our leaders talk about "competitors, adversaries, and enemies." They use the language of strategies, campaign plans, and lines of effort. Subtle distinctions and nuances to be sure, but in an age where the National Defense Strategy clearly states, "It is now undeniable that the *homeland is no longer a sanctuary*." These are the distinctions that will help the service prioritize efforts within our 11 statutory missions to protect, defend, and "guard", if you will, the homeland.

When soliciting articles for this edition, we first had to decide just what "Defending the Homeland" actually means, and how the Coast Guard as a whole struggles to do so. In an attempt to answer those two critical questions we turned to the National Defense Strategy and the National Security Strategy for guidance. The four pillars of the National Security Strategy are:

- Protect the American people, the homeland, and the American way of life
- Promote American prosperity
- Preserve peace through strength
- Advance American influence

These pillars are embedded in our service culture and how we work within them define us as an organization. They are found in the tasks each and every "Coastie" accomplishes with every sortie, patrol, or inspection. These four pillars are not a new strategy for us, but rather describe what we have been doing since 1790. The articles chosen for this edition illustrate the ways our missions support those pillars, enhancing them and making them stronger.

Again, it is our hope that as you read through this edition you come to the same conclusion that we have. Whether executing a Titles 6, 10, 14, 33, 50, or any of the many other authority roles, every day our service is Defending the Homeland.

Strategic Environment

U.S. Coast Guard and the Emerging Criticality of Maritime Governance in Oceania

by CDR Jeremy Obenchain
U.S. Coast Guard Liaison Officer
Department of State Bureau of Political-Military Affairs

LCDR Leah Cole
U.S. Coast Guard Military Fellow
Daniel K. Inouye Asia-Pacific Center for Security Studies

The Indo-Pacific remains the most consequential region for America's future.[1] The U.S. National Security Strategy, the National Defense Strategy, and the Indo-Pacific Strategy underscore the importance of this region to America's continued stability, security, and prosperity. While most of the attention on the long-term strategic competition in the Indo-Pacific has focused on the South China Sea, China is also competing to replace the United States and its allies as the partner of choice throughout the Pacific. The United States is redoubling its commitments to allies and partners throughout Oceania to preserve a free and open Indo-Pacific in which all nations, regardless of size, are able to exercise their sovereignty and reinforce the rules-based international order.

The Indo-Pacific Strategy provides a framework to enable the whole of government to sharpen its focus on the three key pillars of economics, governance, and security.[2] U.S. relationships with its Oceania partners are unfolding against the backdrop of a shifting strategic environment where emerging powers seek to exert a greater influence in the Pacific region through development and economic aid, people-to-people contacts, and security cooperation.[3] The effective implementation of the U.S. Indo-Pacific Strategy in Oceania requires increased Coast Guard presence. The Coast Guard is optimized to operate below the threshold of military conflict and execute statutory missions closely aligned with the Pacific Island partner priorities. However, this increase will require interagency commitment and support to adequately resource a service stretched by current commitments.

Coast Guard operations within Oceania have remained steady over the past half century yet its relevance continues to grow. There is a pressing need for more Coast Guard presence in the Indo-Pacific, specifically in Oceania. Under Admiral Karl L. Schultz, the Coast Guard has made significant new and renewed commitments to Oceania. The Coast Guard is uniquely positioned to respond to the emerging policy imperative to reaffirm U.S. commitment to the Pacific Islands with operational presence, focused security sector assistance, and strategic partnering. However, the Coast Guard must have additional resources to improve and sustain our readiness in this vital region.

Importance of Oceania

Oceania connects the United States to the Indo-Pacific region culturally, historically, and geographically. Its strategic lines of communication are vital to securing a free and open Indo-Pacific, home to the first, second, and third island chains, bridging the geographic gap between Asia and the Americas. The island chain strategy, first discussed by Secretary of State John Foster Dulles, depicted U.S. security arrangements at the time.[4] The first island chain stretches from Japan past Taiwan along the northwest of the Philippines and Borneo and curls up to the southern tip of Vietnam. The second island chain stretches from Japan through the Marianas Islands to the Federated States of Micronesia. The third chain stretches from the U.S. Aleutian islands through the Hawaiian Islands to the northern tip of New Zealand. Oceania includes the U.S. state of Hawaii, the territories of Guam and American Samoa, the commonwealth of the Northern Mariana Islands comprised of Saipan, Tinian, and Rota, and three Compact of Free Association (COFA)[5] countries. COFA is an international agreement that established and governs the relationships of free association between the United States and the Federated States of Micronesia, Marshall Islands, and Palau. Under the compact, the U.S. provides full international defense authority and responsibilities.

These U.S. Pacific states, territories, and commonwealths are the homeland and have direct connection to U.S. banking, education, and health systems. Although under many U.S. protections on paper, the region has explicitly asked for more U.S. presence, specifically to bolster areas of vulnerabilities and limit the potential for exploitation in the region.

Today, militarized outposts and man-made islands in the South China Sea dominate news coverage and necessitate freedom of navigation operations in highly contested maritime areas and sea lanes across Northeast Asia. Meanwhile, many natural islands, strategically located with deep water access that connect Asia to America's doorstep, present a quieter, but equally troubling prospect. No one has to build them. That is Oceania.

Members from American Samoa Marine Police and National Oceanic and Atmospheric Administration Fisheries board a fishing vessel in the American Samoa exclusive economic zone to inspect the ship and crew for compliance with safety, local, and federal regulations on August 9, 2019. A boat crew from the Coast Guard Cutter *Joseph Gerczak* transported the law enforcement members in a partnership to support resource security and maritime sovereignty. Coast Guard photo by Petty Officer 3rd Class Scott Sabatini

World War II history of the Pacific clearly demonstrated how Oceania island chains could be used to arrive at the mainland of the United States and Australia, one of America's closest allies. Today, China is a strategic competitor and seeks to replace the West as the economic and security partner of choice in the Indo-Pacific region in order to advance the strategic objectives of its Belt and Road Initiative.[6]

The evolving security and economic architecture in Oceania has ushered in an increasing strategic anxiety. This is due to a set of seemingly unrelated convergences, including environmental concerns, political uncertainty, increased investment by non-traditional partners, pending expiration of economic assistance agreements under COFA in 2023–2024, and strategic competition in Oceania. While Pacific Island nations boast legitimate claims to enormous exclusive economic zones (EEZ), these zones are difficult to effectively govern. This proximity to United States access, interests, and entry points, as well as law enforcement responsibilities, coupled with the maritime born vulnerabilities and jurisdictions that make up Oceania, command attention and demand action by the Coast Guard to preserve a free and open Indo-Pacific.

Maritime Governance is Regional Governance in Oceania

Oceania contains 43 percent, or about 1.3 million square miles, of the United States' EEZ, making regional governance maritime governance, in this important region. Look at a chart of the Pacific (previous page). Application of international maritime law, coupled with the geographic composition of these nations, has created some of the world's largest EEZs and territorial seas. Many of these waters are under U.S. flag, and 11 Oceania partner nations have signed a bilateral shiprider agreement with the United States. U.S. maritime law enforcement presence to conduct operations and build sustainable commitments and relationships in the region must be planned for in the coming fiscal years. Since millions of the gross domestic product of Oceania's nations comes from tuna fisheries, building and sustaining effective maritime governance and domain awareness in this region ensures the stability of these regional economies. It also ensures that the United States remains a strategic partner of choice.

Similarly, Coast Guard search and rescue (SAR) responsibilities cover 30 percent of the region. It is the largest single U.S. SAR system at 12.2 million square miles, abutted by partner nations French Polynesia (France), New Zealand, and Australia.[7] As regional partners and SAR operators, our four nations also provide aerial surveillance, mass rescue operations and contingency planning, cyclone season response, and Illegal, Unreported, and Unregulated (IUU) fisheries enforcement capacity in partnership with the Pacific Island nations that make up Oceania.

Strategic Partnerships and Regional Initiatives: The Path to Success

As the United States announces its commitment to a free and open Indo-Pacific, the Coast Guard must also strengthen its partnerships with key regional allies in


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Northern Mariana Islands (U.S.)
Guam (U.S.)
Manila
PHILIPPINES
P A C I F I
MARSHALL ISLANDS
Sulu Sea
Koror
PALAU
FEDERATED STATES OF MICRONESIA
Palikir
Celebes Sea
EQUATOR
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Bismarck Sea
Banda Sea
PAPUA NEW GUINEA
Solomon Sea
Dili
TIMOR-LESTE
Arafura Sea
Port Moresby
Honiara
Timor Sea
SOLOMON ISLANDS
Gulf of Carpentaria
Coral Sea
VANUATU
AUSTRALIA
New Caledonia (Fr.)

1621 7-17 STATE (INR)

Oceania map courtesy of the U.S. Department of State, 2017

Oceania, including Australia, New Zealand, France, and Japan. Leveraging existing, effective regional organizations across the Pacific Island nations will be the path to sustainable impact in Oceania. The Coast Guard should continue to strengthen its contributions to the Pacific Islands Forum Fisheries Agency[8] to patrol the vast island nation EEZs more effectively. Similarly, the Coast Guard should grow its partnership with the Pacific Transnational Crime Network[9] to provide meaningful contributions through increased information sharing. Specifically, post-boarding reports and reporting suspicious activity obtained by assets deployed in the region would be valuable.

The United States delegation attends the Pacific Islands Forum, the leaders' level policy body in the Southwest Pacific, in observer status and typically includes the Coast Guard District 14 commander. Frequent, positive interactions by Coast Guard senior leadership with senior State Department and Pacific Island Forum leaders, who form both national and regional governance policies, would further strengthen Coast Guard partnerships, inform long-term resource decisions, and broaden areas of cooperation. The Boe Declaration,[10] issued in September 2018 at the 49th Forum Leaders meeting in Nauru, committed to a strengthening of their national security approaches to more effectively address the complex emerging challenges of the 21st Century. Pacific Island economies, border security, existential climate crisis, and related infrastructure security, as well as the ability to combat transnational organized crime were all stated as highest priorities for the region. Sustained U.S. presence, information sharing, and partnership in the region can assist in addressing these issues especially in the maritime domain, due to the maritime nature of tourism and fisheries-based economies of Pacific Island nations.

Coast Guard Cutter *Washington*, homeported in Santa Rita, Guam, returns from a two-week joint law enforcement patrol with the Republic of Palau and Australia under Operation Kaukledm in early 2017. Photo courtesy of LCDR Ben Fennell, Royal Australian Navy, Australia Ministry of Defence

Partnering with Australian efforts in Oceania also makes good sense. Australia has committed and fully funded[11] an additional $2 billion Australian to their Pacific Maritime Security Program (PMSP). The PMSP consists of three components:

- Pacific patrol boat replacement
- regional aerial surveillance
- efforts to strengthen regional coordination

Australia is gifting 21 highly capable Guardian Class patrol boats to 13 Pacific Island countries between late 2018 and 2023.[12] These will replace 18 aging Pacific class patrol boats from the Pacific Patrol Boat Program, the PMSP's predecessor. These vessels are packaged with long-term Australian sustainment, training, infrastructure, and advisory support. The Coast Guard should complement this important investment by providing and sustaining basic seamanship training, boarding team training and equipment, and information sharing.

Domestically, Australia has recently enacted four national security objectives that directly impact and improve the U.S. Coast Guard's ability to form an updated, powerful partnership. First, Australia passed the Maritime Powers Act[13] and then formed and resourced its new Maritime Border Command, which has now reached full operating capability.[14] It also has stood up its Department of Home Affairs, creating a

Petty Officers 2nd Class Mandi Stevens and Chris Parmenter, aviation maintenance technicians from Coast Guard Air Station Barbers Point, Kapolei, Hawaii, sit on the ramp of an HC-130 Hercules airplane to deploy a long range deployable drop kit to a disabled vessel approximately 80 miles off Tonga in May 2017. The air crew was returning from a search and rescue conference in New Zealand and spotted the vessel after being diverted. Coast Guard photo by Petty Officer 3rd Class Amanda Levasseur

domestic joint, inter-agency, maritime governance model that has allowed for significant growth in its maritime governance abilities, pushing their borders further offshore. Finally, Vice President Michael Pence announced in Papua New Guinea in November 2018 that the United States will partner with Australia and the island nation to develop a joint naval base on Papua New Guinea's Manus Island. A naval base in Papua New Guinea, supported by Australia and the United States, will serve as a much needed logistics hub to sustain future deployments across Oceania, and more broadly, the Indo-Pacific region.

For many outside of the region, France may not be an obvious Pacific power, but France has the largest EEZ and is a key ally. Strategically located, French Polynesia is the first stop sailboats must make in their Pacific transit west due to the directional nature of the trade winds. Similarly, the islands of New Caledonia (French) are typically the last stop in Oceania before the final leg to Australia or New Zealand. The French navy is a strong and collaborative partner and regularly conducts highly successful international exercises, IUU fishing, and counter-narcotic patrols in the region. Tahiti boasts the French naval headquarters for the Pacific, and France's new naval acquisitions, multi-mission vessels, including the offshore patrol vessels *Bougainville* in Tahiti and *D'Entrecasteaux* in New Caledonia.[15] Moreover, as a permanent member of the United Nations Security Council, France patrols the South China Sea, conducts freedom of navigation operations, and enforces international laws and norms. Investing in relationships with the French navy is investing in the long term. It has not only re-homeported new ships to the area, but in 2017 also rebuilt its entire pacific naval headquarters facility to boast a modern, new command and control suite.

Partnering with New Zealand is central to relationships, information, and patrol efforts as the country maintains many direct and cultural ties to the Cook Islands, Niue, Tonga, and Samoa through industry, economic, and government. Also, New Zealand is a key partner for Antarctic exploration and regional maritime issues in the Southern Ocean.

New Zealand's 2016 defense white paper outlines significant maritime and defense investments and acquisitions over the next two decades. The New Zealand Defense Forces have also deployed, for the first time, their offshore patrol vessel for near continuous Oceania patrols, specifically in partnership with the Fijian defense forces, which has achieved favorable outcomes. New Zealand has hosted Coast Guard polar ice breakers and been a partner in Operation Deep Freeze, furthering commitments in both Oceania and Antarctic operations.

Fijian sub-Lt. Opeti Enesi, a navigation officer, and an Air Station Barbers Point HC-130 Hercules aircrew fly over the Fijian islands in December 2018. Enesi was acting as a shiprider for the Fiji government during a joint law enforcement operation. Coast Guard photo by Petty Officer 3rd Class Matthew West

Despite New Zealand's smaller size, it brings outsized contributions, credibility, and value to the Pacific Island countries. Their National Maritime Coordination Center is embedded in its Headquarters Joint Forces New Zealand, where all branches of their military work together while simultaneously coordinating with their police, customs, and intelligence arms. This level of interagency partnership has allowed for consistent, reliable, and meaningful informational and operational exchanges with their Pacific Island neighbors.

Partnering with Japan is critical in Micronesia. Here, Japan has donated patrol boats, small boats, and shoreside infrastructure for new vessel berthing, as well as other maritime domain initiatives under its Project for Improvement of Coast Guard Capabilities of the Three Micronesian States. The total granted for the project is $44 million. Three countries in Micronesia—Palau, the Federated States of Micronesia, and the Marshall Islands, all have tiny populations and large EEZs to patrol. They have been working with the Nippon Foundation, the Japan Coast Guard, and the Sasakawa Peace Foundation to improve their maritime policing capabilities. Micronesia continues to be a sub-region within Oceania where Australia and New Zealand look to the United States to lead. Coast Guard Sector Guam conducts many international engagements and operations here, but most are unknown outside of the immediate area. With more capability, Sector Guam could deliver more to achieve U.S. strategic military and diplomatic objectives.

Innovation in the face of limited assets, criticality of partner collaboration, deconfliction of efforts in the region, and increasing demand for Coast Guard presence and security cooperation resulted in the creation of two key initiatives. The Oceania Maritime Security Initiative (OMSI) dually enables the U.S. Indo-Pacific Command (INDOPACOM) to leverage U.S. Navy ships transiting Oceania for maritime law enforcement by embarking a Coast Guard Law Enforcement Detachment, and allows the Coast Guard to leverage Navy vessels for surface coverage and law enforcement platforms. These OMSI deployments also offer opportunities to exercise the Coast Guard's bilateral shiprider agreements to counter IUU fishing.

Through the Pacific Quadrilateral Defense Coordi-

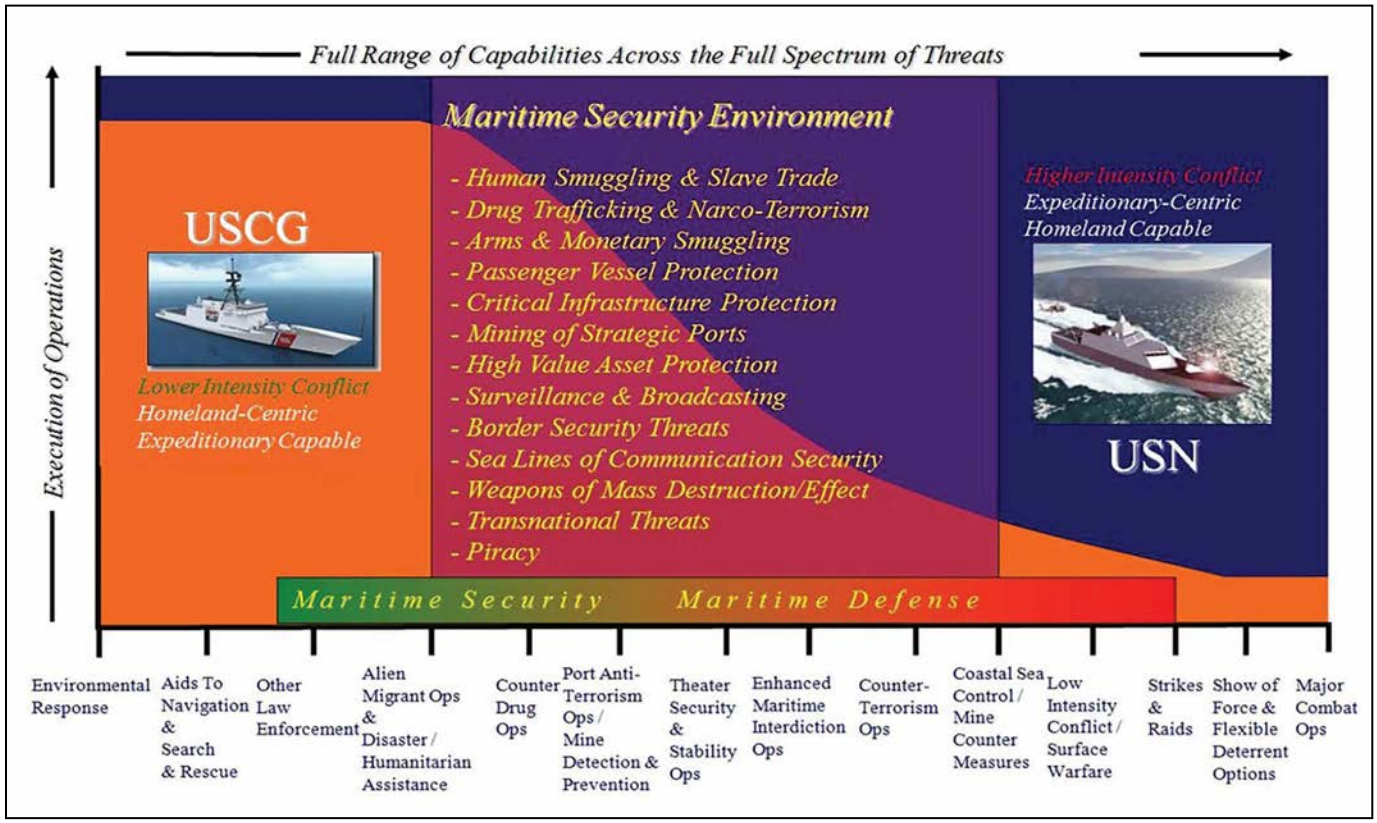
nating Group (Pacific-QUAD), the Coast Guard's experience in multilateral operations is a model for engagement within the Indo-Pacific and a key strategic advantage when competing with revisionist powers. At the September 2018 Pacific-QUAD principals meeting, it was agreed the scope of engagement beyond IUU fishing, to include transnational threats, resource security, and other security areas described in the Boe Declaration, would expand. More recently, at the April 2019 Pacific-QUAD meeting, a framework of action and a road map to success were developed. The Coast Guard would benefit from increased staffing at District 14, Pacific Area, and the Office of International Affairs to support this expanding international engagement.

Increased Coast Guard Presence and Security Cooperation in Oceania

This year, in response to increased strategic demand signals, the Coast Guard demonstrated its commitment to Oceania. The Coast Guard replaced four aging cutters with new national security cutter (NSC) and fast response cutters (FRC) in the port of Honolulu. In the 2020s the port of Apra Harbor, Guam, will also receive three new FRCs. This significant investment in newer, faster, and more capable assets in the Pacific Islands will decrease response times to major events while increasing opportunities for the Coast Guard to meet its partners where they are. The Coast Guard, answering a request for forces from INDOPACOM, also provided critical waterside security for the 2018 Asia-Pacific Economic Cooperation Summit in Papua, New Guinea. In 2019, the Coast Guard covered a Pacific Island partner patrol boat gap between the decommissioning of an Australian-donated Pacific Forum class boat and delivery of the new Australia Pacific Maritime Security Guard class patrol boat. The Coast Guard remains uniquely positioned to support the whole-of-government effort to reaffirm U.S. commitments and partnerships in Oceania.

In the near term, with modest investment by interagency partners, the Coast Guard is postured to provide increased operational support and security assistance. This includes:

- aids to navigation assistance in the compact states
- host regional subject matter expert workshops
- deploying these experts to regional collectives in support of focused operations
- enhance information sharing
- dispatch senior leaders to engage with their regional counterparts
- promote opportunities for qualified regional candidates to attend the Coast Guard Academy
- partner with regional forums and the International Maritime Organization on port security capacity building



Coast Guard graphic

Moreover, for lasting, substantive, and meaningful effect, the Coast Guard should enable consultative maritime legal framework dialogues to identify the jurisdictional and legislative gaps and shortcomings. This is in addition to closing loopholes in the conservation management measures, binding decisions made by a Pacific fisheries commission, to enable prosecutorial effect across the region to counter transnational organized crime and IUU fishing across the region.

In the long-term, with a more substantial investment of resources, the Coast Guard could explore and implement operational and security assistance models that have successfully provided presence and delivered capability in other regions of the world. Operationally, a Patrol Forces Oceania with two to three FRCs operating from forward locations with a shoreside support element, and a multi-rate subject matter expert engagement team would provide significant presence and engagement capacity. The Coast Guard could also consider an Oceania support tender program, using a dedicated Coast Guard cutter that conducts regional engagement, with a combined crew from like-minded partners focused on training regional personnel at sea. A permanent liaison or maritime advisor to the compact states, a rotational presence at the pending Pacific Fusion Center,[16] and a regionally based technical assistance team, designed to assist regional partners with maintenance and logistics would support key lines of effort. Lastly, the Coast Guard would need to increase security cooperation expertise and capacity.

However, increased Coast Guard presence and support for partner capacity-building in Oceania will be a trade-off, and cannot result in decreased Coast Guard presence and focus in the Western Hemisphere. Therefore, the Department of Defense must advocate on behalf of, and if required provide resources to support, the Coast Guard's increased presence in Oceania. The Department of Defense could start with increasing the Coast Guard's defense readiness funding, which has been completely left out of the current investment to restore U.S. military readiness. INDOPACOM, formerly U.S. Pacific Command, and U.S. Southern Command should advocate in the Global Forces Management process for the U.S. Navy to deploy ships in support of the Joint Interagency Task Force South thereby freeing up Coast Guard assets to deploy to the Southwest Pacific. INDOPACOM should transition OMSI from a notion of transiting ships with embarked shipriders to a funded operational authority like the Maritime Security Initiative. Additionally, the Coast Guard, with support from the U.S. interagency, could explore increasing its presence through liaisons, attachés, or advisors in key locations such as the Compact of Free Association States or a regional liaison in Canberra, Australia, or Wellington, New Zealand.

The Coast Guard is an essential instrument of U.S. policy in Oceania, which continues to emerge as a center of gravity in the ongoing great power competition. To be an effective instrument, however, the United States must invest accordingly in Coast Guard capabilities and readiness.

About the authors:

CDR Jeremy Obenchain focuses on security forces capacity building in the Indo-Pacific, in the Bureau of Political-Military Affairs, Office of Global Program and Initiatives. He has served at U.S. Embassy Manila, Philippines; U.S. Naval Forces Central Command; Coast Guard Patrol Forces Southwest Asia; Coast Guard Activities Europe; the U.S. House of Representatives Committee on Homeland Security; and Coast Guard Tactical Law Enforcement Team South. He is a graduate of the Virginia Military Institute.

LCDR Leah Cole focuses on strategic policy for maritime security, crisis management and security cooperation in the Indo-Asia-Pacific region at Daniel K. Inouye Asia-Pacific Center for Security Studies. She has served aboard four cutters conducting a broad range of maritime law enforcement and lifesaving missions. She has also served with Joint Interagency Task Force West, U.S. Indo-Pacific Command; and the Coast Guard's Leadership Development Center, as well as executive assistant to the commander of Coast Guard Atlantic Area. She earned a bachelor's degree from the U.S. Coast Guard Academy, a master's from Florida State University, and has completed Joint Professional Military Education at the U.S. Naval War College.

