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