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U.S. Coast Guard Intelligence

Unparalleled placement and access for the homeland security enterprise

by LT Gianfranco D. Palomba
Intelligence Officer
USCG Sector Upper Mississippi River

As our nation's lead maritime first responder and homeland security agency, the U.S. Coast Guard is in a unique legal and operational position to effectively counter emerging threats in the maritime environment. The Coast Guard also plays a critical role in the collection, analysis, exploitation, and dissemination of intelligence, leveraging both national and law enforcement authorities to do so. Although intelligence-driven operations have very much been a familiar Coast Guard concept since the creation of the Revenue Cutter Service in 1790, a 2002 amendment to the National Security Act of 1947 formally welcomed the Coast Guard into the 17-member U.S. Intelligence Community (IC). Unlike other IC members, however, the Coast Guard occupies a unique armed service and law enforcement space within the national security enterprise of the Department of Homeland Security (DHS). Generally unknown, the legal framework of Titles 10 and 50 of the U.S. Code grant the Coast Guard authority to gain unrivaled placement and access to particularly sensitive intelligence collection opportunities.[1,2] After all, the Coast Guard is known for executing many of the stability and disaster response operations associated with its 11 statutory missions, rather than acting as a unique arm of the IC. Arguably, this allows Coast Guard Intelligence (CGI) professionals to provide the U.S. homeland security enterprise its greatest return on investment. CGI members pair both requisite authorities and honed interagency relationships to specialize in every modern intelligence discipline.

Human Intelligence

In order to meet the executive branch's most pressing national security priorities, the IC charges its members with aligning their mission with overall collection requirements. Human Intelligence (HUMINT) is one arena in which Coast Guard professionals leverage unique advantages relative to fellow IC agencies and collectors. The most storied and well-practiced of all of the intelligence disciplines, HUMINT relies heavily upon common relationship building and interpersonal communication in order to spot, assess, and recruit human intelligence sources. This may sound like skills all Coast Guard personnel intuitively employ on a daily basis, whether in the local community, the workplace, or even at home with family and friends, and this is absolutely true. As intuitive as HUMINT may seem, collector capabilities require exhaustive training and disciplined practice. A good "HUMINTer" understands the role that assumptions and cognitive biases play in decision-making. They often speak multiple languages, have an ability to be both the center of attention and blend into a crowd, and rarely allow emotion to override logic. In essence, HUMINT professionals function well in dynamic and unpredictable situations, maintaining an even keel and focus on collection requirements.

> White-hull diplomacy refers to white-hulled ships, like those of the Coast Guard, representing a less defensive, more accommodating posture than that of grey-hulled war ships.

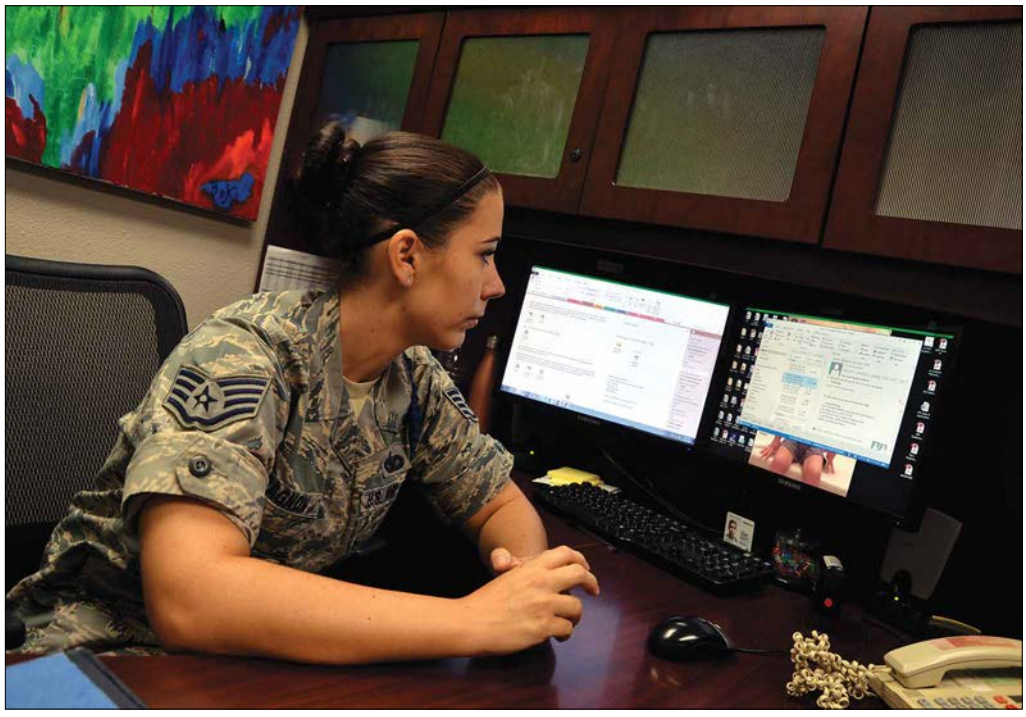
Because of its diverse mission set, the Coast Guard has routine access to foreign ports and interactions with foreign maritime professionals, making it uniquely positioned to report on said interactions as an asset for the IC. Practicing "white hull diplomacy" during foreign engagements allows Coast Guard HUMINT professionals unparalleled placement and access to valuable information ripe for intelligence exploitation. Unlike other IC members, however, intelligence authorities restrict the Coast Guard to overt HUMINT collection. Contrary to clandestine and even covert intelligence collection, overt methods include custodial interviews, consensual information exchanges, and overt imagery collection in the performance of duty. Even counterintelligence professionals in the Coast Guard, whom execute particularly sensitive investigations on invasive foreign-actor

intelligence collection attempts, do so without the protection of plausible deniability or the shield of cover stories. To hone its HUMINT collectors' skills, the Coast Guard routinely sends its members to the Department of Defense's Defense Strategic Debriefing Course at Fort Huachuca, Arizona, as well as several other interagency HUMINT training courses in the national capital region. With their overt surveillance best practices and learned HUMINT tactical strategies, Coast Guard collectors are adaptable in military and law enforcement settings at home and abroad. IC analysts across the 17-member community stress that routine HUMINT collection and the aggregation of overt and voluntarily-provided information is what often provides the greatest insight to both allied and adversarial intentions. Focusing on consensually provided information from foreign attaché officers, vessel captains, international military and law enforcement professionals, and even foreign corporate and think tank leaders allows Coast Guard HUMINTers to play an exclusive role in meeting national security priorities and intelligence requirements.

Signals Intelligence

CGI professionals are also heavily entrenched in the collection, analysis, and exploitation of foreign communications. Known formally as signals intelligence (SIGINT), this national intelligence element discipline involves the real-time surveillance and interception of foreign radio, satellite, and other modern digital communications signals. Given the access that Coast Guard cutters and personnel routinely enjoy, IC signals intelligence practitioners train Coast Guard Intelligence Specialists in foreign SIGINT operations. To augment the National Security Agency's overall foreign SIGINT efforts, the Coast Guard Cryptologic Group boasts a healthy number of Coast Guard Cryptologic Units at various interagency centers across the United States. These units' "SIGINTers" employ specialized equipment and methodologies to provide raw, unevaluated SIGINT information to both Coast Guard operational decision makers as well as fellow IC and military components. With strict U.S. legal authorities limiting collection on U.S. persons, the Coast Guard SIGINT mission focuses externally on foreign communications. Accordingly, Coast Guard SIGINT members often work beyond domestic Coast Guard mission sets to address larger strategic intelligence priorities in direct support of the U.S. National Security Strategy, the U.S. Defense Strategy, and the U.S. Counterterrorism Strategy.[3]

Beyond traditional SIGINT concerns are offensive and defensive cyber warfare issues. As part of U.S. Cyber Command's growing role in the IC and the U.S. national security apparatus, the Coast Guard established Coast Guard Cyber Command (CGCYBER) in July 2013, for the purpose of addressing internal and external cyber threats. Although maintaining a much smaller footprint than Defense Department services and IC agency cyber components, CGCYBER is becoming well-practiced in more than routine information assurance and cyber security lessons learned. It collaborates extensively with the Defense Department's military cyber warfare operations and exercises while keeping eyes on domestic cyber threats in conjunction with DHS' Office of Science and Technology, Cybersecurity and Infrastructure Agency, and the National Protection and Programs Directorate. The mission focus of these agencies extends beyond foreign-deployed military assets and infrastructure. Instead, it ensures the hardened cyber security posture of vulnerable critical infrastructure and key resources against state and



Air Force Staff Sgt. Amber Gagnon, 316th Training Squadron (TRS) military training leader, works at her computer on Goodfellow Air Force Base, Texas, in June 2016. The 316th TRS conducts Air Force, Army, Marine Corps, Navy, and Coast Guard cryptologic, human intelligence, and military training. U.S. Air Force photo by Airman 1st Class Randall Moose

Chief Master Sergeant Michael Ditore, command chief of the 432nd Wing, 432nd Air Expeditionary Wing listens as a 22nd Reconnaissance Squadron mission support analyst explains how he uses maps to collect information for preflight briefings. Ditore met with a sensor operator, geospatial intelligence targeteer, mission support analysts, and a squadron aviation resource manager at Creech Air Force Base, Nevada, in April 2016. Air Force photo by Senior Airman Christian Clausen

non-state rogue cyber actors. With critical Coast Guard leadership roles in U.S. maritime ports of entry, including overall captain of the port authority and responsibilities, CGCYBER professionals work with regional and local partners to advance effective cyber security for major U.S. ports on behalf of government and industry stakeholders. This commitment to preserving economic security, maritime commerce, and cyber threat vulnerability mitigation catapult CGCYBER into a very distinct and invaluable position in the homeland security enterprise.

Geospatial Intelligence

The IC's functional manager for all imagery and geospatial intelligence (GEOINT) is the National Geospatial Intelligence Agency (NGA), one of the most crucially important IC components. Known as the Intelligence Coordination Center's GEOINT department, this relatively small contingent leverages the strategic initiatives and robust resources of IC imagery intelligence and GEOINT capabilities to address all 11 of the Coast Guard's statutory missions.

The relevance of timely and accurate imagery often speaks for itself, but what about less-publicized spaceborne reconnaissance and imagery? These types of images allow the Coast Guard to cue operational assets during narcotics and migrant interdictions, map foreign ports for visiting cutters, track ice flows across vital shipping channels, and provide ground-level developments during natural disaster responses. This doesn't mean that the Coast Guard's dependence on crucial GEOINT products should come across as all take and no give.

To bolster NGA's collection efforts for the IC as a whole, these same Coast Guard operational assets—cutters, aircraft, and Coast Guard personnel—gain the access necessary to forego more expensive and intrusive GEOINT collection efforts.

For example, rather than reallocating surveillance capabilities away from high priority national security and defense priorities, Coast Guard operational assets can collect and disseminate valuable imagery and geospatial information with routine sensor and human-based methodologies. Given the unique access Coast Guard personnel and cutters often enjoy globally, it is able to execute many IC GEOINT priorities during the

course of other formal duties and responsibilities. It is within this wide mission scope that the Coast Guard's GEOINT utility proves instrumental to both intelligence consumers as well as producers.

Open Source Intelligence

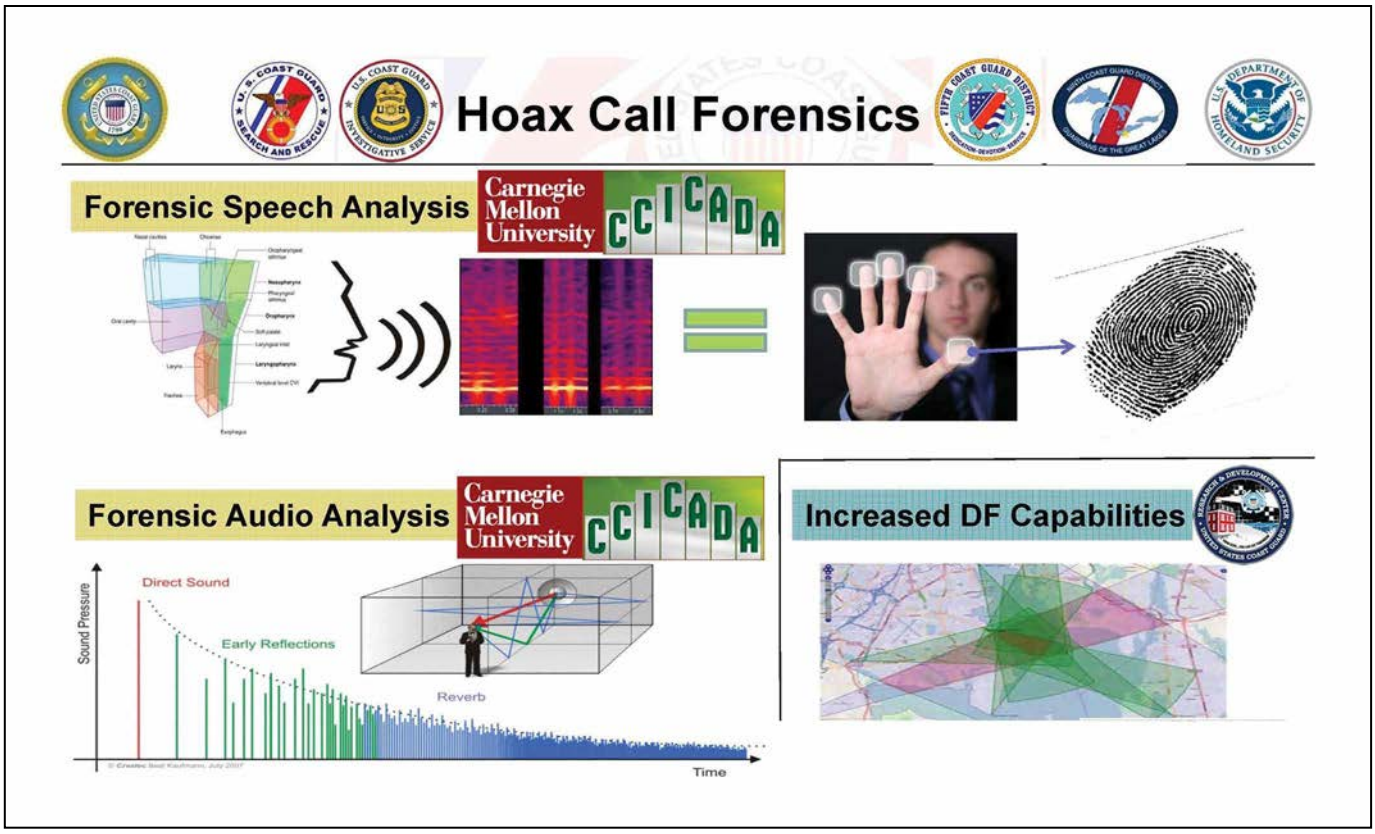
The digital age has ushered in one of the newest intelligence disciplines. Open Source Intelligence (OSINT) leverages electronic and internet-based media and social media sources while respecting the importance of more classic paper literature and audio/video communication methods. Although important to the IC prior to 2011, the Arab Spring that occurred across the Middle East and North Africa is a perfect case study, demonstrating the overwhelming influence crowd-sourced collaboration can have on societal changes.[4,5,6] Common OSINT practices capture publicly available open source information via overt and clandestine means. Although CGI members do not engage in the latter, the organization absolutely incorporates the insights gained through crowd sourcing and social media to their advantage in decision-making. In concert with larger intelligence community efforts, Coast Guard intelligence professionals engage in completely overt OSINT collection and analysis with the use of advanced digital technology and methods, including social media aggregator software. Commercial off-the-shelf social media aggregators allow analysts to geo-reference social network posts, employ keyword searches to filter for threatening language and imagery, and translate foreign language social network videos or imagery in real-time to best position resources efficiently.

A Coast Guard sector commander with limited operational assets to cover large geographic areas would appreciate the ability to best position small boats and cutters based on real-time information. Similarly, a Coast Guard helicopter or aircraft could respond more quickly to a tweet emanating from a disabled sailboat adrift offshore if it could be geo-referenced.

With assistance from interagency partners, and technology from the Coast Guard Research and Development Center, Coast Guard Investigative Service has carried out specific evidence collection and criminal prosecution with the assistance of more nuanced OSINT collection. This includes voice and audio forensics. Although still rapidly-developing and often subject to "fake news" denial and deception tactics, OSINT's power and relevance as an intelligence discipline has not gone unnoticed or unpracticed by CGI and operational decision makers.

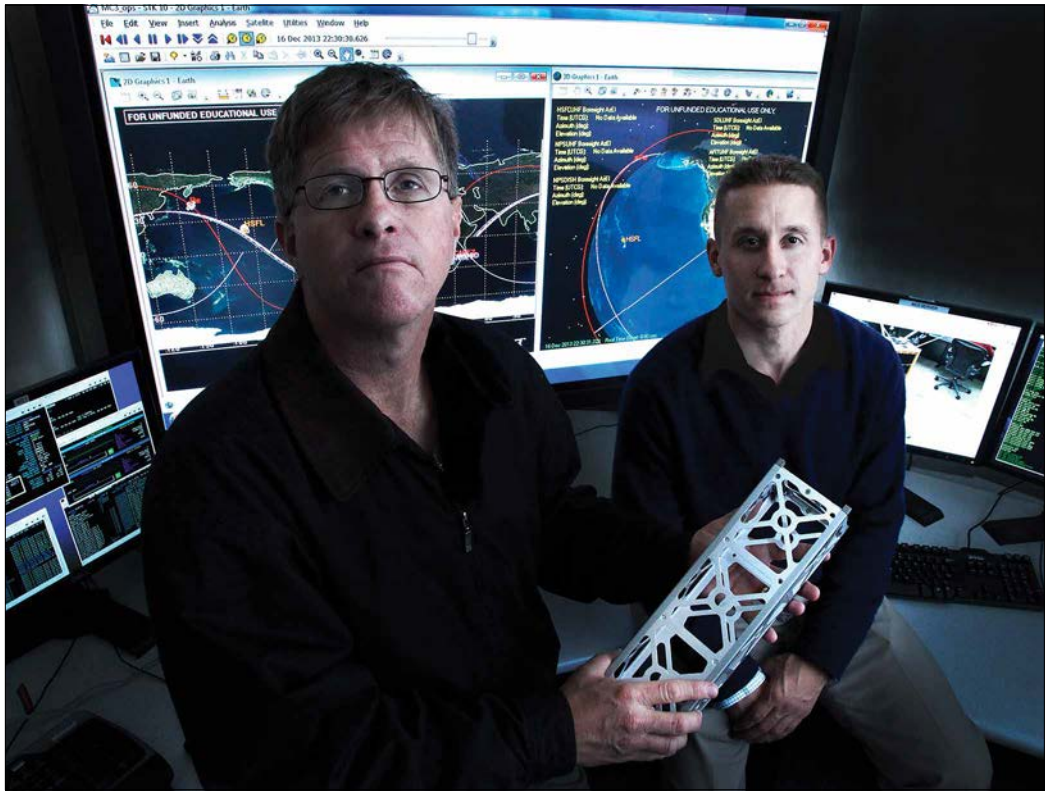
Future Challenges

Senior Coast Guard and IC leadership continually stress



Coast Guard Research and Development Center and Carnegie Mellon University cooperate on voice and audio forensics to create an audio "fingerprint" of callers on suspicious maritime search and rescue emergency calls. Coast Guard Research and Development Center graphic

the importance of joint, intelligence-driven operations as critical to separating us from our adversaries. It is this integration and the ability to employ domestic law enforcement authorities, and foreign intelligence collection capabilities that enables CGI to assume a critical role among the 17 members of the IC. Executing 11 statutory missions often requires reliance on intelligence collection, analysis, exploitation, and dissemination beyond what the service can organically produce. What the Coast Guard brings to the IC in return for this tactical, operational, and strategic IC support is the unique access afforded to the Coast Guard as not only a maritime first responder but a military service. Although paling in staff numbers when compared to larger IC agencies, CGI professionals are extremely well-trained, highly adaptable, and carry a unique number of authorities and access. They also understand the intimate connection between analyst and operator necessary to execute missions. This is important, as emerging technological advancements employed by both state and non-state actors is fundamentally changing the threat landscape. The CGI is evolving and even leading the charge for DHS agencies attempting to address non-traditional homeland threats. Coast Guard acquisition professionals are working closely with CGI to mitigate the corporate espionage, technology theft, and cyber vulnerabilities associated with current and future major acquisitions like the Offshore Patrol Cutter. Intelligence Coordination Center analysts and research and development scientists have continued to partner with both government and private industry big data analytics representatives to assess machine learning, artificial intelligence, and perhaps future quantum computing advantages for Coast Guard mission use. The Coast Guard boasts a team that has paired with DHS science and technology to launch tiny cube satellites, or "cube sats," and bolster the Coast Guard's intelligence, surveillance, and reconnaissance options in the future. With a renewed focus on "intelligence-driven operations" and continued fiscal constraints, CGI must continue to foster interagency relationships, develop its human capital, and maintain analytical focus on emerging homeland threats to the American public.



Naval Postgraduate School (NPS) Research Associate Brian Wood (left) and Marine Corps Captain Clayton Jarolimek inside NPS' Mobile CubeSat Command and Control center in 2013. Naval Postgraduate photo by Javier Chagoya

About the author:

LT Gianfranco D. Palomba is currently an intelligence officer at Sector Upper Mississippi River and recent graduate of the National Intelligence University's Master of Science of Strategic Intelligence program. Previous assignments include intelligence officer, Patrol Forces Southwest Asia, project manager, Coast Guard Research and Development Center, two Tactical Intelligence Element, Pacific Joint Interagency Task Force South patrols in the Eastern Pacific theater, and direct analyst support to the Coast Guard military and police attaché at the U.S. embassy in Bogota, Colombia.

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Playing the Away Game

Securing the homeland from afar

by CAPT Mark Gordon
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Petty Officer 2nd Class Erica Thurman
Operations Specialist and CIC Team Leader
U.S. Coast Guard Cutter Hamilton

As this article was being written, Coast Guard Cutter *Hamilton* was thousands of miles from its Charleston, South Carolina, home. Her 148-person crew, three pursuit boats, and airborne use-of-force capable helicopter were on patrol in the Eastern Pacific Ocean, roughly more than 2,000 miles from our nearest land border

Hamilton, commissioned in December 2014, is one of the newest 418-foot national security cutters. The national security cutters replace the 1960s-era 378-foot Treasury Class high endurance cutters and offer an exponential increase in capabilities. The cutter is currently part of a joint force consisting of cutters, Navy ships, allied warships, and aircraft dedicated to securing the homeland by combating transnational criminal organizations where they are most vulnerable, at sea far from our borders.

In a span of 16 days during *Hamilton*'s winter 2018 patrol, she averaged an interdiction every three days, detained 21 suspected smugglers, and seized 4.7 tons of cocaine. This tempo is not uncommon for any cutter or ship operating in the Eastern Pacific. More important than the amount of drugs seized, however, is that criminal organizations never received the proceeds from the sale of their illicit goods. Those proceeds are often used to sow further violence and corruption along the path they travel from their South and Central American origins to our southwest border. In addition to denying these criminals resources and influence, each interdiction also destabilizes these illicit networks, and provides information used to identify additional targets and criminals higher in the organization.

The adversary is networked, ingenious, and ruthless, but they are most vulnerable where the U.S. Coast Guard is the most effective. The Coast Guard's unique and broad law enforcement authority on the high seas, and in some cases, under a bilateral agreement, within another nations' territorial seas make it highly effective at countering threats to the homeland far from our shores. This also makes the Coast Guard a sought out and highly effective partner with many nations, not just in our hemisphere, but throughout the world.

Admiral Karl L. Schultz, then-Coast Guard Atlantic Area commander, speaks at a press event in December 2016, at Port Everglades Cruiseport in Fort Lauderdale, Florida. The crew of the Coast Guard Cutter *Hamilton* offloaded approximately 26.5 tons of cocaine worth an estimated $715 million. Coast Guard photo by Petty Officer 3rd Class Eric Woodall

The United Nations Office on Drugs and Crime estimates that illegal narcotics constitute the number one money making enterprise for transnational crime.[1] Through these illicit proceeds Transnational Criminal Organizations (TCO) are able to corrupt officials, dominate communities, and control their operating environment especially in Caribbean and Central American countries.[2] Corruption is surely the single most concerning destabilizing factor. Felipe Calderon, former President of Mexico, attributed the pervasive problems

of Mexico and in other developing nations to low institutional strength that "… allows criminals to dominate law enforcement agencies and use them to fight against other groups, leaving thousands of victims. Institutional weakness leads to impunity, and impunity is exacerbated as the size of the problem grows. The vicious circle creates an unbelievable spiral of violence …"[3] Additionally, the increasingly complex pathways, routes, and networks developed to infiltrate our borders and gain access to our communities allow traffickers to smuggle other things as they become profitable. These illicit pathways are clearly something very concerning to the safety and security of the United States and the integrity of the maritime transportation network. The Mexican cartels have shown these pathways to be very profitable, employing extortion or kidnapping to further erode society and take advantage of the flood of people attempting to flee Central America to the United States.[4]

A member of Costa Rica's Policia Control de Druga shakes hands with CAPT Mark Gordon, commanding officer of the Coast Guard Cutter *Hamilton*, following the crew's successful interdiction of a Costa Rican-flagged fishing vessel. Coast Guard photo by LTJG Kiana Kekoa

Each interdiction or case is different but shares one common factor: It is not easy finding these smugglers on a vast ocean. The areas of the Eastern Pacific and the Caribbean are huge, and even with the increased capability of *Hamilton*, her sister ships, patrol aircraft, unmanned aerial systems, and other assets, the challenge has been likened to patrolling the entire state of California or, in some cases, half of the United States with just a few patrol cars. In addition to the immense geography of the oceans, TCOs are experts in stealth, hiding in plain sight by blending into legitimate traffic or commerce, using hidden compartments that can take weeks to locate, or all of the above. Despite this, in an average year, the Coast Guard seizes three times more cocaine at sea than all other U.S. agencies combined. Despite record seizures for the last few years, the availability of cocaine and cocaine related deaths in the United States are increasing.[5] While we will never be able to completely eliminate the supply of illicit products, more resources like cutters, aircraft, agents, and ships, deployed where they can be the most effective may help to stabilize or begin to reverse this trend. Reducing the pressure on our borders and our neighbors in Latin America is likely an added bonus.

Two recent *Hamilton* cases highlight how not only the United States, but our partners in Central America and the Caribbean, are more secure through the actions of the dedicated interagency and international team working far from home. On November 14, 2018, a Maritime Patrol Aircraft sighted a suspicious fishing vessel operating in a known drug trafficking area. *Hamilton* launched its MH-65 Dolphin Helicopter and a 35-foot long range interceptor boat to relocate the F/V *Miriam*, which was claiming the Costa Rican flag. During the right of approach questioning, there was reason to suspect this vessel of illicit activity. *Hamilton* shifted its tactical control from Joint Interagency Task Force South, responsible for detection and monitoring, to Coast Guard District 11, responsible for interdiction and apprehension, in order to conduct a potential law enforcement action. District 11 enacted the bilateral agreement with Costa Rica, entered into many years ago under provisions recommended within Article 17 of the 1988 United Nations' Convention Against Illicit Traffic in Narcotics and Psychotropic Substances. It was under those provisions a full law enforcement boarding was authorized on behalf of the Costa Rican government.

After 36 hours of thoroughly searching the vessel an ingeniously concealed compartment was discovered and 1,700 kilos of cocaine removed. On behalf of the Costa Rican government, the four crew were detained along with all related evidence. The crew, a thorough case package, and non-drug evidence were turned over to the Costa Rican authorities during a port call to Golfito, Costa Rica. In conjunction with the turnover of the case package, an engagement was held onboard with several key members of the government of Costa Rica, to discuss expanding opportunities for further cooperative success.

The F/V *Miriam* case highlights the importance of our partners and how the efforts of cutters like *Hamilton*

can bolster such relationships. Using Costa Rica as just one example, in fiscal year 2018 Coast Guard District 11 enacted the bilateral agreement between the United States and Costa Rica 33 times, resulting in the seizure of more than 7.9 metric tons of cocaine, 10,000 pounds of marijuana, and 13 vessels. In addition, Costa Rica provided support for U.S. counter criminal network efforts with 90 aircraft based out of various sites throughout the country and 45 Coast Guard port calls. With the *Miriam*'s 1.7 tons of cocaine, Costa Rica surpassed its previous national record of 30.1 metric tons of cocaine seized in a year. Also, a valuable partner on the water, the country's Guardacostas conducted numerous drug interdictions after receiving Libertadors, 110-foot cutters previously belonging to the Coast Guard. For example, on November 10, 2018, a Libertador crew detected and intercepted two suspicious vessels, seizing 1 ton of cocaine and six smugglers. That case was one of five in a patrol of less than 2 months that culminated in the seizure of an estimated 9,460 pounds of cocaine ultimately destined for American soil.

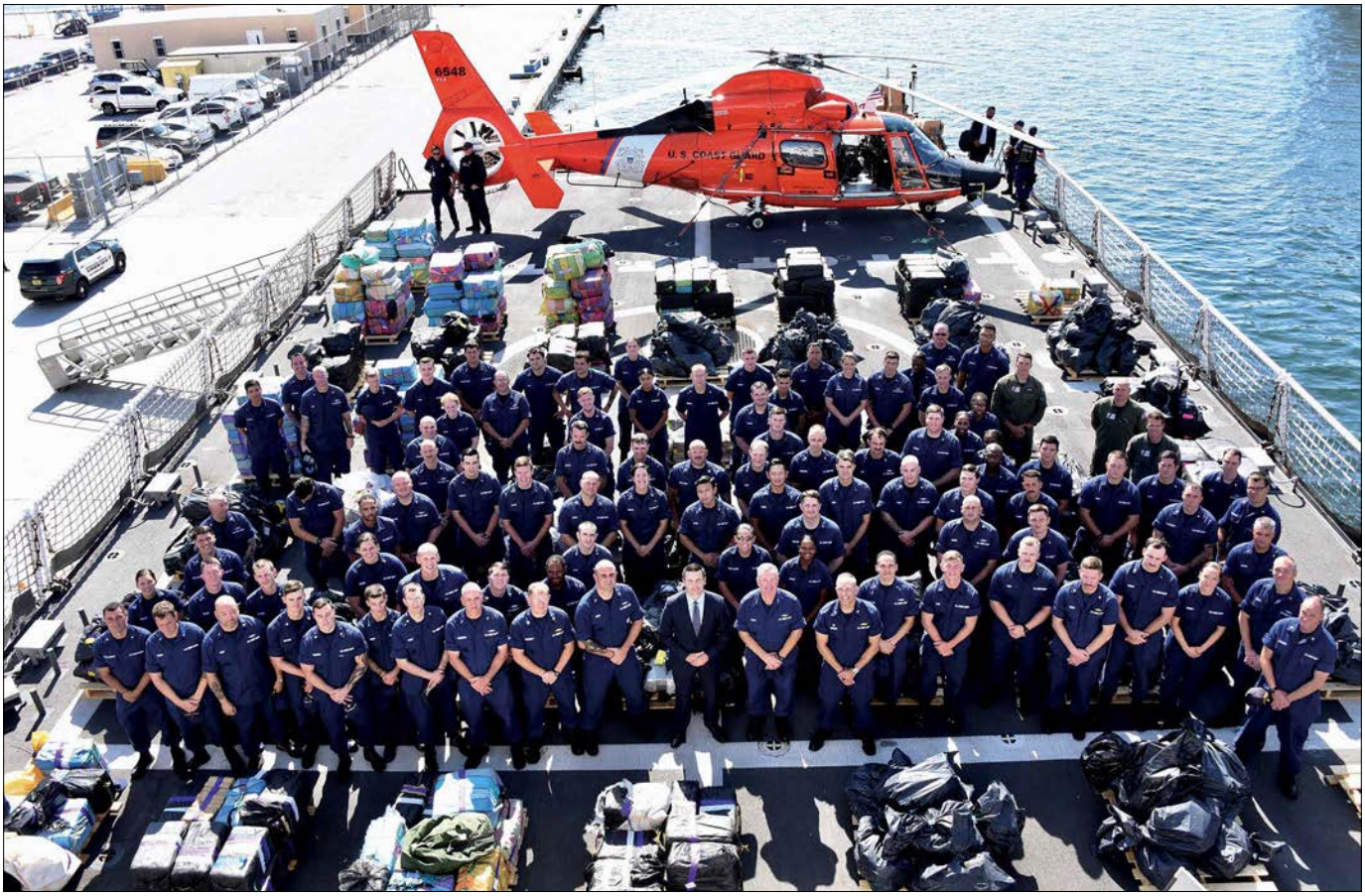
Our work with Costa Rica is just one example of how powerful this cooperation can be. The United States has established 34 different bilateral agreements with Caribbean, South American, and Central American nations. These agreements have allowed the Coast Guard to exercise its broad authorities to stop, board, and search on the high seas and, in some cases, on the territorial seas of those nations participating in a bilateral agreement when reasonable suspicion exists. No other U.S. agency has comparable authority.

Coast Guard Cutter *Hamilton* transits the Delaware River en route to Philadelphia in May 2016. The *Hamilton*'s primary missions include law enforcement, migrant interdiction operations, counternarcotics, living marine resources, search and rescue, defense operations, and homeland security. Coast Guard photo by Petty Officer 3rd Class David Micallef

It is estimated that 90 percent of the cocaine bound for the United States is still moved via non-commercial means like the *Miriam*. However, among those means that include fishing boats; sailboats; self-propelled, semi-submerged vessels; and low profile vessels, the use of go-fasts is still the preferred conveyance for TCOs. Typically 35 feet or less in length, they are painted to blend into the seas, made of fiberglass, have poor radar cross sections/returns, and are extremely difficult to spot on the high seas.

During a recent patrol, USCGC *Hamilton* interdicted two go-fasts traveling together. They were located with an embarked interdiction squadron helicopter while flying a search pattern in a common smuggling route. Upon detection and determination that these were stateless go-fast vessels with contraband on board, they were stopped with airborne use of force. Following closely behind the helicopter, *Hamilton*'s boarding teams were able to quickly gain positive control of each vessel, while a third small boat and boarding team from *Hamilton* began to collect contraband that was jettisoned during the short chases. It was later determined that these smugglers were associated with a known TCO. Evidence, as well as information gathered, will support future legal action, whether that is more interdictions or the development of extradition warrants as the appropriate U.S. agencies' investigators build cases against the organizers. As was revealed during the El Chapo trial, Coast Guard interdictions often provide significant pieces of evidence used to further develop criminal cases and convict criminals.

The Coast Guard's unique ability to enforce U.S. laws on the high seas, the increased capability of its newest platforms, and the Coast Guard's proven relationships with domestic and foreign partners are bringing tremendous capability to bear against the growing threat of transnational criminal organizations. While we will never have enough resources to completely stop the supply of illicit contraband, the dedicated men and women of the Defense and Justice departments and the Department of Homeland Security, with the interagency cooperation, are making their efforts count far from our borders. The cases discussed here are just a few examples of how playing the away game allows



Then-acting Secretary of Homeland Security Kevin McAleenan, RADM Peter Brown, and Coast Guard Cutter *Hamilton* crew stand on the flight deck in Port Everglades, Florida on June 6, 2019. In front of them sits 26,000 pounds of interdicted cocaine and 1,500 pounds of interdicted marijuana. Coast Guard Photo by Petty Officer 3rd Class Brandon Murray

Coast Guard Cutter *Hamilton*'s crew rehearses for the upcoming commissioning ceremony at Union Pier in Charleston, South Carolina, in December 2014. Coast Guard photo by Senior Chief Petty Officer Sarah B. Foster

for targeting these criminal organizations at their most vulnerable points, where their illicit goods are most concentrated, and where their losses will have the biggest impact. Securing our homeland far from our borders also has the added benefit of improving our neighbors' security, increasing their ability to address their own security concerns, and ultimately reducing problems on our own borders.

About the authors:

A career cutterman, CAPT Mark Gordon served aboard five cutters and one Navy destroyer. His most recent staff assignment was as chief of law enforcement for the Coast Guard District. He is currently the commanding officer of USCGC Hamilton.

Petty Officer 2nd Class Erika C. Thurman has served aboard three cutters including the previous USCGC Hamilton *(WHEC 715) and the current USCGC* Hamilton*, completing eight deployments from the Bering Sea to the Caribbean Sea and everything in between. She has been nominated for Women In Defense Military Woman of the Year Award, but finds the greatest joy in the relationships gained while in uniform.*

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The Coast Guard's Challenges in the Arctic

Protecting the North

by LT Amy Gayman
Marine Inspector
U.S. Coast Guard

The Arctic is a desolate, pristine region of formidable ice, freezing temperatures, and an abundance of untapped natural resources. For centuries, this area was impenetrable and largely unnavigable by commercial traffic, but in the last decade, an unprecedented seasonal retreat of sea ice has opened water channels. Still, few ice-capable tank and cargo ships are conducting cargo operations in the Arctic without the assistance of vessels known as 'icebreakers,' ships which use their own bulk and hull design to break ice several feet thick. Yet these new passages present important access opportunities to transit the Arctic. As an Arctic state, the United States is dedicated to structuring and implementing the 2013 National Strategy for the Arctic Region (NSAR) through a variety of government agencies and military branches for improved domestic and foreign partnerships. However, the United States maintains only two icebreakers capable of Arctic operation, which are operated by the Coast Guard. The Coast Guard coordinates missions to the Arctic with these critical assets on behalf of the United States, and develops its own Arctic strategy to support national objectives. The Coast Guard's presence is therefore paramount in the Arctic to reduce operational risk, enforce vessel safety, and uphold U.S. sovereignty and national interests, including the Arctic territorial seas and exclusive economic zone (EEZ).

Arctic States

Arctic States—the United States, Russia, Canada, Norway, Finland, Sweden, Iceland, and Denmark—are permanent members of the Arctic Council, claiming territory north of the Arctic Circle, and representing competitive interests in the Arctic's natural resources.

Analysis of USCG Icebreaker Capabilities

The Coast Guard maintains more than 100 cutters for a variety of missions within U.S. jurisdictions and internationally, including a fleet of seagoing buoy tenders, icebreaking tugs, and a seagoing buoy tender breaker capable of domestic icebreaking operations. However, the service currently only operates two vessels capable of operations in significant Arctic sea ice, Coast Guard Cutters *Healy* and *Polar Star.* These cutters, both homeported in Seattle, assist in Coast Guard missions and are highly committed to operations in the Arctic and Antarctic regions. Commissioned in 2000, *Healy* is the largest Coast Guard cutter. At 420 feet long and 16,000 tons, *Healy* can continuously break ice up to four and a half feet thick at 3 knots, or up to 10 feet of ice when ramming or backing. Commissioned in 1976, *Polar Star* is the Coast Guard's only heavy icebreaker. At 399 feet in length, *Polar Star* uses its 13,000-ton bulk to break up to six feet of ice at 3 knots, or up to 21 feet of ice when ramming or backing. Although this capable cutter is a valuable asset in a heavy ice environment, it is more than 10 years past its intended 30-year service life.[1]

While the *Healy* assists researchers in the Arctic every winter, *Polar Star* is otherwise occupied in the Antarctic region. Antarctica's primary U.S. research facility, McMurdo Station, is completely dependent on annual supply runs to remain operational. However, commercial resupply ships cannot break through the sea ice surrounding the station without the assistance of *Polar Star*'s icebreaking capabilities. This assistance is incorporated into the recurring annual Operation Deep Freeze, which is essential to keeping McMurdo Station open year-round. Deep Freeze is part of a joint military mission that has supported the National Science Foundation for the last 63 years.[2]

Healy and *Polar Star* perform a multitude of other national statutory missions within the Coast Guard. In addition to icebreaking, they perform search and rescue, marine safety, aids to navigation, fisheries law enforcement, marine environmental protection, ports, waterways and coastal security, defense readiness, and other law enforcement.[3] With these two icebreakers'

A group of scientists and engineers from Coast Guard Cutter *Healy* deploy an ice tethered profiler on the Arctic ice about 350 miles northeast of Barrow, Alaska, in September 2018. The profiler is a device that moves up and down a cable below the ice surface and measures temperature, salinity, depth and current. Coast Guard photo by Senior Chief Petty Officer NyxoLyno Cangemi

operational reliability declining in their remaining service life, a newer generation of ice-capable surface assets is necessary, not only to cover the required mission sets, but to represent the U.S. national security interests in the Arctic. From the Coast Guard's perspective, U.S. national security in the Arctic is enabled by asset presence and made up of a combination of safety, stewardship, and sovereignty interests. These interests stem from the same national statutory missions, and ensure the physical protection of mariners, enforcement of domestic and international laws, and economic security on the waterways.

USCG Arctic Operations

The Coast Guard has committed cutters, aircraft, and personnel in support of Operation Arctic Shield since 2009. A year-round Coast Guard operation based in Juneau, Alaska, Arctic Shield is designed to improve maritime domain awareness, increase vessel safety, enhance preparedness, prevention, and response capabilities, as well as educate communities. This initiative experiences an operational surge between May and October. Assets deploy to Forward Operating Location Kotzebue, Alaska, a critical location that allows units to provide vital search and rescue operations in and offshore of Alaska's North Slope region. Coast Guard personnel are also instrumental in presenting information on the state-driven program "Kids Don't Float," which seeks to reduce the high rate of drownings amongst children by providing critical life jacket safety and donning demonstrations.[4]

The Coast Guard uses *Healy* as a platform for scientists to collect vital Arctic data—a separate initiative from Arctic Shield—boasting five laboratories in over 4,200 square feet with room on board for up to 50 scientists. On its 2018 patrol to the Arctic, *Healy* crew members assisted scientists from the Applied Physics Laboratory at the University of Washington (Seattle) to deploy and retrieve research equipment on behalf of the Office of Naval Research's Stratified Ocean Dynamics in the Arctic initiative. These weather buoys and autonomous underwater vehicles transmit bathymetric data over a year-long period, which is used to predict future ice coverage in the Arctic.[5] These annual research expeditions are critical to forecasting future Arctic conditions and would not be possible without *Healy*'s icebreaking capabilities.

Future Arctic Routes

For several months during the year, retreating ice in the Arctic presents new trade routes for commercial shipping

Coast Guard Petty Officer 3rd Class Shannon Eubanks loads a shotgun about 715 miles north of Barrow, Alaska, in October 2018. Eubanks was stationed aboard Coast Guard Cutter *Healy* as a member of the ice rescue team and used a shotgun while standing polar bear watch on the ice. Coast Guard photo by Senior Chief Petty Officer NyxoLyno Cangemi

Coast Guard graphic

companies and Arctic states. This seasonal change, witnessed over the last decade, has major implications in the shipping world. Open Arctic passages can provide faster and cheaper routes between the Atlantic and Pacific Oceans via the Northwest Passage or Northern Sea Route instead of using traditional travel methods through the heavily trafficked Panama or Suez Canals.[6] However, these new Arctic routes remain precarious to transit, fraught with ice hazards, and require routine icebreaking for the safe passage of large, unreinforced vessels.

In December 2018, the Coast Guard announced a port access route study for the Alaskan Arctic Coast that was open for public comment in the *Federal Register* until September 2019. This study aimed to understand the requirements for Arctic waterways to remain passable and safe by analyzing current and recommended vessel patterns and routes for new Arctic passages. The outcome of this study will likely result in future rulemaking or international regulatory action as the waterways are outlined and charted. As waterway traffic increases, the possibility of traffic separation schemes or other routing measures, to ensure safe waterway navigation, similarly increases. Although consistent travel through Arctic passages may not likely be well-established for many years, it will be prudent to identify all waterway requirements for implementation well ahead of expected shipping traffic.[7]

USCG Arctic Strategy

In May 2013, the Coast Guard released its Arctic Strategy to lay the groundwork for the next decade of work in the region and subsequently issued the Arctic Strategic Outlook in April 2019, four years earlier than planned. The 2019 Arctic Strategic Outlook expands on objectives identified in the Coast Guard's 2013 Arctic Strategy and addresses recent environmental, economic, and competitive trends in the region. Despite projected outcomes and a "sky is falling" mentality amongst competing Arctic States, the Coast Guard is instead focusing on what the service can and should do to support the NSAR in the coming years. Recapitalized ice-capable surface and aviation assets are critical requirements to promote safety, security, and stewardship in the Arctic, and Congress recently appropriated $655M to fund one new polar security cutter with heavy icebreaking capabilities. This funding development will provide the Coast Guard, and the nation, a greater opportunity for achieving its Arctic mission.[8] Concurrently, Coast Guard leadership looks to the next step of its Arctic Strategy implementation: Discussion of the future in the Arctic with foreign and domestic partnerships.[9,10]

The 2019 United States Coast Guard Arctic Strategic Outlook presents three key lines of effort for future Arctic development:

- Enhance capability to operate effectively in a dynamic Arctic
- Strengthen the rules-based order
- Innovate and adapt to promote resilience and prosperity

These lines of effort provide the means by which the Coast Guard will make progress in the Arctic. The first objective speaks to the need for investments in ice-capable assets and high-latitude communications, while establishing awareness and understanding of the Arctic domain. The second objective underscores the need to provide leadership in the Arctic domain across multiple forums including domestic, public, and private sectors; international organizations like the Arctic Council, International Maritime Organization (IMO), and Arctic Coast Guard Forum; and state, federal, and tribal partnerships. This essential networking will support the nation's Arctic priorities to uphold global sovereignty while offsetting threats from competitors. The third objective requires the Coast Guard to interact with stakeholders to identify the capabilities necessary to manage risk and safeguard American villages and seasonal workers in the Arctic.[11]

The Arctic Strategic Outlook is also aligned with the NSAR's supporting objectives. These three lines of effort demonstrate national intent to advance U.S. security interests, pursue responsible Arctic region stewardship, and strengthen international cooperation.[12] Additionally, the outlook articulates the need to support Arctic allies and partners to ensure/facilitate continued peaceful operations and mutual respect for the Arctic region. From the mindset of enforcement, the Coast Guard looks to be a leader in establishing a rules-based international order to help keep the Arctic conflict-free, while enforcing international laws and shipping regulations. Similarly, the IMO adopted the Polar Code in 2014, which dictates safety regulatory requirements for vessel operations within Arctic waters. Meanwhile, the Air Force and Navy are also seeking ways to expand on opportunities to contribute to the nation's Arctic vision and are developing their own strategies.

U.S. military services are supporting the NSAR and generating interest and future investments to protect U.S. rights in the Arctic. Navy submarine forces have conducted under-ice operations in the Arctic for more than 70 years "in support of inter-fleet transit, training, cooperative allied engagements, and routine operations," and to increase environmental familiarization through its five-week biennial ice exercise.[13] However, Navy surface forces are ill-suited to withstand the challenging Arctic conditions. Despite this shortcoming, the Secretary of the Navy emphasized the necessity to understand environmental conditions north of the Arctic Circle to better prepare for future deployments. In 2018, the Navy sent the USS *Harry S. Truman* Strike Group to the Norwegian Sea in support of NATO Exercise Trident Juncture to experience challenging weather conditions and ice hazards. Additionally, the Navy plans to reopen a naval air facility in Adak, Alaska, to oversee operations in the vicinity of the Aleutian Chain, while the Air Force is upgrading it's northern most U.S. base in Thule, Greenland.[14,15,16]

Peter Koski connects a cable to a buoy on the ice about 715 miles north of Barrow, Alaska, in October, 2018. Koski was an engineer aboard Coast Guard Cutter *Healy* in the Arctic deploying sensors and autonomous submarines to study stratified ocean dynamics and how environmental factors affect the water below the ice surface for the Office of Naval Research. Coast Guard photo by Senior Chief Petty Officer NyxoLyno Cangemi

Competing Arctic States

The Coast Guard requires a drastic upgrade in its icebreaker fleet to maintain a capable U.S. presence amongst the many international icebreakers from the seven other Arctic States all with competitive interests in the Arctic's natural resources. There are mining opportunities for gas, oil, and minerals, in addition to using shipping passages that reduce transit times and fuel costs. When compared with Russia's more than 60 icebreaking vessels, Norway's 11, and China matching the U.S.'s two icebreakers, America's dire icebreaking capability gap comes into focus. It is therefore paramount the Coast Guard build new ice-capable surface assets or risk not meeting statutory and national requirements.

The Coast Guard statutory mission set is vital to the safety, security, and stewardship of the United States' territorial seas and EEZ. Emphasizing the Coast Guard's need for new assets with these capabilities, Commandant

of the Coast Guard, ADM Karl Schultz, officially reclassified the new icebreakers as "polar security cutters." This new title stresses the need for vessels that cover all mission sets, but most importantly represent U.S. national security interests in the Arctic.[17] ADM Schultz aspires to build six new polar security cutters by 2029, but for now, only one construction project is contracted for build. This new polar security cutter plan is justified not only to safeguard the nation's Arctic interests, but to uphold U.S. sovereign rights and support Coast Guard missions.[18,19,20] Should the Coast Guard not be able to fulfill its statutory requirements, a foreign country could claim responsibility for maintenance of new trade routes and search and rescue operations and threaten U.S. sovereignty in the region.

Of principle concern to the United States in the Arctic region is Russia. Russia poses a major concern from an economic and political standpoint with the largest fleet of icebreakers and approximately 50 percent of the Arctic coastline. Russia operates 27 military bases north of the Arctic Circle and recently outfitted its newest military outpost, the Kotelny base, with defense missile systems capable of operating in temperatures of -50 degrees Celsius. The Northern Sea Route falls within Russia's EEZ and is one of only two trade routes to transit through the Arctic; a route already being used by foreign shipping companies. However, Russia now requires a 45 day notice for foreign transits, a Russian pilot to navigate ships, and an increased transit toll. These considerable economic pressures stemming from Russia have the potential for increasing the country's overall grip of the Arctic.[21]

Coast Guard Petty Officer 1st Class Lisa Densmore stands guard about 350 miles northeast of Barrow, Alaska, in September 2018. Densmore was a crew member aboard the Coast Guard Cutter *Healy* and was armed with a rifle to protect crew members and scientists on the ice from polar bears. Coast Guard photo by Senior Chief Petty Officer NyxoLyno Cangemi

China will be another emerging Arctic competitor. Although this non-Arctic State does not have any Arctic territory, environmental and economic reasons prompted the country to proclaim the region a strategic priority. After building its first research base on the Norwegian island of Spitsbergen in 2004, China's Arctic Yellow River Station oversaw eight scientific missions in the Arctic Sea through 2017. From recent Arctic expeditions, China is taking measured steps to gather climate and resource data and leverage it for political and economic advantage. After a failed attempt to purchase an abandoned naval base in Greenland in 2016, China is also seeking investments in oil, gas, and mineral industries in the Arctic to better diversify their energy sources while developing Arctic ports for future use. Also troubling is China's goal to establish the "Polar Silk Road" for Chinese commercial ships using Arctic routes, like the Northern Sea Route, in order to transport their cargo. This route from Europe to Asia cuts shipping times by 40 percent compared to using the Suez Canal. It also reduces the country's necessity to use routes in the South China Sea, including the Strait of Malacca, with considerable U.S. naval presence. With extensive scientific research, funding for building new icebreakers, and its interest in Arctic resources, China is posturing to become a major player in the Arctic region.[22,23,24]

Conclusion

The Arctic is a challenging environment: physically, economically, and politically. Despite the significant retreat of seasonal ice throughout the last decade, commercial ships attempting to transit through new trade routes in the Arctic will continue to require icebreaking services for the foreseeable future. Additionally, competitive Arctic and non-Arctic states are moving into the Arctic region to exploit natural resources for economic gain. Therefore, the Coast Guard continues to engage national and international partnerships to address challenges in the region. However, the Coast Guard must replace its venerable icebreakers with new polar security cutters if the service is to continue supporting national Arctic objectives and protect U.S. sovereignty amidst growing international competition.

In implementing its Arctic Strategy, the Coast Guard is working on behalf of the United States to prioritize the services' Arctic mission set. This will support its primary missions of safety, security, and stewardship within the Arctic and enhance cooperation with Arctic States. The long-term goal is a safe, secure Arctic that is in political, economic, and environmental balance.

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Crew members of Coast Guard Cutter *Polar Star* participate in various activities on the ice about 13 miles from McMurdo Station, Antarctica, in January 2018. Coast Guard photo by Fireman John Pelzel

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Strategic Partnerships

Foreign Governments and Securing the Maritime Transportation System

by LCDR Steve Barry
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In 2002, Congress passed the Maritime Transportation Security Act (MTSA) in response to the 9/11 terrorist attacks. This comprehensive security legislation, intended to protect the U.S. and the global maritime transportation system, also directed the Department of Homeland Security (DHS) to assess anti-terrorism measures at foreign ports. DHS delegated responsibility for this mandate to the Coast Guard.

The Coast Guard's transition from the Department of Transportation to DHS also impacted other parts of the mission. The Port and Waterways Coastal Security mission became a larger priority, and it needed a means to perform risk-based targeting for more than 60,000 annual vessel arrivals from abroad. Methods to target a vessel based on its history of safety and environmental risk existed, but there was no such tool to assess the security risk posed by vessels arriving from abroad.

Nigeria's Transportation Minister Rotimi Amaetchi wears a mustang suit prior to boarding a Coast Guard response boat-medium to perform a harbor tour at Sector Long Island Sound during a reciprocal engagement. Coast Guard photo by LCDR Steven Barry

To address these issues the Coast Guard established the International Port Security (IPS) Program in 2004. Through this program, bilateral discussions, and sharing port security best practices, the Coast Guard's IPS Program seeks to reduce world-wide risks to maritime interests and facilitate secure global trade. Previously, there was no single entity assessing the risk to vessels posed by foreign ports, but the IPS Program filled this critical void.

The IPS Program developed a uniform method for verifying the security conditions in foreign countries and their ports. The program sought to quantify results from assessments that often left program assessors asking questions like, "How does a lagoon full of alligators compare to a barbed wire fence with movement detection? Is one more effective than another given the locale?" "Is facial recognition by a guard a reasonable alternative to requiring ID badges issued by a competent authority?"

The next challenge was to determine how the IPS Program would engage foreign countries without appearing to encroach on their national sovereignty. The Coast Guard believes diplomacy and personal interaction, backed by official action, is the best way to improve and uphold international port security standards. The IPS Program has personnel based in Atlantic Area, Activities Europe, Activities Far East, and detached staff in Alameda, California, representing the IPS Program to all maritime trading nations. There are liaison officers, officially referred to as International Port Security Liaison Officers (IPSLOs), full time assessment personnel, capacity building personnel, and support staff. IPS

Program members maintain regular communication with embassies and local maritime professionals, including governmental authorities and port officials responsible for maritime and port security. They foster relationships and coordinate regular visits to foreign ports to observe port security measures in place, share new security related information, offer recommendations, and monitor improvement progress. These visits help ensure the secure movement of people and goods through ports and the global maritime transport system.

LCDR George Cottrell and Steve Boyle discuss access control procedures with the port security officer at the Port of Maputo, Mozambique. Coast Guard photo by LCDR Steven Barry

Using the International Ship and Port Facility Security (ISPS) Code as a benchmark, these Coast Guard officers evaluate a country's port security posture at both the national and port facility level. They identify where port security is effective and/or where it needs improvement. Through facility visits, officers observe operations in port security, including:

- access control
- cargo/ship store inspections and monitoring
- communications
- drills, exercises, and training
- roles and responsibilities

This information is analyzed to determine whether a country is substantially implementing the ISPS Code.

The IPS Program's experience over the past 15 years justifies the MTSA mandate to periodically reassess the port security performance of U.S. trading partners to ensure they continue to implement effective anti-terrorism measures. Although many countries demonstrate that they consistently maintain or improve their port security performance over time, others have unfortunately declined in performance. Causes can be a major change in government, a national crisis, or the loss or transfer of a key individual. In certain cases where nations do not improve port security or are unable or unwilling, the Coast Guard takes action to reduce the risk to the U.S. by making public the country's lack of effective security measures. In turn, the Coast Guard imposes conditions of entry on vessels sailing to the U.S. from those countries. These conditions of entry could result in additional costs for the vessels while in U.S. ports, delays in transit times due to security requirements, or decreased traffic to that port due to increased costs for security or insurance.

Countries that do not, or cannot, maintain effective anti-terrorism measures are listed in a public Port Security Advisory (PSA), published on the Coast Guard's Homeport website. At the same time, vessels arriving in the United States from foreign ports with adequate security measures are less likely to be targeted for port state control action. This reduces potential delays and facilitates safe and secure maritime trade. Since 2004, the IPS Program has observed that the majority of U.S. trading partners are now in substantial compliance with the ISPS Code. To highlight some of the challenges and successes that the IPS Program has achieved, the following are examples of work performed in three different countries. These examples highlight the need for continued engagement and the need for continuing assessment and technical assistance.

The IPS Program has been engaging with a certain country since 2005. The country is relatively poor and historically hasn't had the financial or personnel resources to manage its many competing priorities. When the ISPS Code entered into force in 2004, the country adopted its text by reference. The code is not prescriptive and does not detail which agencies are responsible for administering its provisions or compliance verification, nor does it contain measures for conducting enforcement actions or administering penalties for non-compliance. As a result, the country's agency for ensuring compliance was not

provided with the necessary jurisdictional authorities to enforce the code, nor could it provide clear guidance to port users and operators on how to comply.

Initial engagements with the government showed that facilities were effectively securing cargo and preventing unauthorized access, but also documented that government oversight was minimal. Though good access control and monitoring are important factors in securing ships and cargo, most facilities were not performing the other necessary requirements of the code and the government was not performing annual verifications of its facilities as required.

The IPS Program recommended the country overhaul its legislation as a first step and offered to assist by performing legal capacity building. The country accepted the offer and in 2012, the IPS Program legal team provided capacity building to assist the maritime administration's two attorneys with drafting a new maritime code. Over the course of several engagements and teleconferences, IPS legal provided guidance and recommendations on how to draft the legislation and followed its progress.

Unfortunately, the legislative drafting stalled and the country directed its limited resources toward other projects. Through continued IPS Program engagements to the country it became clear that the maritime administration was not meeting its requirements to oversee the ports and facilities under its authority per the ISPS Code. During a 2016 assessment the IPS Program team recommended placing the country on the PSA. The decision was not taken lightly and received close scrutiny throughout the review process. A determination was made to issue a démarche to the country explaining that it would be placed on the PSA if it did not correct previous issues observed by the IPS Program team.

The country was provided ample time to make corrections, and throughout the démarche process the IPSLOs remained in constant contact with the U.S. embassy in country, and the affected government agencies. The ambassador and deputy chief of mission took note and expressed their concerns to the ministry of transportation, then asked the IPSLOs how the embassy could assist with bringing the country into compliance.

The first order of business was to fix the maritime regulations and repeal the law that adopted the ISPS Code by reference. The legislative drafting had been completed years earlier so it was simply a matter of performing a final review and getting the text approved by the council of ministers. With support from the U.S. embassy and an effort from the minister of transport, the maritime code was passed less than three months after the démarche was delivered. The country's maritime authority was given broader powers for enforcing the newly enacted laws and their staff was increased in size to account for an additional workload imposed by annual facility verification.

With legislation passed, the IPSLOs focused on assisting with training and awareness among administration officials, but mostly among other port partners and operators throughout the country. The IPS Program worked with the maritime authority to provide technical assistance and capacity building to management from the national police, immigrations, customs, port managers, and port operators at the country's largest ports. While this was happening, the IPSLOs also engaged the U.S. embassy's regional security office, which had an expert in maritime security on staff. This office developed a training program for the largest port in the capital based on input from the IPSLOs, and assisted the port with developing a new traffic management scheme and updating all of the port's access control procedures.

LCDR Steve Barry and Cellou Diallo, director general of the Guinean Merchant Marine Administration, prepare to view a live display of recently acquired firefighting equipment in the Port of Conakry, Guinea. Coast Guard photo by LCDR Steven Barry

The efforts of the IPS Program and embassy engagement resulted in drastic nationwide changes in a matter of months. It would have been very difficult for the maritime authority, or even the ministry of transport to achieve such a fast turnaround without external pressure from the IPSLOs and the U.S. embassy. Making sweeping changes in a short amount of time can be incredibly difficult in the maritime sector. Maritime administrations generally face significant resistance from worker's

LCDRs Mary Dwyer and Tony Mercado perform an inspection of the perimeter of the Port of Bissau to assess its integrity and the challenges posed by a small market that encroaches on the security zone, in Bissau, the capital of Guinea-Bissau. Coast Guard photo by LCDR Steven Barry

unions, government agencies who previously profited from loose controls, as well as port operators, who initially experience increased delays at checkpoints during the transition.

Within a year, the country passed an extensive maritime code, and the country's three largest ports made significant changes to its security procedures, upgrading many physical security aspects. Although the work is far from complete, the country's maritime authority is now working to bring other terminals into compliance. The efforts of the IPS Program, working in conjunction with the U.S. embassy, significantly increased the security of a country in an area of the world otherwise plagued by security challenges.

The Republic of Iraq is another country where the IPS Program has had significant involvement since the inception of the ISPS Code. The Iraqi transitional government faced many significant challenges in addition to implementing port security. The IPS Program worked in concert with other Coast Guard offices and DHS agencies to assist the Iraqi transitional government with bringing their ports into compliance between 2004 and 2007.

After the initial assistance period, the IPS Program performed the first country assessment in 2008 to observe the country's port security performance. The country was found to be lacking effective anti-terrorism measures. Considering the challenges facing Iraq, IPSLOs continued working with the Iraqi government and the U.S. embassy. Between 2012 and 2014, the IPSLOs leveraged embassy contacts from the U.S. Department of Transportation liaison in Baghdad and coordinated several capacity building engagements in the ports of Basra and Umm Qasr. The IPSLOs stressed the importance of language and requested the support of an Arabic linguist who had received Arabic language training from the IPS Program. The linguist traveled to Iraq twice for two engagements and spent enough time in its ports to assess the challenges, and to provide direction to the port operators and Iraqi government on how to address the problem. At the same time, a new director was appointed to

Iraq's maritime authority who had the connections and political capital to address the issues brought up by the IPS Program.

During the assessment in 2014, it was clear the country had turned the corner on port security and had made significant progress toward compliance. Unfortunately, The Islamic State of Iraq and the Levant began its invasion of Iraq while the IPS Program team was in country, and prompted its early departure when the security situation began deteriorating. Although the results of the visit were positive, they were short-lived. The IPS Program was not able to return to the country until 2016, at which time it was discovered that most of the progress made in 2014 had been lost. Despite multiple efforts to prevent placing Iraq on the PSA, it was clear that it was the most appropriate course of action.

The IPSLOs' engagement with the Iraqi government and the U.S. embassy in Baghdad to find a solution limiting restrictions on vessels calling from certain Iraqi ports continued. This effort was made because, although Iraq was not meeting security requirements as a whole, some facilities were performing extremely well and posed limited threat to the maritime transportation system. Taking this into consideration, the IPS Program was able to exempt the Al-Basrah Oil Terminal, Khawr Al Amaya Oil Terminal, and Maqal Port after performing assessments. Combined, these terminals account for more than 80 percent of Iraq's gross domestic product. The IPSLOs continue to visit the exempted terminals to monitor their effectiveness and the government's engagement.

A different set of circumstances led to increased IPS Program involvement in Ukraine in Eastern Europe. The IPS Program took a greater interest in maritime port security in Ukraine following Russia's annexation of Crimea. All visits to the country in 2014 were cancelled due to the ensuing conflict and a restructuring of some of Ukraine's government agencies. The IPSLO reached out to U.S. Embassy Kiev and secured a visit with the State Service of Ukraine and the Ukrainian State Agency of Ports in November 2015. A country visit was performed in 2016 and the Ukrainian port authorities showed that they were meeting international security standards, but had lost much of the previous institutional knowledge as a result of continued shake-ups within Ukrainian government agencies.

The IPSLO recognized this as an avenue to support the Ukrainian government during their difficult transition and also an opportunity for the U.S. embassy to become more involved with promoting the development of transparent state agencies supported by a strong legal framework. The IPSLO worked closely with U.S. Embassy Kiev, and Ukrainian agencies involved in maritime port security to develop an ambitious multi-year plan to strengthen Ukraine's nascent maritime port security program.

The plan involved three facets:

- assist Ukraine in developing a legal framework to adopt the ISPS Code
- provide Ukraine's regulators with the necessary legal backing to perform mandated functions
- develop the practical knowledge and skills of local port authorities and operators in Ukraine through capacity building
- continue to visit Ukrainian ports, identify potential security vulnerabilities, and provide timely feedback

Ukraine met the IPS Program criteria for qualifying to receive capacity building so the program developed a plan and schedule. Ukraine had long had effective maritime port security, but had not applied some of the more administrative aspects of the ISPS Code. Between 2016 and 2018, the IPS Program performed six engagements to increase the capacity of the Ukrainian government. The results of these engagements have begun to bear fruit. Members of Ukraine's maritime authority and port authorities have established new policies and procedures, and are conducting training and exercises within their ports. In a short amount of time the Ukraine Port Authorities have continued to improve the security within their ports and the capacity of their administrators. The relationship between the Ukraine and the Coast Guard has strengthened as a result of the continued engagements.

In the Pacific, the IPS Program has partnered with many international agencies to further mutual goals to improve maritime port security and protect the international maritime transportation

CDR Eric May and RADM Paul Thomas observe pier side security procedures in Salvador, Brazil. Coast Guard photo by LCDR Steven Barry

LCDR Kirsten Sullivan observes a truck entrance in San-Pédro, Côte d'Ivoire, the largest cocoa bean exporter to the United States. Coast Guard photo by LCDR Steven Barry

system. The IPS Program works with the Secretariat of the Pacific Community, Maritime New Zealand (MNZ), Australia's Office of Transport Security, and the United Kingdom's Department for Transport in a variety of countries to promote port security.

Recently, these teams collaborated to provide port security capacity building in Papua New Guinea in preparation for the 2018 Asia Pacific Economic Cooperation summit. Australian, British, and American teams worked together in Indonesia with a focus on cruise ship port security. Coast Guard IPSLOs also worked with MNZ, specifically in Fiji and the Cook Islands, on joint capacity building initiatives.

With a staff of only 60 people, the IPS Program engages in more than 140 countries. The results of this relatively small operation save the Coast Guard millions of dollars every year in equipment costs and thousands of personnel hours by allowing operational units to identify and focus their efforts on vessels that pose the highest risk to the maritime transportation system. By assisting other countries that are motivated to improve, the IPS Program strengthens foreign borders and lowers the burden on Coast Guard operational units. As new global threats emerge and more countries increase vessel traffic to the United States, the IPS Program mission will become even more critical to reducing the risks posed by vessels, their crews, and cargoes from abroad.

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A Marriage of Two Communities

Pairing capabilities to improve maritime security

by CAPT Jeffrey Randall
Commanding Officer
U.S. Coast Guard Cutter James

This article may result in my formal ex-communication from the afloat community—or at least label me a heretic. Previous authors in this publication have written about the diminished stature of the afloat community and questioned the relevance and value of the deployable specialized forces (DSF) community. Proponents of the DSF community have touted its importance and contributions to our overall national security objectives. Behind closed doors and amongst themselves, members of both communities have questioned the value and contributions of the other. This article does not seek to pick scabs off of these old wounds, nor does it seek to promote the merits of one community over another. Instead, the purpose is to highlight the synergy and opportunity that successfully pairing the capabilities of the afloat and DSF communities provides our daily operations, as well as our broader Coast Guard and national security objectives. More specifically, it looks at the recent effort to pair two of the Coast Guard's high-end capabilities. Combining the National Security Cutter and the Maritime Security Response Team into a complementary and scalable force package that is globally deployable, enables the Coast Guard to push out our borders to meet the demands of our rapidly changing global security environment.

The sea services have routinely paired distinct capabilities to produce more lethal and adaptive force packages. The Navy and Marine Corps regularly team together to create amphibious readiness groups that can operate collectively, or as independent units, to project power and effectively distribute targeted lethality. For decades, the sea services have also paired aviation and afloat capabilities to accomplish similar objectives. This pairing of aviation and afloat capabilities has served the Coast Guard well. Originally used to extend cutter surveillance capabilities, and for search and rescue, the pairing of Coast Guard cutters and aviation detachments with airborne force capability has been an essential ingredient in the Coast Guard's recipe for success in its counternarcotics mission. These pairings successfully stop the flow of illicit narcotics, primarily cocaine, from source regions in Mexico and Central America before it gets into the United States. The marriage between the DSF and cutter communities is beginning to follow a similar path.

A landing signals officer from Coast Guard Cutter *James* braces himself as a 160th SOAR Blackhawk lifts off the flight deck. Coast Guard photo by LTJG Luke Dewhirst

From my seat overseeing units in the DSF and cutter communities, initial efforts to merge their capabilities encountered significant resistance and substantial growing pains. Unlike the movie characters Forrest Gump and Jenny, these two communities did not get along like peas and carrots. From the cutter side, integrating DSF personnel into cutter operations, particularly during at sea law enforcement operations, was viewed as a major encroachment into the cutter

community's world of work. This prevailing attitude was certainly understandable as the cutter community has long prided itself in having the organic capability to conduct this mission. On the other hand, the DSF community had difficulty recognizing it could provide specialized capabilities and unique skill sets to complement a cutter's capabilities and operations. More specifically, there was resistance to disaggregating the typical law enforcement detachment that normally deploys as a team aboard Navy vessels supporting counterdrug operations. As the demands on the Navy have changed and the Navy's frigates have all been decommissioned, the number of U.S. naval assets supporting counterdrug operations is extremely limited, necessitating a need to look again at the employment of the Coast Guard's Tactical Law Enforcement Teams (TACLET). This began the marriage of the distinct and unique capabilities provided by these two different operational communities to create more effective and adaptive force packages to address the ever-changing tactics the Coast Guard faces in its counterdrug mission.

A Maritime Security Response Team team fast ropes onto the deck of CGC *James* from a 160th SOAR Blackhawk during a nighttime insertion exercise. Coast Guard photo by LTJG Luke Dewhirst

With a steady vision and extensive communication with all stakeholders, significant strides were made in the marriage between these two communities. Despite the initial resistance described above, members of Coast Guard TACLETs now routinely deploy with major cutters to augment boarding teams and provide additional law enforcement expertise. This not only provides TACLET personnel with opportunities to remain current on drug trafficking trends, it serves as a force multiplier for boarding teams to have dedicated personnel for counterdrug boardings, detainee management, and law enforcement case package development. TACLET personnel who have extensive training in law enforcement case package development assist cutter boarding team personnel with their cases. This has resulted in more successful prosecutions and positive feedback from federal agents involved in the ongoing Operations Panama Express and Operation Martillo, operations aimed at dismantling major drug trafficking networks. In addition to the positive operational impacts, this pairing of capabilities has also resulted in upgrades and improvements to gear and equipment used by pursuit crews Coast Guard-wide. Similarly, equipping Maritime Safety and Security Teams with cutter boats when deployed with U.S. Navy patrol craft and TACLETs for counterdrug operations provides pursuit and surface use-of-force capability to an otherwise non-pursuit capable platform. This has increased overall effectiveness and viability for counterdrug operations.

Widening the aperture beyond the Coast Guard's counterdrug operations, the service contributes to national and border security through a layered security strategy using programs, partnerships, and a strategic dispersal of available assets around the nation and in potential threat vectors to protect the homeland by preventing threats delivered from the sea. The Coast Guard uses a layered security strategy that begins with capacity-building activities in foreign countries to improve individual vessel and port facility security to prevent threats, including potential weapons of mass destruction, from being introduced to vessels and cargoes that may ultimately be bound for the United States. Additionally, through available assets, major cutters deploy to intercept potential threats, using advance notice of arrival and vessel boarding programs to prevent threats from impacting key ports and critical infrastructure that are vital to the economy and maritime commerce.

The 2018 National Defense Strategy discusses the fact that "we are facing increased global disorder … creating a security environment more complex and volatile than any we have experienced in recent memory."[1] While the threat of terrorism remains persistent, strategic competition from Russia, China, and rogue regimes, require our nation and Coast Guard to be responsive and ready to address these changing priorities and emerging threats.

A member from Coast Guard Cutter *James* assists a Marine Security Response Team member in cutting off his mission oriented protective posture suit in the first stage of the decontamination locker. Coast Guard photo by LTJG Luke Dewhirst

Defense Department strategies routinely discuss the need for national sea power projection to defend the homeland and support our national security objectives. More specifically, the Cooperative Strategy for 21st Century Seapower discusses the in-depth role of self-sustaining naval forces "to protect the homeland far from our shores …."[2] Here, there is strategic opportunity for the Coast Guard to pair additional cutter and DSF capabilities to fill a unique niche in our nation's homeland security toolkit and reaffirm the Coast Guard's contributions as a unique instrument of the nation's sea power.

There remains a persistent and underlying threat of global terrorism, and rogue regimes remain firm in their resolve to develop, build, and distribute weapons of mass destruction. To counter this threat, the Coast Guard's Atlantic Area headquarters, in cooperation with the offices of Defense Operations and Specialized Capabilities, paired the capabilities of the Coast Guard's Legend Class National Security Cutter (NSC) and the DSF's Maritime Security Response Teams (MSRT). This pairing fully leverages the capabilities of both assets for counter response to a weapon of mass destruction (WMD) threat. The vision was to increase the Coast Guard's capability to conduct counter WMD operations for near coastal operations and around the globe. The combination of the MSRT's ability to conduct opposed boardings in a chemical, biological, or radiological (CBR) environment and the NSC's Command, Control, Communications, Computers, Intelligence, Surveillance, and Reconnaissance (C4ISR) resources, ability to operate in a CBR environment, and extensive CBR decontamination capabilities is a powerfully adaptive force package.

Using a crawl, walk, run approach, this pairing began with the MSRT conducting CBR decontamination familiarization aboard the NSC, as well as boat familiarization with the cutter's long range interceptor boat platform, to test its viability for MSRT boarding operations. In addition, the MSRT and NSC crews and Atlantic Area planners conducted tabletop exercises to iron out command and control relationships, as well as supported and supporting commander relationships for an actual boarding evolution. Using the lessons learned from these initial efforts, an at sea exercise to test the pairing was scheduled. This first iteration exercise was conducted in 2018 and involved MSRT East, Coast Guard Cutter *Hamilton,* and an Air Station Clearwater MH-60 Jayhawk helicopter.

While successful, it was clear that additional exercises were needed to further refine the concept. Occurring in February 2019, the second full-scale exercise involved the same components as the first with added fast rope insertion capability provided by the Army's 160th Special Operations Air Regiment.

Marine Security Response Team member awaits final instructions from the medical officer before removing his mask in the final stage of the decontamination locker onboard Coast Guard Cutter *James*. Coast Guard photo by LTJG Luke Dewhirst

Using Coast Guard Cutter *Willow* as the target vessel, MSRT East and Coast Guard Cutter *James* finalized, and successfully tested, a command and control relationship that fully leveraged the C4ISR capabilities of the cutter's platform. The test included detection, stalking, and putting rotary wing and boat assets in position to successfully interdict a target of interest suspected of carrying CBR material. These exercises went one step further, simulating the MSRT's personnel exposure to a chemical agent, and then returning those personnel to the NSC platform for full decontamination. This exercise not only provided the MSRT mission commander with the full suite of the cutter's C4ISR capabilities to help plan and execute boarding operations, but the NSC crews had opportunity to learn from the team's CBR experts.

Marine Security Response Team East personnel practice boarding techniques on Coast Guard Cutter *Willow* using the NSC's long range interceptor boat. Coast Guard photo

While some may argue that expending efforts to exercise this capability to prepare for a low-probability event is unwarranted, the consequences of such an event could be catastrophic. Across the Departments of Homeland Security and Defense, we have many contingency and operational plans developed and exercised exactly for this type of low-probability, high-consequence event. Efforts to improve our counter WMD interdiction and consequence management should be no different. During a crisis there is no time to test and exercise working relationships. This is why pairing the NSC's and MSRT's capabilities makes for a truly capable force package for short-notice maritime response operations. Additionally, extending the reach of the Coast Guard's short-notice maritime response capability by using the NSC as a staging platform for MSRT boarding operations achieves the objective envisioned in the operational requirements for the NSC and MSRT assets, as well as the overarching strategic objective in Cooperative Strategy for the 21st Century by providing national decision makers with time and decision space to deal with these types of threats.

Fully leveraging this capability pairing for the above missions is certainly possible but will require the appropriate strategic leadership decisions and a corresponding commitment of resources to make it happen. Nonetheless, the effective pairing of these unique capabilities is a strategic imperative that better positions the Coast Guard for the variety of current and projected operational realities.

As a former skeptic of the DSF community, I came to appreciate the value and operational effectiveness realized from this merger. It allows capabilities to better secure our nation's waterborne approaches and buys time and decision space for the Department of Homeland Security and our national decision-makers to deal with emerging threats and foreign political crises. By advocating this approach, from my current seat as a commanding officer of a national security cutter, some may label me a heretic. However, as I watch my crew prepare to launch with a cutter boarding team, TACLET, and an embarked MH-65 helicopter to interdict a drug-laden vessel, it is clear that this force package is effective and supports national security. As we continue to optimally staff our cutters, leveraging the capabilities and added capacity provided by other operational communities to increase our mission effectiveness and meet our homeland security objectives will remain a necessity. If we are truly striving to be relevant and responsive to our nation's needs, two of our current commandant's guiding principles, we must continue to seek and maximize opportunities to pair the specialized capabilities of the DSF and other communities with those of the afloat community, because they can actually go together like peas and carrots.

About the author:
CAPT Jeff Randall is a career afloat officer with more than 25 years of service in the U.S. Coast Guard. He previously served as chief of Operational Forces for Atlantic Area where he oversaw major cutter and DSF units, as well as aviation and boat forces.

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Playing to Our Strengths

Support of Title 10 missions in the Arabian Gulf and beyond

by LT John J. Kearney
Student, George Mason University
U.S. Coast Guard

Since March 9, 2003, days before the invasion of Iraq, Coast Guard cutters have supported the U.S. Navy's 5th Fleet and United States Central Command (CENTCOM).[1] While the nature of operations has changed significantly, the Coast Guard's excellence while supporting the Department of Defense (DoD) has not. The scope of operations has broadened significantly, expanding from oil platform security in the Northern Arabian Gulf to a combination of missions that include:

- layered defense of coalition assets
- maritime security operations to counter illicit maritime traffic
- theater security cooperation exercises to build partner capacity

These operations occur in varying density throughout the Arabian Gulf and Gulf of Oman offering excellent opportunities for Coast Guard personnel to learn from our DoD peers and participate in the sustainment of strategic regional partnerships. While these missions may receive less press than Coast Guard search and rescue or counternarcotics operations, they are of critical relevance to the U.S. national security strategy. They serve to blunt Iran's threats to maritime commerce and deter its effort to sow further discord in the region.[2]

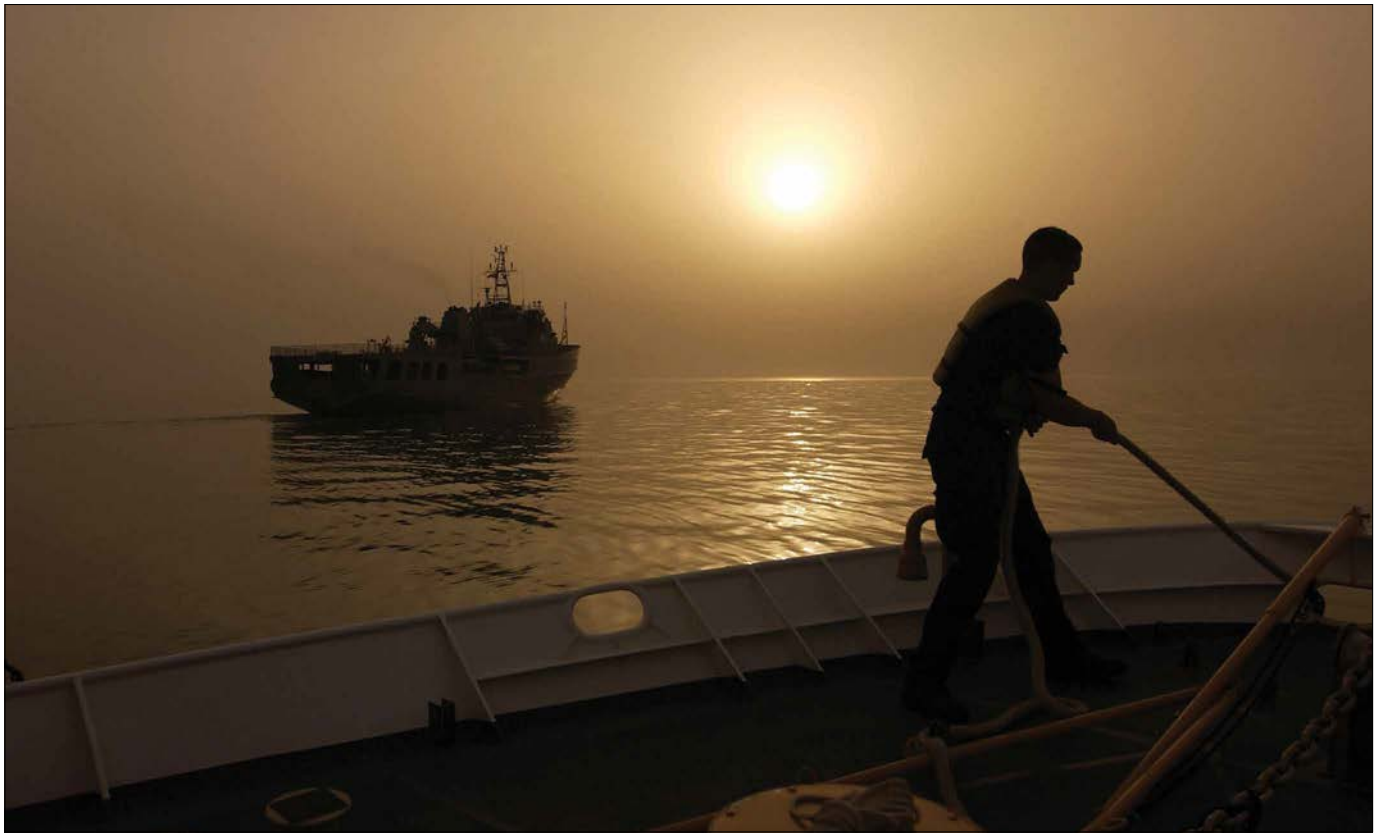
Continued Operations Despite the End of Open Hostilities

The Coast Guard's contributions to last century's wars and conflicts are well known, but they did not exceed the length of the conflict, usually ceasing in conjunction with the end of hostilities.[3] In light of this, the length of Patrol Forces Southwest Asia's (PATFORSWA) expeditionary service is historically unique. For at least 10 years, there has been a notion that this command's days were numbered. Given DoD's standard historical use of Coast Guard forces, and a culture rooted in a binary understanding of armed conflict, either war or peace, this was a reasonable expectation.[4] The often romanticized and costly great power conflicts of the 20th Century are unlikely to occur in the 21st due to the ostensible cost of a peer-to-peer conflict. This reality has given rise to "Gray Zones" of warfare. A U.S. Special Operations Command white paper defines them as:

> *… competitive interactions among and within state and non-state actors that fall between the traditional peace and war duality. They are characterized by ambiguity about the nature of the conflict, opacity of the parties involved, or uncertainty about the relevant policy and legal frameworks.*[5]

The Arabian Gulf and Gulf of Oman fit this definition and, as CDR Craig Allen noted in 2016, the operating

LTJG James Rizzo, left, and Petty Officer 1st Class Martin Williams navigate their small boat during maritime security operations. Army photo by Staff Sergeant Cortez Mastin



Seaman Apprentice Brett O. Davidson, works a line onboard Coast Guard Cutter *Adak*, as the Polish naval ship *Kontradmiral X Czernicki* passes by in the North Arabian Gulf off the coast of Iraq in April 2003. At the time, *Adak* was one of four 110-foot patrol boats in the Gulf region in support of Operation Iraqi Freedom. It was the first time Coast Guard patrol boats had been deployed to a theater of war since Vietnam. Coast Guard photo by Petty Officer 1st Class Tom Sperduto

challenges gray zones present fit well with the Coast Guard's strengths.[6] While PATFORSWA cutters continue to support operations in the 5th Fleet area of responsibility, China[7] and Russia[8] are working towards greater global influence. Their challenge of international norms comes at the expense of the United States and the liberal world order that has dominated political and economic events since the end of the Cold War.[9]

Making a Home In the Gray Zone

In the absence of kinetic engagement with adversaries, the Coast Guard's ability to build the capacity of our allies, while maintaining austerity in the presence of antagonistic competitors is invaluable to the strategic goals of the Coast Guard and the United States. In the Western Hemisphere Strategy (WHS), our executives articulated a layered defense model using the national security cutter as the primary means to project soft power far from the conventional U.S. border.[10] The WHS' goals of "Ensuring a Secure Nation, Prosperous Markets, and Thriving Oceans" is being challenged by Chinese and Russian activity in East Asia and Europe, respectively. Our near-peer competitors are building their capacity to challenge international norms using the ambiguity of gray zones, and exploiting the U.S. Navy's relative lack of soft power projection—many nations feel grey-hulled ships are threatening.[11]

Conclusion

Suspiciously well-equipped and organized Chinese maritime militias have asserted illegitimate maritime claims and seized Philippine islands and fishing grounds.[12] Russia has been a barrier for merchant and military vessel traffic seeking access to the Sea of Azov.[13] The list of recent maritime sovereignty violations goes on and it will continue, possibly escalating, without the Coast Guard providing the necessary assistance to our current and potential allies. While the national security cutter is an excellent addition to any combatant commander's force package, it cannot be the exclusive means through which our service supports defense operations and strengthens military alliances. The size of the national security cutter fleet and location of homeports will make it difficult to maintain the presence needed to deter, prevent, and respond to actions that disrupt critical sea lanes and maritime commerce. Forward deployed Sentinel class cutters could be a large part of a comprehensive solution to the problems facing the maritime industry and coastal nations in Europe and Asia. Potential homeports include Rota, Spain, or Naples, Italy, for European operations,

Aviation Warfare Specialist 1st Class Jim Dudgeon, assigned to Helicopter Sea Combat Squadron 26, prepares to lower supplies to Coast Guard Cutter *Baranof* during a vertical onboard delivery exercise in the Arabian Gulf in February 2014. *Baranof* was supporting operations in the 5th Fleet's area of operations. Navy photo by Petty Officer 1st Class Martin Cuaron

and Okinawa or Sasebo, Japan, for the Western Pacific. While these overseas duty stations are a rarity for the Coast Guard, freedom of navigation operations and partner capacity building exercises are not. Additionally, the Navy's small surface combatant fleet consists of 13 Cyclone class patrol craft and another 11 Avenger class mine countermeasures ships, in total, 24 of the almost 290 deployable ships, roughly eight percent, used by the Navy. Conversely, Coast Guard patrol boats, the Sentinel, Island, and Marine Protector class, represent just over 50 percent of a 243 ship force.[14] As a service, we must leverage our strengths in both littoral patrol boat operations and non-kinetic adversary engagement to stem the growing influence of our near-peer competitors.

About the author:

LT John J. Kearney is a student at George Mason University's Antonin Scalia Law School and a 2011 graduate of the U.S. Coast Guard Academy. Prior to law school, he served in the Coast Guard as a cutterman with more than seven years of sea time. His last duty station was in Manama, Bahrain, where he served as the Coast Guard Cutter Baranof's *commanding officer from May 2018 to May 2019.*

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A Home for the Interceptors

The Coast Guard's unique air intercept mission may finally get a proper home

by CDR Michael R. Darrah
Office of Counterterrorism and Defense Operations
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It's difficult now to remember the complete shock on the morning of September 11, 2001, but Air National Guard's Major Heather "Lucky" Penney, then a rookie captain with the D.C. Air National Guard's 121st Fighter Squadron, will never forget. She and her operations director, then-Lieutenant Colonel Marc Sasseville, rushed to their F-16s on Andrews Air Force Base, knowing only that New York and the Pentagon had been hit and that another airliner might be inbound. Their job was to stop it.

A Different Time

As hard as it is to believe now, North American Aerospace Defense Command's (NORAD) air defense structure was focused on threats coming from abroad, and private aircraft were free to fly to within just a few blocks of the White House. There also were no alert fighters on standby in the nation's capital. Even if there had been, Penney had never scramble-started an F-16, but the pilots had a bigger problem. Their jets carried no missiles or live ammunition.

In what the 9/11 Commission would later term a "Failure of Imagination," the country was simply not prepared for an aerial attack from within.

With no time to wait for missiles, the only way Penney and Sasseville could down a hijacked airliner on that bright Tuesday morning was to ram it. So that was the plan.

"I'm going to go for the cockpit," Sasseville said as they struggled into their flight gear.

"I'll take the tail," Penney replied.

It was going to be a suicide mission to stop a suicide attack the likes of which the world had never seen.

In the end the brave passengers aboard United Flight 93 beat Penney and Sasseville to the punch, ending it all in a Pennsylvania field. But the world had changed, and the United States needed a new approach to airspace security.

A New World

The country was just beginning to grasp with the magnitude of the attacks when the National Airspace System reopened a few days later. Over time, the Federal Aviation Administration (FAA), NORAD, and the Secret Service instituted a layered system of restricted airspace around the capital. This eventually evolved into the roughly 15 nautical mile Flight Restricted Zone (FRZ) surrounding Washington, and a Special Flight Rules Area (SFRA), per FAA, of 30 nautical miles in place today. Flights in the SFRA must follow strict "talk and squawk" rules to maintain contact with air traffic control, while access to the FRZ is limited to commercial airliners and approved military, law enforcement, and emergency medical service aircraft.

Defending that airspace is a unique integrated air defense system. This system incorporates not only the F-16s at Andrews, but a network of Army missile sites, advanced radars, a laser-based visual warning system,

A helicopter crew from the Coast Guard's National Capitol Region Air Defense Facility flies over the capital during trainings, familiarization flights, and responses. Coast Guard photo by Petty Officer 2nd Class David R. Marin

specialized cameras, and, in a key role that remains unbeknownst to many, the United States Coast Guard.

The Road Game

The Coast Guard's air defense role didn't start in Washington, but in southern Georgia. In 2004, with the G-8 Summit bringing world leadership to a tiny island 60 miles south of Savannah, the Secret Service was worried about airspace. Air Force fighter jets could defend against another hijacked airliner, but general aviation aircraft were different. Flying at low altitudes and below the stall speed of a fighter jet, it would be difficult for an F-16 to maintain visual contact with the cockpit of a small Cessna or helicopter, establish communications, and ascertain the pilot's intentions. With no way to determine whether an inbound aircraft was a genuine terror attack, the Secret Service might be forced to evacuate the senior leadership of the world's most powerful countries in the middle of a global summit. Worse, NORAD might have to make the difficult decision whether or not to engage an inbound aircraft without passenger confirmation. A new capability was needed.

MH-65 Dolphin helicopters from Coast Guard Air Station Atlantic City, New Jersey, fly over Washington in April 2015. Coast Guard photo by Petty Officer 3rd Class David Micallef

A lighted sign in the window of a Coast Guard helicopter reads "Warning." Light boards and International Civil Aviation Organization signals are used to communicate with aircraft intercepted by the Coast Guard as part of the National Capital Region air defense mission. Coast Guard photo by PA1 John Edwards

With no air assets of its own, the Secret Service had long looked to the Coast Guard for ad hoc air support when local police didn't have aircraft available. Surveilling proposed travel routes and scouting ahead of the motorcade were common tasks, and the Coast Guard's culture of flexibility, interagency cooperation, and quick response fit well with the service's needs. With discussions getting serious in January 2004, Coast Guard Headquarters ordered Alabama's Aviation Training Center Mobile to quickly develop an air intercept capability. In April, then-Secret Service Director Ralph Basham made the formal request to Coast Guard Admiral Tom Collins, asking the Coast Guard to provide protection not just to the G-8 summit, but for all future national special security events, as well. From this request, the Rotary Wing Air Intercept (RWAI) program was born.

The Mission

The concept is simple, but the execution is complex. When an aircraft violates restricted airspace around Washington, or another protected area, someone has to intercept it, identify it, and get close enough to look at the pilots and establish communication. The goal is to assess the threat and get the aircraft turned around quickly, before NORAD is forced to take action. The Air Force does this with jets for anything high or fast, such as a lost business jet. The Coast Guard does this with helicopters, specifically the MH-65 Dolphin.

Coast Guard RWAI crews are specially trained to launch quickly and fly directly at an incoming aircraft,

A Coast Guard MH-65 Dolphin helicopter from Coast Guard Air Station Atlantic City, New Jersey, flies over Atlantic City on a training flight in March 2015. Aircrews from Coast Guard Air Station Atlantic City train to stay proficient for the Rotary Wing Air Intercept mission over the nation's capital and other critical areas throughout the country. Coast Guard photo by Petty Officer 3rd Class David Micallef

receiving intercept vectors from NORAD radar controllers. After spotting the track of interest (TOI), the helicopter executes challenging intercept maneuvers to pull up beside the suspect aircraft, get the pilot's attention, and determine what has gone wrong. They are equipped with flashing blue lights and an electronic signboard that can display urgent messages telling the intruder to turn to a certain heading or tune to a specific radio frequency. It's a unique skill set requiring significant training and proficiency to master under high pressure conditions, but one at which Coast Guard RWAI crews have become adept.

While no bogeys ultimately tested the new procedures at that 2004 G-8 Summit, President Ronald Reagan had passed away just days before. At the Secret Service's request, the Coast Guard quickly redeployed the team to California to protect the June 11 memorial service. There, a news helicopter attempted to violate the restricted airspace and became the first TOI successfully intercepted and diverted by Coast Guard RWAI forces.

The Home Game

In Washington at the time, Customs and Border Protection was flying H-60's out of Ronald Reagan Washington National Airport's Hangar 7 to support air security in a law-enforcement capacity. But on May 11, 2005, after a lost instructor and student flew their Cessna to within 3 miles of the White House, triggering chaotic evacuations and nearly being shot down by Air Force fighters, Department of Homeland Security (DHS) and Department of Defense (DoD) reevaluated the air defense posture. Given NORAD's airspace control mission and the Coast Guard's dual role as both an armed service and law enforcement agency, then-DHS Secretary Michael Chertoff decided to transfer the intercept mission to the agency's only military service. After hurricanes Katrina and Ike delayed the handoff, the Coast Guard began standing the watch from Hangar 7 on September 25, 2006. The newly designated National Capital Region Air Defense was a detachment supported and commanded by Air Station Atlantic City, the nearest operational unit, so the new call sign was an easy choice—BLACKJACK.

Capital Watch

While Hollywood would have viewers believe that rescue missions begin with crews sprinting to their aircraft and immediately launching into the stormy skies, the reality is more deliberate. Search and Rescue (SAR) sorties are quickly but carefully planned, with crews allotted up to 30 minutes to evaluate the case and prepare before taking off into the proverbial storm.

The air intercept mission, on the other hand, requires exactly the response a movie director would love. Time equals distance over speed, and with only a 30 mile buffer around Washington, the entire enterprise may have less than 15 minutes to intercept and stop a legitimate threat,

or much more likely, identify and divert a pilot who may not even realize they have stumbled into harm's way. In the ready-rooms where Coast Guard air intercept crews await the scramble klaxon, there are speakerphones constantly dialed in to the Domestic Events Network, a nonstop, FAA-hosted conference call that keeps the country's air security players informed of developing events in real time. Most of the calls received on this network are routine; a radar outage due to maintenance or an airliner diverting for a medical situation.

But as soon as anyone hears the magic words, "Capital Watch …" conversation stops and earplugs get pulled out of pockets. The crews listen intently as the FAA, Air Force, and others trade information and try to determine whether this blip on the radar is a flock of birds or a threat. If and when the scramble alarm sounds, all bets are off; chairs go flying, doors burst open, and crews outright sprint to their aircraft. Using special scramble procedures and an abbreviated checklist, they spin up the helicopters and launch towards the suspect track as fast as physics allows. The aircrews take pride in meeting their very short launch window and get to practice it. In the past five years, BLACKJACK crews have responded to 765 alert events, or one every other day. Thanks to the number of low, slow aircraft that stumble into restricted airspace, the National Capitol Region Air Defense Facility (NCRADF) is, and remains, the busiest alert site in NORAD's Aerospace Control Alert (ACA) arsenal, being named unit of the year in 2014 over all its DoD brethren. As of 2019, they have never missed their launch window.

You Are 237 Yards Away

When the Coast Guard took over the National Capital Region mission in 2006, it naturally occupied the spaces previously used by Customs and Border Protection. But Hangar 7 was less than ideal as an alert facility. The pilot and crew ready-rooms and operations center were scattered in old offices on the second deck. Moreover, the hangar itself was shared, with only limited deck and ramp space carved out for the three MH-65s maintained there at all times.

Given the suboptimal layout, it could be a long run to the ready aircraft in the event of a scramble. Small signs were placed around the facility to keep pilots and crews on their toes. At the entrance to the ready-rooms, stuck to the top of computer monitors, and even above the urinals placards warned: "REMEMBER: You are 237 yards from BLACKJACK 1."

Upon hearing the alarm, a pilot had to levitate out of their chair, accelerate out the door trying not to trip over their shipmates doing the same, make a left turn down a long narrow hallway, make another left through a fire door, spiral down two flights of industrial concrete stairs

A Coast Guard MH-65 Dolphin helicopter crew from Air Station Atlantic City, New Jersey, flies over the streets of Washington during a 2017 patrol. Crews from Air Station Atlantic City support the National Capital Region Air Defense Facility. Coast Guard photo by Auxiliarist David Lau

Petty Officer 1st Class Travis Burlew, a crew member at Coast Guard Guard Air Station Atlantic City, New Jersey, inspects a helicopter after a 2015 training flight. Coast Guard photo by Petty Officer 3rd Class David Micallef

while trying not to trample or be trampled, burst through another fire door into the hangar, and then sprint out the hangar and across the ramp to the aircraft.

This chaos generated some challenges, exemplified by a true story about a beloved pilot known as "the Bison." In the early days at Hangar 7, the Bison took a nasty spill down those stairs during a scramble, and yet, propelled by adrenaline and determination not to be 'that guy,' still launched inside the time window. It was only after the sortie when he caught his breath and tried to climb out of the helicopter that he realized his leg was broken from the fall.

A Box Inside a Box

In 2012, after years of planning and work, the National Capital Region Air Defense Facility (NCRADF), got a much needed move two doors down to Hangar 5 where the Coast Guard could lease the entire space. The upper floors were renovated to provide offices and a new command post, but the ready-rooms and maintenance shops were built in a two-story prefab building inside the hangar itself. The 'box within a box' concept allows today's crews to be just a few short yards from their aircraft at all times, and keeps office spaces, kitchenettes, and maintenance control in close proximity. As an alert facility, it offers security, quick access to aircraft, and perhaps most importantly, is very close to downtown Washington. The pilot ready-room has a plaque on the wall designating it "The Bison Pen. In dedication to all those who have risked life and limb in defense of the nation."

27 Years of Temporary Active Duty

Hangar 5 is a proper alert facility, but is far from a self-sufficient unit. Since 2006, the National Capital Region mission has been managed as a permanent forward detachment, owned by Air Station Atlantic City and manned by a never-ending stream of temporary duty (TDY) pilots and aircrews. While there is a small footprint of 'permanent party' officers and command post watchstanders, almost all of the 25 pilots and aircrew required to stand alert duty every day are there on TDY orders, most from Air Station Atlantic City, and some from three satellite RWAI units: Air Stations Detroit, Savannah, and New Orleans. A new crew of two pilots and three aircrew/maintainers arrives in Washington every three days for a 17-day rotation. They'll spend a week on day watch, a week on nights, and half a week on the mid-watch before departing back to their unit. Depending on the unit's bench strength and the pace of deployable operations, which are drawn from the same pool of aviators, they may be back in just a few weeks to do it again.

This arrangement has been effective, but inefficient. All told the Coast Guard incurs roughly 10,000 temporary duty days per year staffing the NCRADF, or just over 27 years per year. The temporary duty model, with aircraft and personnel primarily sourced from Air Station Atlantic City, was only intended for initial operating

Coast Guard National Capital Region Air Defense Facility (NCRADF) receives the 2014 Continental North American Region Aerospace Control Alert Unit of the Year award in February 2015. Canadian Forces Brig. Gen. Alain Pelletier (center), the deputy commander of the North American Aerospace Defense Command region, presented the award to NCRADF Operations Officer LCDR Zac Mathews (left) and CAPT Peter Mingo (right), the commanding officer of Coast Guard Air Station Atlantic City, New Jersey. Coast Guard photo by Petty Officer 2nd Class David Marin

capability. Thirteen years later, the Coast Guard may finally find a proper home for the interceptors.

Full Operational Capability

Until recent years, almost every RWAI pilot in the Coast Guard was also a search and rescue pilot, but neither of these missions is what one would consider a side gig. Maintaining proficiency in both was a growing challenge as the Coast Guard, like every other branch, struggled to retain experienced aviators in light of the airline boom.

In 2015, an initiative to finally move beyond initial operating capability and match proper resources to the mission began. An early proposal to reduce the readiness to match current resources was killed when senior leadership saw the risk it posed to meeting the launch window. Another proposal to place a large cadre of pilots in Washington without expanding the facility would have struggled to provide individual pilots with enough flight hours. A consensus emerged on what full operational capability would look like—a dedicated RWAI unit in the metropolitan Washington area.

Hangar 14

Immediately a problem emerged: Where?

Ronald Reagan Washington National has no room for expansion, but the alert site must remain there for quick response against threats coming from any direction. What is needed is a Mission Support Facility, a home base that supports the training, maintenance, and administration needs of both the NCRADF and the frequent deployable missions to support the Secret Service. It also had to be large enough to provide maintenance and support for up to 10 aircraft, close enough to easily drive to and from, and at an airport that can support military operations 24/7. Enter Joint Base Andrews' Hangar 14.

Located on the Navy quarter of the airfield, Hangar 14 has been mostly empty for several years and presents a prime opportunity to both enhance the RWAI mission and save significant taxpayer dollars.

While not in bad shape, the hangar would need significant renovations to accommodate this new unit, notionally referred to as the Helicopter Air Intercept Wing, or HAIWING. Maintenance spaces and equipment, ground support equipment, and office and administrative spaces would all need to be overhauled, and the Coast Guard is already engaging with the budget process, the DHS, DoD, and congressional leadership to line up support for the expenses.

But the anticipated cost pales in comparison to building a new facility. Thurgood Marshall Baltimore-Washington International and Dulles International are the only other airfields nearby that can support the airlift needed to move the helicopters cross country for long-distance, short-notice missions. Neither of them are advertising hangar space, and even if the footprint for a new unit was there, the cost of building on a non-military facility and meeting security and support needs would be tremendous.

On the other hand, Hangar 14 provides all the synergy of co-locating with other military units, including security, medical, fuel, facilities, and air traffic support. NORAD has expressed strong support, and Coast Guard Headquarters has already submitted a basing action request to the Secretary of the Air Force. As of spring 2019, the capabilities and civil engineering offices involved are working quickly through the studies and reports necessary to validate this as the right move for both services. The Navy and Air Force management aboard Joint Base Andrews are on board and look forward to putting Hangar 14 back to good use.

Moreover, it would put the Coast Guard HAIWING, focused solely on defense of our nation and capital, just a few hundred yards down the flight line from their long-time partners, the 121st Fighter Squadron. The squadron that has continued to stand the alert watch ever since Penney and Sasseville roared into the sky on September 11. The Rotary Wing Air Intercept Program may be a specialized mission within Coast Guard aviation, but it couldn't fit better with the service's motto of *Semper Paratus:* Always Ready.

About the author:

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Mission Excellence Anytime, Anywhere

Sustaining the Standard of Excellence

A reflection on national security cutter maintenance and support strategies

by LCDR Andrew Pritchett
Engineer Officer
U.S. Coast Guard Cutter Hamilton

It's a warm, still morning in the Eastern Pacific as the crew of Coast Guard Cutter *Hamilton* eagerly awaits a target of interest they've tracked and are positioned to intercept. Through a carefully choreographed cooperative effort, funneled via Joint Interagency Task Force (JIATF) South and shipboard "state of the art" monitoring and sensing equipment, the target's track plotted unknowingly towards the most capable surface asset in the Coast Guard's fleet. Shortly after an operations brief, a helicopter is launched and small boats are underway. There is also coordination with a maritime patrol aircraft and sensors are honed in on the suspected smuggler for vectored interdiction. Over the calm, but hectic din of activity in the Combat Information Center, you can hear the operations officer exclaim, "We got another one!" Apprehending suspected smugglers is one of many capabilities the national security cutter (NSC) brings to its role in keeping our homeland secure.

The NSC is the largest cutter acquisition program ever undertaken by the Coast Guard. A product of the now defunct Integrated Coast Guard Systems, or Deepwater, the program initially suffered a rocky start as a "system of systems" acquisition. Improved processes and a shift to a Coast Guard-led acquisition approach resulted in the most capable cutter in the fleet while setting a solid foundation for the offshore patrol cutter acquisition with an expected delivery of the first of its class in 2020. The NSC is more than proving its worth in nearly all of the Coast Guard's 11 statutory missions with the obvious exception of icebreaking. In fact, *Hamilton* seized enough illicit drugs in its first two full patrols to nearly cover the cost of its construction. The cutters are outfitted with three small boats, multi-frequency communications, long-range sensing equipment, and the ability to launch and recover two helicopters or unmanned aerial systems.

The original concept for the NSC emerged in the late 1990s as the fleet of Vietnam era high endurance cutters (WHEC) were nearing their life expectancy and some were deteriorating rapidly, leading to decreased reliability and increased maintenance costs. The requirements spectrum included an offshore command and control platform that would be able to complete the WHEC

Coast Guard Cutter *Hamilton* completes an interdiction/boarding of a low profile vessel. Coast Guard photo

mission while also bridging technological and communication gaps employed by navies around the world. The original program of record called for eight NSCs to replace the 12 high endurance cutters. The decision focused on the operability of the vessel with installed computer control systems and minimal organizational maintenance while deployed. After multiple design iterations, the general characteristics were developed, as provided in the table below.

Length (Overall)	418 ft	**Beam**	54 ft
Draft	24 ft	**Height**	138 ft
Displacement	4500 LT	**Max Speed**	28–30 knots

Small Boats	One Long Range Interceptor 35' boat	Two Over-The-Horizon 26' boats
Deck Weapons	57mm computer controlled deck gun	20mm close in weapons system

Endurance	7800 NM @ 15 knot	6300 NM @ 18 knots	3400 NM @ 25 knots

Since its commissioning, *Hamilton* has mostly been employed to counter the flow of illicit narcotics and human smuggling in the JIATF South area of responsibility, most notably the greater Caribbean area and equatorial Eastern Pacific. These are prime transit routes used by transnational criminal organizations for smuggling illegal narcotics, primarily cocaine and marijuana. While these networks currently move drugs, their established pathways and logistics cells are capable of moving any illicit good, including people or other things, whatever will make the most money. In addition, NSCs are now being deployed in support of Department of Defense's combatant commanders. In general, the capabilities of the NSCs far outweigh those of its older sister cutters, most notably the medium endurance cutter fleet of aging 210-foot and 270-foot cutters, based on their sea keeping, maneuverability, and ability to detect, engage, and interdict.

From an engineering perspective, fundamental to the design of the cutter is redundancy. The NSC is equipped with a robust propulsion system that includes two main propulsion diesel engines (MPDE) and a main gas turbine, which can operate independently or collectively via a cross connect gear and two reduction gears. Further, an integrated machinery control and monitoring system (MCMS) uses programmed logic that allows for multiple propulsion configurations depending on mission requirement. Separate from propulsion, the ship includes redundancy in the auxiliary systems, like air conditioning, refrigeration, and potable water makers. Finally, a key component of the engineering system is the electrical generation. The configuration is comprised of three same-characteristic ship's service diesel generators (SSDG), each of which can provide enough power for most missions. Additional programming in the MCMS architecture includes logic that allows for an offline SSDG to start and parallel to the electrical buss if there is an indicator that the electrical load is becoming too much for one to handle. This arrangement makes it less likely that a loss of power would occur, ensuring continuity of operations.

The burning remains of a vessel used to traffic illegal narcotics is monitored. Coast Guard photo by CAPT Mark Gordon

These are fantastic capabilities that are more than proving their worth. To maintain them and keep them current, the Coast Guard will need to address the challenges of lifecycle sustainment on a complex platform that must maintain its technological edge far into the 21st Century. The shift from all-organic, Coast Guard engineering expertise and wrench turners to a contracted out maintenance and repair model must be addressed to keep these platforms performing at peak performance. The Coast Guard business model employed for mission support encompasses multiple logistics centers that are

Coast Guard Cutter *Hamilton* was positioned off the coast of Wilmington, North Carolina, to serve as the command and control platform during Hurricane Florence in fall 2018. Coast Guard photo

further organized into fleet-centric product lines. From an engineering perspective, the Coast Guard's technical authority resides with the Surface Forces Logistics Center (SFLC). The primary SFLC product line supporting the NSC are the Long Range Enforcer (SFLC-LRE) and secondary small boats. From a combat systems perspective, the primary support stems from the Command, Control, Communications, Computers, Information, and Technology Service Center. Collectively, these organizations are responsible for ensuring planned and unplanned organizational and depot level functions occur to meet the cutter's sustainment needs, including identification and development of replacement systems throughout its life cycle.

There are additional tenets that factor into the support for the NSC, including configuration management, bi-level maintenance, and total asset visibility. Adherence to a standard build-out or configuration is a common challenge with centralized support. Far too often, crews take the initiative to improve or alter installed systems for expeditious casualty repair or general betterment of habitability or maintainability. As a result, the cost to sustain increases as differing configurations may require multiple, similar components from different vendors, in addition to unplanned costs necessary to restore configuration. From a maintenance perspective, the Coast Guard focuses on a bi-level system—organizational and depot. Organizational relates to the maintenance performed by the unit crew, while depot may be other organic resources with additional skills and training or contracted out. Finally, total asset visibility is a term related to the use of modern information systems that provide snapshots of an asset's capability and maintenance needs, viewable by essentially any element within the Coast Guard, most notably the operational commander and support elements.

Ensuring long term sustainment of mission excellence is not an easy task and competing demands include diverse operational and maintenance requirements, calculated reliability as systems and components age, and unknown external factors including budget climate and political realities. One of the more challenging aspects of operating a NSC relates to the expectations for the billeted crew. The current position assignment list includes manpower gaps among all technical rates further challenging the ability to complete needed organizational level maintenance. This triggers more reliance on contracted out maintenance to complete various tasks ranging from topside preservation to in-depth equipment troubleshooting and repair. From a fiscal perspective, the maintenance cost per operating hour (MCpOH) is used to track maintenance expenses, and is defined as

the actual maintenance expenses for an asset, including direct and indirect maintenance costs as well as depot level labor and installed repairable parts. By comparison, the FY18 MCpOH for a WHEC with more personnel and stable support contracts was $2,509 while the NSC required $4,226, highlighting the challenges and expense of maintaining a NSC. It is noted that there are more NSCs now than there are WHECs in service, but the MCpOH for a WHEC, in general, remained the same from FY13 to FY18 prior to their decommissioning.

> Technical rates include boatswain's mate, electrician's mate, electronics technician, and machinery technician.

A primary driver for this difference in cost stems from a need for the NSC to conduct a major dockside availability each inport, normally contracted out to a commercial entity. This is a product of the extensive recurring depot level maintenance necessary for the various systems, structure, and ongoing improvements. While hiring a single contracted integrator saves significant contracting capacity, there is a potential cost savings, as well as additional technical expertise, if individual work items are completed by Coast Guard maintenance or Coast Guard industrial enterprise teams. Separate from planned maintenance, a significant level of discrepancy repair requires contracted technicians, typically from the original equipment manufacturer, to perform the necessary work to restore the system. There will always be system nuances, or increasing reliance on proprietary software that may require this level of support. However, an investment in the training, skill, and technical knowledge of our cutter and shoreside support workforce is paramount in gaining organic experience and achieving long-term cost savings.

As the Coast Guard evolves and systems mature, it is prudent to evaluate these systems to ensure correct functionality. Follow-up operational testing and evaluation is highly recommended when upgrades are implemented. There are means of thoroughly investigating the fault or failure of a system, often accomplished through a root cause for failure analysis or failure mode, effects, and critical analysis. These investigation techniques are useful in understanding the nature of the failure, what is necessary to restore functionality, and highlight how this can be a detriment to the NSC success.

Reliability-centered maintenance is a proven philosophy for how to best integrate maintenance and repair efforts for a system while ensuring operational requirements are met. This is a concept that enables the identification of maintenance needs prior to a forecasted milestone by using metrics like time or operational hours. It also predicts if, or when, a failure may occur thus enabling the user to take action prior to the casualty. SFLC-LRE uses this philosophy with respect to the national security cutter's MDPE, a critical system necessary for the NSC to carry out its missions. During each inport, an SFLC-LRE engineer pulls a data extract from the MPDE data log and evaluates the engine's operation and function. In addition, quarterly lube oil samples are tested, using standard industrial criteria, for how the internal components of the MPDE are wearing. In response, the original equipment manufacturer conducts a diesel engine inspection to return the MPDE to near-original build as well as conduct additional repairs based on the aforementioned inspections. Finally, in conjunction with the original equipment manufacturer, engine overhauls and maintenance are incorporated into NSC inport maintenance projects, typically concurrent with diesel engine inspections. Because of this, the NSC fleet MPDEs are continuing to perform well, with few exceptions.

Support for new designs, technology, and techniques requires careful planning. Integration of new systems into an original design is not a quick process and requires multiple levels of coordination. As a result, the power plant can meet operational need, logistics mechanisms are in place, the personnel operating or maintaining are trained, the physical structure can withstand the operational environment, and funding is available. There are many new concepts under consideration, and others being implemented. One in particular is the small unmanned aerial system (sUAS). This emerging technology will allow for surveillance of suspected targets of interest and reduce reliance on maritime patrol aircraft. A launching platform will be installed on each NSC with at least one sUAS. Already in use for limited operational test and evaluation, the initial response is an incredible force multiplier that greatly improves real-time visual accountability of suspected vessels.

Additional improvements include expanded underway connectivity to allow for improved command and control with shoreside tactical and operational commanders allowing for expedited interdiction. While this is one example of improved capability, it is imperative that continuous identification of life-cycle upgrades for the cutter as a whole continue, many of which are identified by the operators and offered to the acquisition and sustainment organizations for development and implementation.

The NSC continues to provide robust offshore coverage and will continue to prove its worth in the years to come. To date, eight NSCs have been delivered and

Coast Guard Cutter *Hamilton*'s crew completes an abandon ship drill. Coast Guard photo by CAPT Mark Gordon

another three are expected. We must continue to highlight the benefits these vessels offer, especially the increased operational effectiveness, regardless of the mission. A concern with the number of NSCs is that the original program of record called for eight. The latest projections for 11 indicate potential resource gaps, specifically with regards to personnel, funding, and necessary shore infrastructure for their berths and support. We must also recognize and accept that the first National Security Cutter, *Bertholf*, is nearly 11 years old and the fleet is aging.

However, with the advancements of these vessels, we must be ready to support, and continue to improve, their abilities. We must forecast NSC sustainment needs and ensure that the maintenance availabilities we are executing are developed to effectively address pressing needs and to maximize the use of contractors for work that is best completed commercially. However, surging our organic workforce elements to handle more maintenance needs will result in a decreased capital cost while also improving internal Coast Guard response capabilities. This includes having a ready supply of spare parts, logistics support contracts in place, and crews trained to properly complete the work. Finally, the design, capabilities, and lessons learned from this fleet must be documented and understood for future acquisitions, including the offshore patrol cutter, and the fleet that will one day replace the NSCs.

About the Author:

LCDR Andrew Pritchett is a seasoned naval engineer, a permanent cutterman, and certified acquisitions program manager. An early career assignment to the National Security Cutter Project Resident Office instilled a desire to one day be assigned to a national security cutter and experience its engineering and operational capabilities.

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The First Line of Defense at Sea

Cutter crews intercepting migrants have complex roles

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The bioluminescent plankton glows through the wake of the Coast Guard small boat, as the boarding team carefully approaches a dimly lit vessel in the Mona Passage between Hispaniola and Puerto Rico. As the small boat closes the distance, it becomes apparent that it is a yola, a small outboard-propelled vessel used by Dominican fisherman, but also a common conveyance used to carry migrants or smugglers from the Dominican Republic to the island of Puerto Rico.

The yola in question seems to carry about 30 people waving their arms as if they need assistance. Operating under customary international law,[1] the Coast Guard is afforded the right to approach and verify the nationality of vessels in international waters. As such, it conducts right of approach questioning to determine the nationality of the vessel. There are three methods to accomplish this:

- observe the vessel flying a flag of a nation
- hear the master or person in charge make a verbal claim
- the vessel's master or person in charge producing documentation

Coast Guard Cutter *Tahoma* small boat crew transfers Haitian migrants from a 50-foot sail freighter 33 miles east of Great Inagua, Bahamas in March 2018. Coast Guard photo by Petty Officer 3rd Class Brandon Murray

If the vessel is unable or unwilling to provide such information, a warship (the Coast Guard small boat) may send a team to conduct a right of visit boarding to gather and confirm the information obtained during the initial questioning. If the vessel does not make a claim through one of the three right of approach methods, the warship that has been authorized to conduct such operations can treat the vessel as though it has no national affiliation. If this is determined to be the case, the vessel is subject to the jurisdiction of any nation. In these cases the government conducting the boarding can assert their own jurisdictional authorities over the vessel. In cases of safety of life at sea, vessels are obligated to render assistance under the same convention governing the right to board a vessel to confirm nationality.[2] Oftentimes, vessels may be dangerously overloaded, creating an imminent threat to the passenger's safety. In the case of the persons in the yola, the Coast Guard is exercising their international obligation to provide assistance[3] and attempts to get the passengers to voluntarily leave the vessel. In these cases, the safety of the migrants is always paramount to establishing jurisdiction and enforcing immigration laws.

As the coxswain formulates the approach, careful consideration is given to the stability of the migrant vessel as well the orientation and position of the people onboard. If the coxswain approaches the vessel on either the port or starboard side without analyzing the reactions of the people, their actions could jeopardize the yola's stability causing it to capsize. This reaction could make an already dangerous situation turn deadly.

Due to a nation's sovereign right to protect its border, the Coast Guard is one of the U.S. agencies charged with enforcing immigration laws out on the sea. Obligations to prevent illegal immigration by sea are outlined in a series of presidential directives issued since 1981.[4]

As they approach the yola, the original estimate of 30 people triples, and initial contact makes it evident the situation is

A boat crew from Coast Guard Cutter *Tahoma* participates in boat tactics training off the coast of Massachusetts in July 2016. Coast Guard photo by Petty Officer 3rd Class Nicole J. Groll

a migration scenario. The yola is severely overloaded and vulnerable to capsizing at any moment. The crew tells the migrants not to move and carefully hands over lifejackets. The coxswain reports this to the cutter's commanding officer, recommending immediate debarkation from the yola to ensure the safety of the migrants and receives authorization to do so. In turn, the commanding officer reports this information to the cognizant command center at Coast Guard District 7 in Miami, Florida.

With the small boat crew's encouragement, all 90 migrants disembark the yola in groups of five to be transported to the nearby cutter to begin their in-processing.

With the first load of migrants in the small boat, the coxswain requests permission to come alongside the 154-foot patrol cutter, which is actively preparing to receive the migrants on deck. As they make their approach to the cutter, the well-trained and prepared crew is tense but fluid as they try to keep themselves balanced in the choppy seas. After the small boat is secured alongside the cutter, each migrant climbs up the 6-foot ladder onto the deck where two more crew members greet the migrant to formally begin their in-processing. A basic medical evaluation is conducted by qualified medical personnel and their biographical and biometric data are collected by a crew member operating portable biometrics equipment.

The Coast Guard collects biometrics in accordance with a nationally approved biometrics collection program that allows information gathering on any person that has crossed, or is attempting to cross, the maritime domain's equivalent of the border. This data is sent to a fusion center where it is processed through three national databases that check for prior criminal activity and terrorist affiliations. Once processed, the data informs the crew whether migrants should be detained for their safety and potential interagency investigation, or prosecution. The cutter's operation officer analyzes the data and reports this information to the cognizant command center for dissemination to interagency partners for consideration. Through an interagency decision-making process, migrants interdicted at sea can be brought ashore for a multitude of reasons including further investigation into immigration-related offenses, prosecution for immigration-related offenses, witness purposes, and expedited removal proceedings.

In this case, none of the migrants have outstanding information in law enforcement databases. Since the data is shared among these databases, the United States government can catalogue the encounter with these 90 individuals, allowing for future identification if the migrants are ever stopped again attempting to cross the border illegally.

The migrants are given new, disposable coveralls that protect them from the elements and gets them out of their saltwater and gasoline saturated clothing. They also receive new footwear and blankets before being moved to an area of the cutter protected from the elements and safe from normal crew operations before being given food and water. The next step in the processing phase is to determine the disposition of the migrants. The cognizant command conducts disposition planning according to the applicable bilateral agreement.

The Department of State[5] has authorized the Coast Guard to negotiate, and enter into bilateral agreements, pertaining to interdiction at sea, specifically drug and migrant interdictions. The agreements are different, but generally cover several topics including shipboarding, shipriding, pursuit, entry to investigate, overflight, relay order to land, international maritime interdiction support, technical assistance, repatriation, third-party platform, and operations in each other's territorial seas. Under the current case, the District 7 Command Center would implement the repatriation provision of the United States and the Dominican Republic bilateral agreement.[6]

This agreement allows the Coast Guard to repatriate nationals of Dominican Republic and other nationalities that last departed the Dominican Republic. These international agreements are available for public access.[7]

Waiting for disposition instructions, the small crew, already spread thin, is now required to stand security watches in addition to normal navigational and engineering duties, as they sail to one of the designated repatriation ports in the Dominican Republic. As they make way across the Mona Passage, the security watch notices that a female migrant is becoming visibly nervous and starts crying. The crew member, recalling training in how to identify and report verbal and non-verbal cues of fear, notifies the commanding officer who decides to gather more information. The cutter's operations officer, with assistance from the onboard interpreter, sits down with the female migrant to ask about her distraught appearance and behavior. She explains she is afraid to return to the Dominican Republic because she was threatened by her previous boyfriend who said he would kill her. The crew immediately reports this to the District 7 Command Center, who relays the information to the Coast Guard's Office of Maritime Law Enforcement in Washington.

The Coast Guard does not make a qualitative assessment of claims of fear made at sea, they rely on the expertise of the United States Citizenship and Immigration Services' Refugee Affairs Division for this determination.

The United States' obligations are provided under the 1967 protocols to the 1951 United Nations Convention on the Status of Refugees[8] or the Refugee Convention, the United Nations Convention against Torture and Other Cruel, Inhuman or Degrading Treatment or Punishment, or the Convention against Torture.[9] The Refugee Convention is a 149-nation treaty that urges governments to take the actions necessary to protect individuals who have a well-founded fear of persecution in their country of origin. Under the Convention against Torture, the 83-nation human rights treaty aims to prevent torture and others acts of cruel and inhuman treatment against someone to gain information or a confession by a governmental official or those authorized by such persons. The United States' obligation under these treaties was fulfilled by the establishment of legislation and policy to address claims of asylum, with specific procedures for claims at sea. Under asylum law,[10] any alien that is physically present in the United States may claim asylum if the fear of persecution is due to their race, nationality, religion, political views, and/or social group. They can also claim asylum if they can demonstrate it is more than likely the individual will be tortured, or has been tortured, by an agent of the government of the nation to which they are to be returned. Additionally, the United States adheres to its international obligation to the Refugee Convention to not return individuals to a place where they have a credible fear of persecution or torture. This practice is referred

Coast Guard Cutter *Tahoma* small boat crew approaches a 50-foot sail freighter to interdict the 115 Haitian migrants aboard in March 2018. Coast Guard photo by Petty Officer 3rd Class Brandon Murray

Coast Guard Cutter *Tahoma* crew embarks a Haitian migrant onto the cutter in March 2018. Coast Guard photo by Petty Officer 3rd Class Brandon Murray

to as non-refoulement.[11]

If immigration officials determine a claim is legitimate, those asylum seekers are provided protection and permitted to remain in the United States. In the case of migrants interdicted at sea, the protection is afforded, but since the migrants are not present in the United States, alternate policies are applied. Under United States policy,[12] the Department of Homeland Security secretary provides asylum request procedures to those individuals interdicted at sea. When migrants' claim asylum at sea, it is referred to as a manifestation of fear. The same application of the asylum law is applied with the absence of the provision permitting the migrant to be protected in the United States. The United States and various other governments have agreed to protect individuals where measures for determining refugee status is present.

Coast Guard crews are trained to identify these subtle cues and how to report the observations through their chain of command. Reports received through the chain of command are referred to United States Citizenship and Immigration Services for further review. This agency's protective screening officers conduct at-sea screenings that determine whether the manifestation of fear is credible. This credible fear screening is a basic inquiry into their claim for consideration of further adjudication. If the interview indicates the migrant will require further screening, the person is protected and referred for a well-founded fear interview. These cases are carefully considered before a migrant is brought ashore for this interview because of the extensive time and resources required.

The process for determining the location to which the migrant will be taken, is adjudicated through an interagency decision-making process known as Maritime Operational Threat Response (MOTR), and is facilitated by the Global MOTR Coordination Center. This is a result of Presidential Policy Directive 18, which directs the United States to develop a systematic approach to addressing a multitude of national security threats.[13] The Global MOTR Coordination Center is a DHS entity within the United States Coast Guard charged with coordinating MOTR activities according to the national approved MOTR Plan,[14] and is accountable to the National Security Council.

A protective screening officer is deployed to the cutter to conduct an at-sea screening to interview the migrant to ascertain if the fear is due to a fear of persecution or torture if returned to their country or the country

Petty Officer 3rd Class Jeffery Evans passes out water to Haitian migrants aboard the Coast Guard Cutter *Seneca* in August 2017. Coast Guard photo by LCDR Krystyn Pecora

to which they are to be repatriated.

The officer determines the woman's claim is valid and requires a well-founded fear interview. The officer reports the results of this interview to the Coast Guard's Office of Maritime Law Enforcement, which begins coordinating with the Global MOTR to chart a course of action to transfer the migrant to immigration officials on Naval Station Guantanamo Bay for the interview. After extensive coordination, the migrant is transferred for her well-founded fear interview. The remaining 89 migrants are transferred to Dominican officials in the Dominican Republic.

As a matter of national policy, asylum protection is afforded at sea but the person is not granted access into the United States, as immigration laws do not apply extraterritorial. For this, cases requiring a well-founded fear interview occur at appropriate facilities on Naval Station Guantanamo Bay. To bring migrants interdicted at sea ashore anywhere in the United States, or its territories, requires consultation with interagency partners through the MOTR process.

After being transferred ashore to Naval Station Guantanamo Bay, and following an initial rest period, the woman is interviewed by United States Citizenship and Immigration Services who determine whether her fear is legitimate and requires protection. It is determined that she meets requirements for asylum and the United States is obligated under non-refoulement practices not to return the individual to the country where they fear for their safety. Per national policy,[15] the Department of State is required to work with international partners to accept refugees for permanent resettlement through third country resettlement agreements.

For many, the scenario described above will be very familiar and takes place in one of the many areas where the Coast Guard interdicts migrants attempting to illegally enter the United States by sea. From the Caribbean to Pacific, East Coast to West, the Coast Guard accounts for the majority of the total flow of migrants interdicted while attempting to illegally enter the United States through the maritime domain. The remaining migrants are interdicted or deterred by partner nations or other United States government and local agencies near shore or on land. Through effective interagency coordination and international partnership, the Coast Guard is equipped to carry out this important humanitarian and border security mission. The Coast Guard stands ready to preserve the safety of all life at sea and the sovereign right to protect the United States' border from all maritime threats.

About the authors:

LT Nicholas Spence has served in the Coast Guard for more than 17 years, including assignments at various law enforcement and search and rescue units. He is currently assigned to the Office of Maritime Law Enforcement and advises on migrant interdiction and human trafficking related policy.

CDR Patrick Culver is a career Coast Guard officer and is currently serving as chief of the Interdiction Division of the Coast Guard's Office of Maritime Law Enforcement Interdiction Division. He has more than three decades of service centered on drug and migrant interdictions at sea, search and rescue, and defense operations.

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Rescuers and Risk

Managing risk while maintaining a bias for action

by CDR Kevin Saunders
Office of Maritime Security Response Policy
U.S. Coast Guard

LCDR Matthew Brinkley
Office of Counterterrorism and Defense Operations Policy
U.S. Coast Guard

Organizations must learn to effectively navigate risk to survive, and the Coast Guard is no different. Leaders must understand, evaluate, and mitigate risk to fully support stakeholders—the American public—while ensuring mission success. Over a century ago, the modern day Coast Guard was formed by the combination of five organizations which, at the time, exposed the need for better regulation and standards to reduce the inherent risk associated with its missions. Today, the service secures ports, waterways, and coastal infrastructure, while assisting thousands of people with search and rescue and law enforcement actions. While these missions are carried out daily, familiarity alone does not make this job any less dangerous. The Coast Guard has always struggled to balance risk while maintaining the high level of protection and regulation that the nation has come to expect of the service in the post-9/11 era.

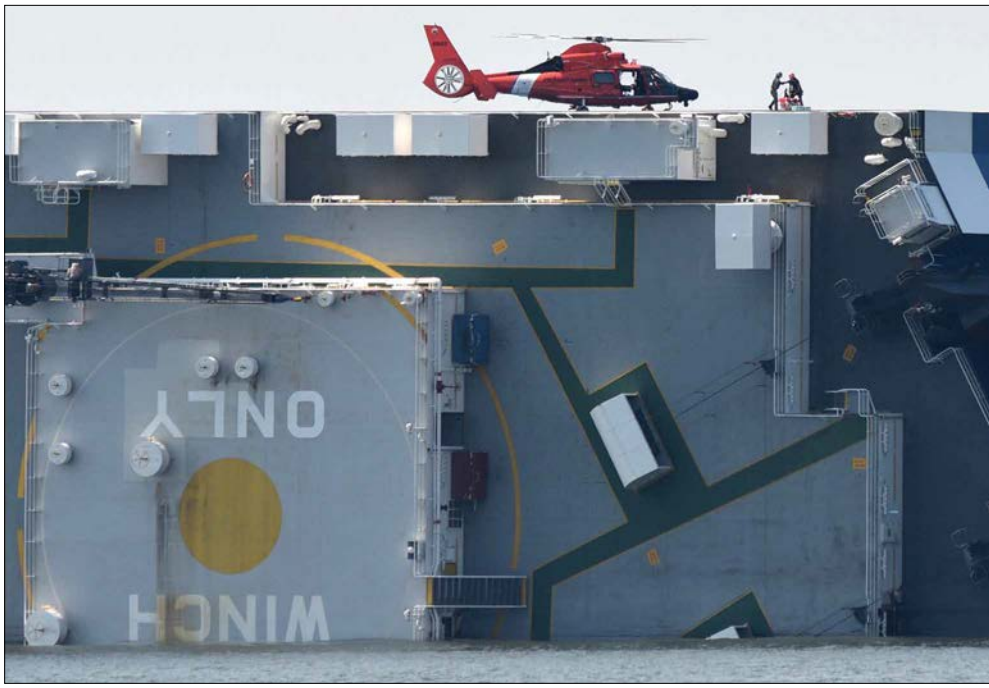
Members at all levels of the Coast Guard may be predisposed to unconsciously interpret risk with an internal bias that manifests differently at various levels of the organization. As leaders balance risk, they must avoid falling into the trap of letting personal bias drive them to avoid risk or take excessive risk. Just as operators continuously train for greater challenges, second and third-level supervisors must develop their own risk-reduction mentality to view, accept, and mitigate risk. Leaders with a bias towards risk avoidance should teach their people to evaluate and mitigate personal risk instead of sheltering them from all risk and becoming risk averse. This is the challenge of every leader who truly cares for the men and women with whom they serve. The very nature of the Coast Guard forces every member of the organization to make decisions with uncertain outcomes. It is essential that leaders work to harness their bias and effectively lead in overcoming irregular and emerging threats, in order to empower responders to act and insulate them from the paralysis of needing a perfect plan.

Rescuer Personality

You have to go out … but you don't have to come back.

Between World War II and the events of 9/11, this unofficial slogan of the Coast Guard defined the identities of the brave men and women who chose to serve in the organization. This motto, and the stories that brought these words to life, inspires thousands of high school students searching for purpose in something bigger than themselves.

The Coast Guard attracts men and women who are physically and physiologically equipped to accept self-risk to help others. People in these types of rescuer careers usually possess similar traits or characteristics. When a group of people with similar values work



A Coast Guard helicopter lands on the capsized M/V *Golden Ray* in St. Simons Sound, off the coast of Brunswick, Georgia, to assist four crew members trapped inside the ship. The risk associated with landing on the side of the M/V *Golden Ray* falls directly on the shoulders of the aircraft commander. Photo taken by Bobby Haven/*The Brunswick News*

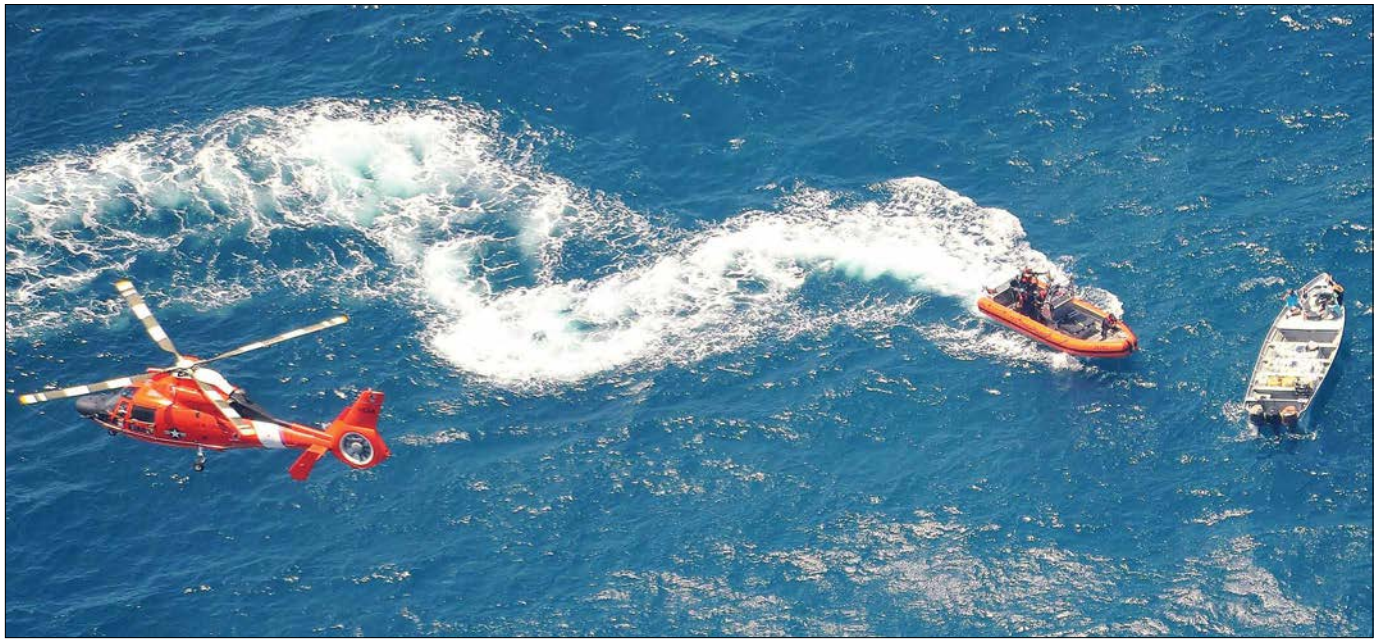
together, over time their views become institutionalized within the organization. Once this happens, they can be exported back into an individual's way of life, shaping everything he or she does. For example, while the phrase, "So that others may live," may have been an unofficial motto, these words were institutionalized as the creed of the aviation rescue swimmer community in 2014. This is an example of how the views of some individuals within a community shaped the views of current and future members of the community. Once ingrained into the organization, separating individuals' values from the way they approach their role in the Coast Guard is almost impossible. This is compounded if the individual already possesses a rescuer personality or the need to be needed.[1] Rescuer personality traits drive an individual to discount risk to themselves when faced with an opportunity to help or rescue an individual in need. For people with this personality, helping others is the primary purpose for living, outweighing the instinct for self-preservation.

The desire to help and rescue others manifests itself differently at various levels of the organization. Individuals with a rescuer personality at the tactical levels where service members are carrying out dangerous operations directly, will freely and enthusiastically accept great risk to save lives and protect others. Members with this personality at the strategic levels of the organization, charged with overseeing operations indirectly, may attempt to protect or shelter responders from harm. In an extreme instance, leaders with the rescuer personality may prioritize the lives of the personnel in their command, and discount the need to provide assistance to persons in peril. An organizational risk model that only looks at risks and risk mitigation without evaluating the reward aspect of taking action will discount the importance of the mission for safety. If the importance of mission success is not properly evaluated, a well-intended rescuer at the strategic level of the organization may make risk averse decisions in order to protect subordinates, even if the subordinate does not observe significant risk.

Coast Guard Station Seattle 45-foot response boat-medium conducts a high capacity passenger vessel escort of a Washington State ferry. Escorts like these deter and defeat vessels attempting to carry explosives to attack the maritime transportation system. Coast Guard photo

Rescuers at the strategic level of the organization can become fixated on decisions that occur in operations, including outlining the flaws in a plan, or armchair quarterbacking the decisions made by those in the field. As a result, those directly engaged in operations may begin to feel micromanaged and unsupported. People with rescuer personality "develop a sense of morality which defines 'right' and 'wrong' decisions that are made. Then the rescuer attempts to stop every wrong decision they can, believing that this method of micromanagement helps the other person learn healthier life habits."[2] However, the strategic-level rescuer that micromanages, projects their own perceptions on others in an effort to correct behaviors that may not necessarily need correcting. One unintended consequence of this type of micromanagement is the rescuer at the tactical end of the mission developing a feeling of regret or guilt in not being able to complete an operation in a way they find acceptable. In addition, restricting a tactical rescuer from taking action jeopardizes their feeling of self-worth, confidence, and contentment within the organization, negatively impacting future missions.

In times of immense need, the pull of the rescuer personality at the tactical level will override personal safety, laws, regulations, and the pleas of loved ones to be more cautious. After the 9/11 attacks on New York City, dozens of boats from the New York and New Jersey area aided in the evacuation of victims. Many of these responders believed another plane attack would occur. Vincent Ardolino, captain of the commercial fishing vessel *Amberjack V,* described his decision-making process to respond by stating "I have to go do something … I have to do what I have to do and no one can stop me, even if I save one person, that's one person less that will suffer and die."[3] He viewed the decision to take action as ethical. "You forget all about what you are supposed to do, morally this is the right way to go and deep down this is what I am gonna do," he said.[4] He is a textbook example



A Coast Guard crew approaches a cocaine-laden vessel destined for the United States. The Coast Guard works with interagency and international partners to patrol known transit zones to deter and disrupt trafficking of illegal drugs, dismantle transnational criminal organizations, and prevent transnational threats from reaching the United States. Coast Guard photo

of how the rescuer personality manifests in the mind of a first responder. No amount of micromanagement or supervisory intervention would deter him from taking actions he thought would save lives even at great risk to himself. Even more profound is that he was under no public obligation to assist as a commercial fisherman. Ardolino's need to help was internally driven. In an organization like the Coast Guard where there is a strong public expectation of action, a responder with a mild rescuer personality could still easily ignore orders of the chain of command to do what he or she thought was right.

Aversion Effect

Averse means a strong feeling of dislike. In the case of a senior member of an organization with a rescuer personality, risking the lives of subordinates brings a strong feeling of dislike. Risk aversion can drive a feeling of uncertainty, cause hesitation, and generate a less predictable outcome to a response. Having an aversion to something drives a lower expected outcome to the result, and therefore makes an individual less likely to participate in action.

The idea of aversion has tilted the risk versus reward debate of public servants. After the shooting in Parkland, Florida, the on-scene commander told Broward County Sheriff deputies not to enter Marjory Stoneman Douglas High School while an active shooter was inside.[5] In another example, first responders were directed by their police inspector not to intervene to save a drowning man because of lack of 'significant training' and lack of formal record proving their qualification to act in this specific scenario. "In cases where patrol officers did take initiative and resolved or attempted to resolve a situation prior to SWAT arrival, they were often chastised and administratively punished for stepping outside their role and training."[6] Rescuers gain personal value in the need to help others. That need to act far outweighs the fear of litigation or worry of command disapproval. "Under the current ethos, the natural human response—to want to save a life—is being trumped by bureaucratic, safety-obsessed procedures and box-ticking," University of Kent sociology professor Frank Furedi writes in a December 2018 Spiked-Online article.[7] Leaders of an organization are increasingly forced to weigh political and organizational risk as well as the risk to responders. Furedi writes in that same article that, "society cannot expect its first responders to automatically intervene in every dangerous situation that confronts them. We expect them to temper their sense of duty with professional judgement. But, regrettably, duty is increasingly seen as an old-fashioned concept that needs to give way to the technical ethos of risk-management."

While these examples may seem exceptional, imagine encouraging a child to play his or her hardest on the sports field, while at the same time chastising that same child for every bruise or broken bone sustained in the pursuit of a sports victory. While a parent may choose to ignore the benefits of sports in order to avoid injury, overly sheltering the child from danger may have other adverse effects such as loss of confidence and sending a mixed message. A person that has aversion will prefer

inaction to completing a task when significant risks exist. Unfortunately, scenarios like this happen regularly, both in parenting and directing Coast Guard missions. Even in routine Coast Guard operations, there is anecdotal evidence that some choose to ignore Coast Guard policy and not conduct a security activity with mounted automatic weapons in the proper loading conditions. If this practice is taking place, one logical justification a rescuer personality would use is that carrying unloaded weapons protects responders from enduring the fallout of a negligent discharge. This discounts the risk to that boat crew engaged in the security activity should the need to respond to a threat occur and there is no weapon available to disable that threat.

Risk aversion is not new. Recently, it has migrated towards an idea that high consequence and low probability events are so unlikely that mitigating risk by abandoning mental and physical preparation for a response is reasonable. In essence, risk mitigation is replaced with risk avoidance. The success of risk avoidance is grounded in the hope that rescuers will never be required to respond to a real threat involving real risk. Instead of being prepared to confidently say, "Not on my watch," some rescuers choose to adopt the ethos, "Hopefully not on my watch." Hope is not an action.

Risk Management

There is a distinct difference between risk aversion and risk reduction. In order to mitigate risk, it must first be embraced. Risk reduction thrives under a system of standardization. Sumner Kimball, the father of the United States Life-Saving Service, one of the organizations that merged to form the Coast Guard, recognized this when he overhauled the "Revenue Marine and the hodgepodge system of lifesaving stations along the nation's coast."[8] He created policies and regulations that standardized how stations would operate, including requiring drills and exercises still practiced today. While he deliberately created a series of standards to reduce risk during rescues, Kimball also proved he was not risk averse by embracing the dramatic exploits of the Life-Saving Service. He hired a professional author to develop annual reports to Congress that were captivating enough to loosen purse strings. These finances created investments to the Life-Saving Service's infrastructure which, in turn, provided for a better equipped, more capable, and safer service.

Kimball was motivated to safely execute the missions of the Revenue Marine Division and turn it into today's Coast Guard. He did this, not by avoiding risk, but by embracing risk and analyzing where response could be made safer through training and standardization. It is safe to suspect he was, at least in part, influenced by the needless loss of life that impacted everyone who lived during the Civil War. Kimball had no desire to be a hero, but recognized that some situations called for men and women to take risk in the execution of missions that matter.

With the exception of political and personal risk, leaders at the strategic level of the organization, have probably lost their ability to accurately evaluate the risk responders in the field are oriented to navigate. Instead, leadership is much better equipped to evaluate the risk involved with their own performance, usually managing the event, rather than the performance of their subordinates directly focused on the operation. An analysis of financial risk shows that it is not "sufficient to have lived in a different state of wealth in the past, since the feeling that the previous conditions produced will be remembered so imperfectly that it would not be possible to develop the corresponding level of risk-aversion, even if the person wished to do so."[9] Assuming the process for evaluating financial risk is similar to that of evaluating risk of injury, it can be extrapolated that even if a supervisor had experience conducting the exact operation in the past, he or she is still not truly equipped to

A crew member from Coast Guard Sector Boston patrols on a 45-foot response boat-medium in Boston Harbor behind a mounted automatic weapon. The tactical boat crews undergo training to reduce collateral damage in a confined waterway should they need to defeat a threat to the port. Coast Guard photo

fully analyze the risk of a mission. Instead, leaders at the strategic levels of the organization should focus on emphasizing the strategic goals of the service, to save lives and stop the threat. They should focus on ways to ensure first responders are "empowered through training, policy, and procedure." [10] The operational level of the organization is best suited to develop the parameters on how these goals are achieved. The tactical level is best suited for evaluating, orienting, deciding how to mitigate and assume risk, and acting to accomplish the mission as long as they have learned to recognize and, if necessary, restrain their bias to take unnecessary risk. Left to do what each level of the organization does best, the values of the service will flourish.

Members from a Coast Guard Law Enforcement Detachment board a semi-submersible loaded with drugs in the Caribbean Sea. Law enforcement teams balanced risk versus reward while attempting to stop the flow of illegal drugs into the United States. Vessels like this are sometimes scuttled by smugglers upon interdiction. Coast Guard photo

Conclusion

The traits associated with the rescuer personality exist at all levels of the Coast Guard. If a supervisor does not recognize his or her bias to shelter subordinates from risk by being overly risk averse, responders will not operate at their highest potential. Tragically, that supervisor has now allowed that responder to feel the regret of not rendering assistance to a person in need. Given the latitude, service members with the rescuer personality will go above and beyond to help those in need. If a supervisor has the rescuer personality, they can learn a lesson from Sumner Kimball. First, they must be in the best position to evaluate mission risk, regardless of their experience. Second, they may recognize and possibly temper bias that manifests as risk aversion or micromanagement. Instead, they should focus on reducing risk before the incident occurs in order to avoid creating a climate of crisis paralysis at the tactical level of the response. Third, they will best serve the public and their subordinates by setting up strategic goals and permitting tactical levels of the organization to operate with the full support of the chain of command. Lastly, in every situation they must facilitate other members of the organization to do what they are naturally ingrained to do which is to help themselves and the organization by helping others.

Note from the authors:

This article does not begin to examine all of the factors involved in risk-informed decision-making. Instead, it focuses specifically on biases that are common and predictable for people with the rescuer personality. The aim of this article is to help readers recognize their potential bias so they will be more equipped to employ informed critical thinking of their personal decision-making process. This article may be controversial for some readers but the intent was to spur internal reflection and group discussion. Both writers recognize the irony of avoiding discussions regarding this topic for risk of offending others.

About the Authors:

CDR Kevin Saunders currently serves as deputy of Maritime Security and Response at Coast Guard Headquarters in Washington, D.C.

LCDR Matthew Brinkley currently serves in Counterterrorism and Irregular Warfare Strategy and Policy division at Coast Guard Headquarters in Washington, D.C. He is a permanent Cutterman and a 2017 graduate of the U.S. Naval War College.

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The Ultimate Multi-Tool

The National Strike Force's history of support to the Department of Defense

by CDR JoAnne Hanson
Interagency Coordination
Office of Marine Environmental Response Policy
U.S. Coast Guard

Anthrax and ricin and sarin, oh my! The National Strike Force has responded to them all and many other unique incidents. Working for and with a variety of Department of Defense entities, the National Strike Force has a long, varied history of protecting the citizens of the United States and the environment from exposure to oil, chemical and biological agents, and hazardous materials.

The National Strike Force is comprised of approximately 140 active duty, 105 reserve, and 25 civilian personnel. There are five operational elements of the National Strike Force including three strike teams, the Public Information Assist Team, and the Incident Management Assist Team. The command element, the National Strike Force Coordination Center, is based in Elizabeth City, North Carolina, which also has an important preparedness role as part of the larger, intergovernmental National Response System.

The Five Operational Elements of the National Strike Force

Strike Teams	
• Atlantic Strike Team	Fort Dix, New Jersey
• Gulf Strike Team	Mobile, Alabama
• Pacific Strike Team	Novato, California
Public Information Assist Team	Elizabeth City, North Carolina
Incident Management Assist Team	Norfolk, VA

A special team under the National Contingency Plan, 40 C.F.R.§ 300, the National Strike Force is one of the Coast Guard's deployable specialized forces. It was created in 1973 by the Federal Water Pollution Control Act, or the Clean Water Act, to respond to large scale environmental threats from oil and hazardous substance incidents. This special team is available to assist Coast Guard, Environmental Protection Agency, and the Department of Defense on-scene coordinators in executing authorities for spill preparedness and response, incident management, spill stabilization and containment, and contractor monitoring and oversight during response operations. With such a broad scope for response activities, the National Strike Force supports on-scene coordinators and operational commanders responding to environmental threats anywhere.

Let's start with an oil spill response, a traditional Coast Guard mission. One of 11 statutory missions for the Coast Guard, oil spill response is part of the marine environmental protection mission. During the 2003 Operation Iraqi Freedom engagement, the Department of Defense requested the National Strike Force pre-stage in the Persian Gulf in preparation for military engagement. Assigned to a Navy ship as subject matter experts to assist in oil spill response should Saddam Hussein blow-up oil wells as he had during the first Persian Gulf War, a dozen National Strike Force members coordinated with the Navy supervisor of salvage in response preparations. While there was no significant or deliberate discharge of oil during this short conflict, the lessons learned from the first Persian Gulf War allowed for appropriate technical resources to be locally available to respond quickly.

In 2004, the National Strike Force responded to the ricin incident on Capitol Hill. Quickly following the 2001 anthrax incident, numerous protective actions had been implemented that prevented wide-spread contamination of the ricin powder delivered via a letter to the Dirksen Senate Office Building. Working with the Environmental Protection Agency and the Marine Corps Chemical Biological Incident Response Force, the National Strike Force completed widespread collection of potentially contaminated materials from the building and the technical decontamination of the affected offices. The efficiency of the integrated response team ensured that normal business operations resumed at the building within one week of the reported contamination.

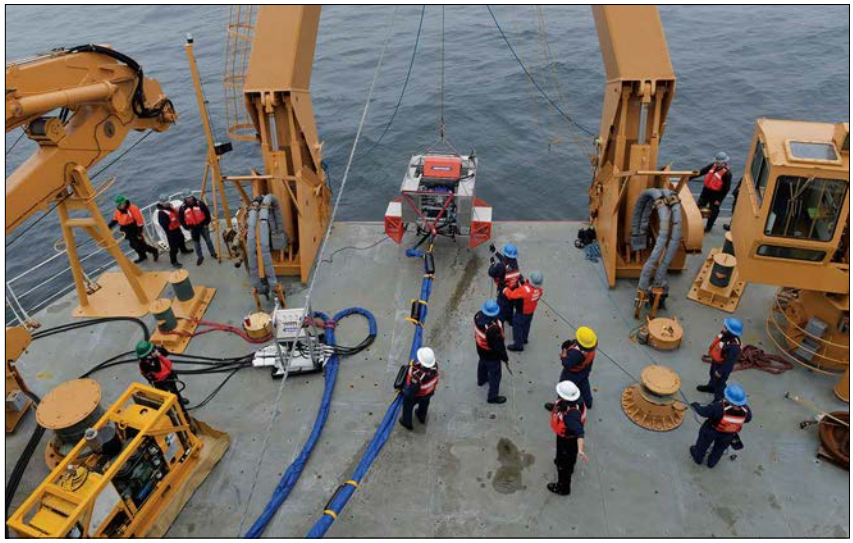
Does anyone recall the disabled spy satellite that was inbound for collision with Earth in early 2008? Operating under the mission name Burnt Frost, the Department of Defense and the Federal Emergency Management Agency coordinated on a robust response to the predicted impact from the satellite that was expected to scatter debris over several hundred miles. Contained within that debris was 1,000 pounds of the highly toxic fuel, hydrazine. The National Strike Force worked closely with Department of Defense counterparts to develop response plans and outfit joint emergency response teams in preparation to deploy wherever the satellite fuel tank landed. This was a massive planning effort as the location of the satellite's potential landfall was difficult to predict so multiple locations were identified as staging areas. International diplomacy was initiated to lay the foundation for U.S. military personnel to enter foreign countries. The focus of the mission included both the minimization of public health and environmental impacts, but also the retrieval of any parts of the satellite technology. Ultimately, none of the joint response teams deployed as the Navy's USS *Lake Erie* used a missile to destroy the satellite and its fuel tanks, ensuring that any pieces making entry into the Earth's atmosphere would be too small to cause significant damage.

Members of the Atlantic Strike Team and the 1st Civil Support Team conduct an operations brief aboard the ESS *Pursuit,* near New Bedford, Massachusetts, in June 2010. Coast Guard photo by Petty Officer 2nd Class Lauren Jorgenson

Chief Petty Officer Bridgette Brown in Port-au-Prince, Haiti, during response to the Haiti earthquake, in January 2010. Coast Guard photo by Petty Officer 3rd Class Brandon Blackwell

When the 2010 earthquake devastated Haiti, the National Strike Force was called upon to assist the Marine Transportation System Recovery Unit in port assessments for oil discharges and hazardous materials releases. Embedding in support of the Department of Defense Southern Command Joint Task Force-Haiti operation, members of the National Strike applied their technical expertise to assess all the major ports and facilities for pollution impacts, as well as reporting on infrastructure damage and supervising pipeline repairs. Furthermore, with resources being delivered to support relief efforts, National Strike Force personnel provided safety oversight for the offload of essential petroleum cargo, including liquid petroleum gas and jet fuel.

Aside from responding to oil spills and hazardous materials releases, the National Strike Force also has capabilities to conduct salvage operations in conjunction with mitigating pollution threats. When Coast Guard Sector Honolulu learned the USS *Chehalis,* a sunken Navy Patapsco class gasoline tanker, was leaking small quantities of oil, they relied on the National Strike Force to provide technical expertise for the product offload of the relic vessel. *Chehalis* suffered a catastrophic explosion while off-loading gasoline at Pago Pago Harbor on the Island of Tutuila, American Samoa, in 1949. When fire containment attempts failed, the ship was eventually towed away from the fuel terminal and scuttled. After decades of sitting on the ocean floor, Associated Underwater Services divers reported that *Chehalis* was leaking small quantities of oil. Observations of *Chehalis'* cargo tanks revealed empty tanks with an absence of



Coast Guard National Strike Force members, with support from Coast Guard Cutter *Healy* deck crew members, hoist a self-propelled Arctic oil skimmer after an initial test in the Bering Sea. Coast Guard photo by Senior Chief Petty Officer Rachel Polish

marine growth on the tank walls. This was a strong indicator that fuel was present in the tanks well after *Chehalis* sank, but that it eventually leaked from the tanks into the harbor environment. It is estimated that up to 100,000 gallons of fuel had leaked from *Chehalis* in years leading up to this 2010 response. Working with Navy divers, the National Strike Force recovered approximately 1,000 gallons of diesel fuel and more than 55,000 gallons of aviation gasoline, minimizing the potential for future marine environment contamination from this historic vessel.

In a rather unique incident, the National Strike Force received a request from Coast Guard Sector Southeastern New England for assistance with the clam fishing vessel ESS *Pursuit*. The vessel had hauled in several military munitions containing mustard gas mixed in with its catch off the coast of Long Island. One of these munitions released its contents on the deck, contaminating one deck hand and 500,000 pounds of freshly caught clams. In conjunction with the 1st Civil Support Team, a National Guard weapons of mass destruction special team, the National Strike Force conducted decontamination procedures, air monitoring, and safety oversight for the recovery and packaging of the munitions.

The National Strike Force has frequently responded and trained with the 55 civil support teams across the nation to enhance interoperability and mission effectiveness. These exercises are often complex, multiagency evolutions involving other federal agencies, like the Federal Bureau of Investigation and Customs and Border Protection. Whether exercising capabilities to mitigate threats from a radiological device in a shipping container or containing a potential bioweapon in a railcar, these scenarios test the responsiveness and interoperability of both Coast Guard and Department of Defense response entities.

The most recent and complex operation the National Strike Force supported was the 2014 United Nations Security Council Resolution 2118 calling for the expeditious destruction of the chemical weapons program in the Syrian Arab Republic. The strike force was requested to deploy internationally in support of U.S. Naval Forces Europe Command and in coordination with the Organization for the Prohibition of Chemical Weapons and the United Nation's Joint Mission. The National Strike Force's role was to provide a contingency hazardous materials response capability during the transload of chemical warfare agents from the Danish vessel M/V *Ark Futura* to the U.S. Maritime Administration vessel M/V *Cape Ray* at the Port of Gioia Tauro, Italy. During the at-sea neutralization of chemical agents, the team then moved from Naval Air Station Sigonella, Italy, to Naval Air Station Souda Bay, Greece. This operation spanned six months, involved months of planning and coordination to integrate into the Department of Defense mission, and established logistics reach-back for such a prolonged overseas operation. The lessons learned from planning the response evolutions necessary to transport people and equipment to the M/V *Cape Ray* helped bolster National Strike Force policy and operational doctrine for response to offshore threats in U.S. waters.

The National Strike Force is truly a multi-tool in the giant federal response capabilities toolbox. Its personnel are trained and equipped to serve as technical advisors or responders to a wide spectrum of threats against the homeland. While the legacy of the National Strike Force rests in its marine environmental response mission, it has evolved over the last four decades to address an ever changing landscape of potential threats to the environment and our nation's citizens. This short summary of cases related only to their work in conjunction with the Department of Defense highlights the operational diversity of this small element of the Coast Guard's marine environmental response mission. It's reinforced by the National Strike Force motto: Any Time, Any Place, Any Hazard.

About the Author:

CDR JoAnne Hanson was privileged to serve 16 years with the National Strike Force (NSF). She has served at all three strike teams and in the NSF Coordination Center as operations officer, executive officer, and deputy commander of the NSF. Her experience culminated with her service as commanding officer of the Gulf Strike Team.

National Security Cutter Conducts National Defense Mission

by CAPT John J. Driscoll
Commanding Officer, U.S. Coast Guard Cutter Bertholf
U.S. Coast Guard

From January to July 2019 Coast Guard Cutter *Bertholf* deployed on a Western Pacific patrol under operational control of the Navy's Seventh Fleet and tactical control of Task Force 70. As we prepared for the deployment, I frequently heard people say, "That's not a Coast Guard mission," or "How is that the coast of the United States?" Those comments came from the public, from family members, and even members of the Coast Guard—including cuttermen. The reality is that our deployment was squarely a Coast Guard mission—defense readiness. While not sailing off the U.S. coastline, we were most certainly conducting a national defense mission that defended the United States and our global national security interests, including maritime security, while strengthening relationships.

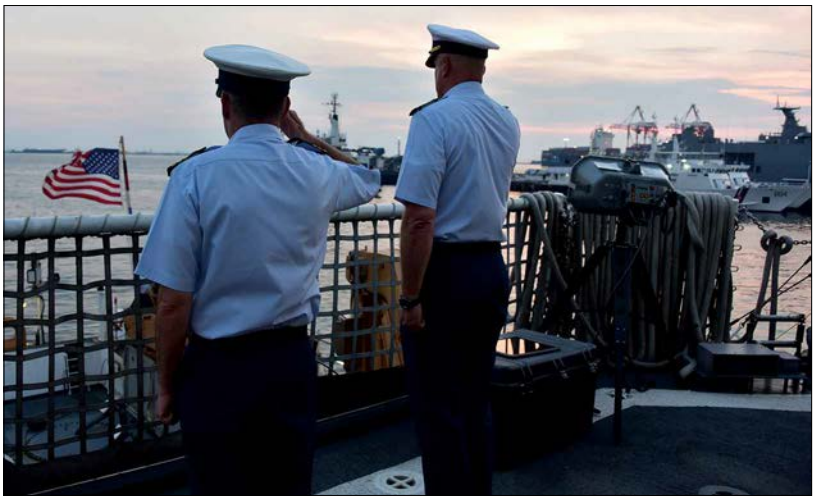
Bertholf's Western Pacific deployment had three main objectives:

- enforce sanctions imposed by United Nations Security Council Resolution against the Democratic People's Republic of Korea (North Korea) limiting the importation of oil
- work with regional navies and coast guards to reinforce partnerships, share our experiences, and assist in developing and expanding coast guards
- demonstrate professional adherence to international law and rules of behavior in the face of great power competitors

Enforcing Sanctions

Bertholf and our Navy counterparts sailed the East China and Yellow seas alongside ships from the navies and coast guards of Japan, Korea, United Kingdom, Australia, and Canada. Our unique Coast Guard experience conducting counter drug operations was incredibly useful as the international community worked to eliminate networks that circumvented the sanctions. We clearly demonstrated the complementary relationship between the Navy and Coast Guard in conducting national defense missions. Tactics used for decades by cuttermen to locate and interdict vessels involved in drug smuggling were put into service as *Bertholf* provided surveillance and tracking of, as well as evidence collection from, vessels involved in illicit ship-to-ship transfers of oil destined for North Korea.

While any Coast Guard cutter could conduct some of these missions, National Security Cutters are ideally equipped to do so. Unlike other classes of cutters equipped with SeaWatch, National Security Cutters (NSC) are equipped with the SeaCommander combat system which is very similar to the Navy's AEGIS Weapon System. SeaCommander allowed *Bertholf* to integrate with the Navy and Air Force for maximum effect while operating throughout the Western Pacific. This was especially critical during enforcement operations in support of the United Nations Security Council Resolutions against North Korea.



CDR Robert Hill, left, executive officer of Coast Guard Cutter *Bertholf,* joins CAPT John J. Driscoll, commanding officer, for evening colors during a reception for dignitaries, including Philippine Foreign Secretary Teodoro L. Locsin, Jr., U.S. Ambassador to the Philippines Sung Kim, and senior commanders of the Philippine Coast Guard, on the *Bertholf* flight deck in Manila, Philippines on May 16, 2019. Coast Guard photo by Chief Petty Officer John Masson

CAPT John J. Driscoll, foreground, commanding officer of Coast Guard Cutter *Bertholf*, conducts a tour of the ship's bridge with senior Philippine and American officials, including Adm. Elson E. Hermogino, commandant of the Philippine Coast Guard, far left; Philippine Foreign Secretary Teodoro L. Locsin, Jr., center; and U.S. Ambassador to the Philippines Sung Kim, to Driscoll's right, during a reception in Manila, Philippines, on May 16, 2019. Coast Guard photo by Chief Petty Officer John Masson

A crew member steps aboard Coast Guard Cutter *Bertholf* from the ship's 26-foot Mark IV over-the-horizon boat as the ship gets underway to resume its Western Pacific patrol on May 7, 2019. Coast Guard photo by Chief Petty Officer John Masson

Building Connections

Bertholf conducted engagements with the Republic of Korea (South Korea) Navy and the coast guards of Japan, Korea, and the Philippines. We shared techniques and best practices in the areas of search and rescue, law enforcement, damage control, seamanship, small boat operations, and helicopter rescues allowing *Bertholf* to rekindle long-standing friendships and professional relationships with our partners. Upon arriving in Manila, Philippines, *Bertholf* was greeted by an honor formation of Philippine Coast Guardsmen, standing at present arms, while a Philippine military band played *Semper Paratus*. *Bertholf* reinforced the techniques and procedures Philippine Coast Guard personnel are being taught in Yorktown and at the Coast Guard Academy, while learning the challenges that the service faces when enforcing sovereignty around the Philippines.

Liberty was part of our crew's mission during the deployment. While in Yokosuka and Sasebo, Japan, Jeju and Busan, South Korea, Hong Kong, Singapore, and Manila, the crew was encouraged to disembark, explore, and meet local populations while the American flag flew proudly from *Bertholf*'s flagstaff in the harbor. While cuttermen sometimes view port calls solely through a logistics lens as places to get food and fuel, showing the flag and demonstrating our core values to the public is strategically important to ensuring access to these foreign ports. Our crew was up to the task and enjoyed meeting new people, shopping, and eating amazing food.

Modeling Professionalism

One of the most important aspects of our deployment was demonstrating professionalism at sea. The East and South China Seas are filled with examples of territorial disputes between multiple countries. Wild interpretations of international law frequently turn into confrontations between regional and Chinese coast guards. While regional

navies communicate using the Code for Unplanned Encounters at Sea (CUES), adopted in 2014 by the Western Pacific Naval Forum, coast guards don't have such an agreement and frequently risk escalation when vessel actions are mistaken or miscalculated. Unfortunately, *Bertholf* experienced this on a daily basis in dealing with Chinese coast guard shadow vessels.

Luckily, *Bertholf* was in a unique position as both a Coast Guard cutter and warship of the United States. We were able to follow CUES when dealing with ships of the Chinese People's Liberation Army Navy and apply those same tenants with ships of the China Coast Guard. By definition, in the Convention on the Law of the Sea, warship means:

> *… a ship belonging to the armed forces of a State bearing the external, distinguishing marks of its nationality, under the command of an officer; duly commissioned by the government of the State and whose name appears in the appropriate service list or its equivalent, and manned by a crew which is under regular armed forces discipline.*

By serving as both a Coast Guard cutter and a warship, *Bertholf* was able to bring the tenants of CUES to our communications with the China Coast Guard—something regional coast guards are frequently unable to do.

On March 24, 2019, *Bertholf* and USS *Curtis Wilbur* conducted a transit of the Taiwan Strait. The transit was conducted entirely in international waters despite claims by China that the area is Chinese territory. Our presence reemphasized that the United States will fly, sail, and operate anywhere international law allows.

Could these missions have been conducted by a Navy ship? Perhaps. But if so, only partially. As a national security cutter, *Bertholf* has capabilities that complement the Navy. We can integrate seamlessly into naval and joint operations, but bring experience from years of conducting other missions. Additionally, Coast Guard has built relationships with coast guards around the globe to ensure maritime security. *Bertholf* was able to use those relationships to enhance our strategic position in the Western Pacific in ways no naval ship could.

Philippine and U.S. Coast Guard members trained together on small boat tactics, damage control, and search and rescue skills, enhancing one of the most enduring partnerships in the Indo-Pacific region as Coast Guard Cutter *Bertholf* continued its deployment under the tactical control of the Navy's 7th Fleet. Coast Guard photo by Chief Petty Officer John Masson

Members of Maritime Security Response Team West exercise with sidearms and rifles from the flight deck of Coast Guard Cutter *Bertholf*. Coast Guard photo by Chief Petty Officer John Masson

About the author

CAPT John J. Driscoll has spent 12 years at sea and conducted counterdrug, fisheries, and migrant interdiction operations. He has also deployed to the Arabian Gulf and Africa. This deployment on Bertholf *to the Western Pacific has been the most strategically significant of his career, and made direct improvements to global maritime security and the national security of the United States.*

Historical Snapshot

The Flying Santa

by William H. Thiesen, Ph.D.
Historian, Atlantic Area
U.S. Coast Guard

Throughout the history of Coast Guard aviation, helicopters and fixed-wing aircraft have been used to aid members of the general public or other federal agencies during emergencies and in times of need. However, the holidays have provided a unique opportunity for private citizens to return the favor. In 1929, the first year of the Great Depression, aviation pioneer Captain William Wincapaw began the tradition of "The Flying Santa." Also known as the "Santa of the Lighthouses," Wincapaw oversaw flying operations for the Curtiss Flying Service at Rockland, Maine. He had a great deal of admiration for lighthouse keepers and their families, who served in isolated and inhospitable locations. On the morning of December 25, 1929, Wincapaw loaded his aircraft with a dozen packages of Christmas gifts and delivered them to a number of local lighthouses.

By 1933, the Flying Santa program was so well received that Wincapaw expanded it to include 91 lighthouses throughout Maine, Massachusetts, Rhode Island, and Connecticut. Wincapaw began to dress as Santa and he enlisted his son, Bill Jr., to help pilot some of the flights. In the late 1930s, the program continued to expand requiring the services of a third Santa, famed

Edward Rowe Snow in 1939 during a Flying Santa flight. Photo courtesy of Friends of Flying Santa

Santa drops presents from a helicopter at Boston Light in 1946. Photo courtesy of Friends of Flying Santa

New England maritime historian Edward Rowe Snow. Despite sporadic deliveries during World War II, the program expanded to 115 lighthouses requiring corporate sponsorship from locally-based Wiggins Airways. And, in 1946, the Flying Santa Program also began to embrace the latest technology using a helicopter to assist in lighthouse deliveries.

In 1947, founder Captain Wincapaw suffered a heart attack during a summer flight out of Rockland. A memorial service held in Rockland was attended by numerous lighthouse keepers, their families, and representatives of the Coast Guard, Army, and Navy. Edward Rowe Snow took over the Flying Santa Program after Wincapaw's passing and, with the support of his family and some dedicated pilots, he expanded it to include nearly 180 lighthouses. In certain years, the program even served lighthouses on the West Coast and Sable Island off of Nova Scotia.

Snow continued the tradition until 1981, when health issues prevented him from participating in any further Flying Santa missions. The mantle of the Flying Santa was passed to another pilot, despite the automation of lighthouses in 1987. Ninety years since its founding by Captain Wincapaw, the tradition continues with the support of the non-profit organization Friends of Flying Santa. Today, the program delivers gifts to about 1,200 Coast Guard kids at more than 100 Coast Guard units with the help of four Flying Santas: Retired CWO Guthlien, Retired Senior Chief Dave Considine, Chief Petty Officer Bill Donahue, and CWO John Roberts.

Coast Guard members and their families attend a Friends of Flying Santa event at Warwick Lighthouse, Rhode Island, in 2015. Coast Guard photo by Petty Officer 3rd Class Andrew Barresi

About the author:

William Thiesen, Ph.D., is the Atlantic Area historian for the United States Coast Guard. He earned an M.A. from East Carolina University's Program in Maritime History, and a Ph.D. from University of Delaware's Hagley Program in the History of Technology. His books include Industrializing American Shipbuilding: The Transformation of Ship Design and Construction, 1820–1920 and Cruise of the Dashing Wave: Rounding Cape Horn in 1860. His articles appear frequently in naval, maritime, and Coast Guard publications and the online history series, The Long Blue Line, featured weekly on the Coast Guard Compass web site.

Chemical of the Quarter

Understanding Hydrogen

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

What is it?

Hydrogen, the first element of the periodic table, is the smallest, lightest—almost 15 times lighter than air—and most abundant element, comprising approximately 75 percent of the universe's mass. It forms a stable, diatomic molecule (H_2), which is a gas at ambient conditions, and has a wide flammability range of 4 percent to 75 percent with a low ignition energy. It also burns with a pale blue, almost invisible, flame.

Hydrogen is widely used in industry. For example, in the chemical process industry it is used in the production of ammonia, pharmaceuticals, plastics, and intermediates for other products. It is also used in refining petroleum products and as a reducing agent for organic syntheses and metallic ores. The glass and electronics industries use it to manufacture flat glass sheets and in the production of silicon chips, respectively. Even the food industry finds hydrogen valuable, using it to hydrogenate oils into fats like margarine.

Hydrogen has long been used as a rocket fuel, but it is increasingly being used in fuel cells, which are electrochemical devices, similar to batteries, that produce energy from a fuel and an oxidant. Unlike batteries, the fuel for fuel cells is external to the cell, so its lifespan is much longer than batteries. They also cannot "die" like batteries. Most fuel cells combine hydrogen fuel with oxygen from the air to produce energy, with the only product being water. They can provide power for nearly any application that uses batteries, from cellular phones to generators, as well as any place where electric power is required, including backup power, portable power, material handling equipment, mobile lighting, and even vehicles. Fuel cells that are used in electric vehicles have the advantage of refueling with hydrogen unlike batteries that need recharging with electricity. Hydrogen fuel cells using liquid hydrogen (LH_2) as the fuel have recently been proposed as a power source for marine vessels.

Why should I care?

➤ *Shipping Concerns:*

At atmospheric pressure and temperature, hydrogen exists as a gas. It can be liquefied to reduce its volume by a ratio of 800 to 1. In order to liquefy hydrogen, the temperature must be reduced to −253°C (20 K). Hydrogen readily reacts with many metallic surfaces in a phenomenon called hydrogen embrittlement. This process results in the material becoming very brittle and prone to failure. The extreme low temperature of LH_2 can exacerbate this situation and increase the likelihood of material failure. Additionally, because of its small size, hydrogen is known to be difficult to contain without leaks. Poor welds or fittings and cracks can provide locations for hydrogen to escape. With its large flammability range and low ignition energy, this is a concern when transporting LH_2 as a fuel or cargo.

➤ *Health and Environmental Concerns:*

Hydrogen is non-toxic, colorless, and odorless, but still poses a significant safety concern because of its significant flammability range and low ignition energy. Special equipment and precautions must be taken when handling or using hydrogen because it can displace oxygen, causing asphyxiation. Specialized gloves and other personal protective equipment must be worn when handling liquid hydrogen because direct contact with skin will cause frostbite.

Hydrogen is not a greenhouse gas and will not trap heat in the atmosphere. Since it is less dense than air, most hydrogen released will rise quickly and be lost to space. In fact, this element plays a role in reducing our fossil fuel dependence. While much hydrogen today is generated from fossil fuels, it can be generated from water through electrolysis using renewable energy such as solar power.

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. It currently is designated as a cargo that is too hazardous for bulk carriage, though it may be transported in containers in accordance with the Hazardous Materials Regulations in Title 49 of the Code of Federal Regulations. Hydrogen is not an approved fuel for use in marine vessels, but CG-ENG may give approval for specific designs on a case-by-case basis.

About the author:
Cynthia Znati, Ph.D., who has worked for the Coast Guard since 2011, is the team lead for Liquefied Gases and Vapor Control Systems in the Hazardous Materials Division of the Office of Design and Engineering Standards at U.S. Coast Guard Headquarters. She received her B.S. from the University of Illinois at Urbana-Champaign, her M.S. from Michigan State University, and her Ph.D. from Carnegie Mellon University, all in chemical engineering. This office may be contacted at hazmatstandards@uscg.mil

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Nautical Engineering Queries

Prepared by NMC Engineering Examination Team

1. What device can be used to check the calibration of a circuit breaker?

A. 500 volt megohmmeter
B. Portable low voltage, high current testing unit
C. Standard digital multimeter
D. Clamp-on voltmeter

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2. When a high pressure turbine is operating at sea speed, the pressure of the steam leaking through the shaft gland may be slightly higher than the pressure setting of the gland seal regulator. In this situation, the excess steam at the regulator is directed to the _____ .

A. gland exhaust condenser
B. excess steam condenser
C. main condenser
D. auxiliary exhaust system

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3. Biasing, in a pneumatic automated combustion control system, refers to a set amount of increase or decrease in the _____ .

A. control pressure
B. loading pressure
C. supply pressure
D. rate relay pressure

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4. The hunting of a diesel engine may be caused by _____ .

A. excessive speed droop
B. fluctuations in load
C. excessive governor control
D. poor quality fuel

Engineering Answers

1. A. 500 volt megohmmeter — Incorrect answer

B. Portable low voltage, high current testing unit — **Correct answer.** "Portable self-contained breaker testing units complete with a high current power source, ammeter, and timer are available and are very useful in maintenance programs."

C. Standard digital multimeter — Incorrect answer

D. Clamp-on voltmeter — Incorrect answer

Reference: Operation, Testing and Preventative Maintenance of Electrical Power Apparatus, *Hubert p 643*

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2. A. Gland exhaust condenser — Incorrect answer

B. Excess steam condenser — Incorrect answer

C. Main Condenser — **Correct answer.** "At approximately 20 knots, the pressure in the high pressure turbine becomes high enough so that the forward gland no longer needs sealing steam. The excess steam is then led to a header and helps to seal the low pressure glands. Any excess team is led to the main condenser."

D. Auxiliary exhaust system — Incorrect answer

Reference: MEBA, *Vol. 1, Modern Marine Engineering, Dist. 1; page 65*

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3. A. Control pressure — Incorrect answer

B. Loading pressure — **Correct answer.** "When the station is set for manual control, the loading pressure from the Signal Selector Relay is interrupted at the Transfer Valve, and a substitute loading pressure for the operation of the Control Valve, is established through manual adjustment of the handwheel of the Bias Amplifier (Relay Sender)."

C. Supply pressure — Incorrect answer

D. Rate relay pressure — Incorrect answer

Reference: NAVPERS *10537, Boilermaker 1 & C, page 391*

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4. A. Excessive speed droop — Incorrect answer

B. Fluctuations in load — Incorrect answer

C. Excessive governor control — **Correct answer.** "Hunting is the continuous fluctuation (slowing down and speeding up) of engine speed from the desired speed. Hunting is caused by over control by the governor."

D. Poor quality fuel — Incorrect answer

Reference: NAVEDTRA *14331, Engineman 3, page 9–29*

Nautical Deck Queries

Questions

Prepared by NMC Engineering Examination Team

1. INTERNATIONAL ONLY: In a narrow channel, a vessel trying to overtake another on the other vessel's port side, would sound which whistle signal?

A. One short blast
B. Two short blasts
C. Two prolonged blasts followed by one short blast
D. Two prolonged blasts followed by two short blasts

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2. Which is TRUE when "checking down" a barge using a check line?

A. Take one round turn and at least two figure eights around the timber heads
B. Take at least three figure eights around the timber heads
C. Put a clove hitch around one timber head
D. Take at least three round turns around one timber head

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3. You must shore up the collision bulkhead due to solid flooding forward. The bulkhead approximates an inverted triangle. Where should the center of pressure of the shores on the bulkhead be located?

A. Evenly over the surface of the bulkhead
B. Approximately two-thirds of the way up the bulkhead
C. Approximately halfway up the bulkhead
D. At the bottom of the bulkhead

---

4. Which type of cloud is among the most dependable for giving an indication of an approaching weather system?

A. Cumulus
B. Altostratus
C. Cumulostratus
D. Nimbus

1. A. One short blast — Incorrect answer

B. Two short blasts — Incorrect answer

C. Two prolonged blasts followed by one short blast — Incorrect answer

D. Two prolonged blasts followed by two short blasts — **Correct answer.** "… a vessel intending to overtake another shall, in compliance with Rule 9(e)(i), indicate her intention by the following signals on her whistle: two prolonged blasts followed by two short blasts to mean 'I intend to overtake you on your port side."

Reference: International Rule 9(e)(i) and 34(c)(i)

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2. A. Take one round turn and at least two figure eights around the timber heads — Incorrect answer

B. Take at least three figure eights around the timber heads — Incorrect answer

C. Put a clove hitch around one timber head — Incorrect answer

D. Take at least three round turns around one timber head — **Correct answer.** Taking at least three turns around one timber head gives enough friction to check the barge or slack away the line if needed without jamming (fouling).

Reference: Deckhand Manual, *Finefield*

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3. A. Evenly over the surface of the bulkhead — Incorrect answer

B. Approximately two-thirds of the way up the bulkhead — Incorrect answer

C. Approximately halfway up the bulkhead — **Correct answer.** Placement of the shoring is critical when the vessel is in a damaged condition. Calculations of the area's pressure points are needed to properly place the shoring. For a triangular bulkhead the following formula can be utilized.

Whereas:
H = Vertical height of compartment.
H/2 = Pressure Point (location of shoring)

D. At the bottom of the bulkhead — Incorrect answer

Reference: Seamanship Techniques, *D. House, Volume 2, 1st Ed.*

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4. A. Cumulus — Incorrect answer

B. Altostratus — **Correct answer.** "They are indicative of warm air flowing up over colder air and impending rain or snow of the continuous type." To the seafarer their appearance means approaching rain or snow with poor visibility, large waves, and heavy swell.

C. Cumulostratus — Incorrect answer

D. Nimbus — Incorrect answer

Reference: Weather for the Mariner, *Kotsch, 3rd Ed*

We're In This Together

More COVID-19 response

Inside front cover: Escorted by the Coast Guard and New York Police and Fire departments, the USNS *Comfort* arrives in New York Harbor on March 30, 2020. New York City's Javits Center was transformed into a coordination hub, where Coast Guard Commanders Brett R. Workman and Rebecca Albert served as liaisons transferring patients from hospitals to USNS *Comfort.* **Page 1:** At his home on Joint Base Perarl Harbor-Hickam, Hawaii, Chief Petty Officer Bob McCormick makes face shields for local first responders, while Coast Guardsman from District 14 assisted the Salvation Army on Ohahu in bagging food provided by the Hawaii FoodBank. Bob Emami and Barry Redmayne, Coast Guard Auxiliary Air pilots transported COVID-19 supplies from the Maui Airport Fire Station to personnel at Lanai Airport for use by airport staff. On Coast Guard Base Alameda, California, Coast Guradsmen participated in a blood drive as a way to make a difference during the COVID-19 crisis. **Above:** As part of a joint effort with the Air Force and FEMA, a Coast Guard Air Station Barbers Point HC-130 Hercules aircrew conducts a preflight brief April 1, 2020, before taking off from Oahu, Hawaii, to deliver medical supplies to American Samoa. **Across the top of all three pages:** A transmission electron microscopic image of an isolate from the first U.S. case of COVID-19. Coast Guard, Navy, CDC, and courtesy photos

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The crew of Coast Guard Cutter *Midgett* man the rails during a commissioning ceremony for *Midgett* and Coast Guard Cutter Kimball at Coast Guard Base Honolulu on August 24, 2019. Coast Guard photo by Petty Officer 3rd Class Matthew West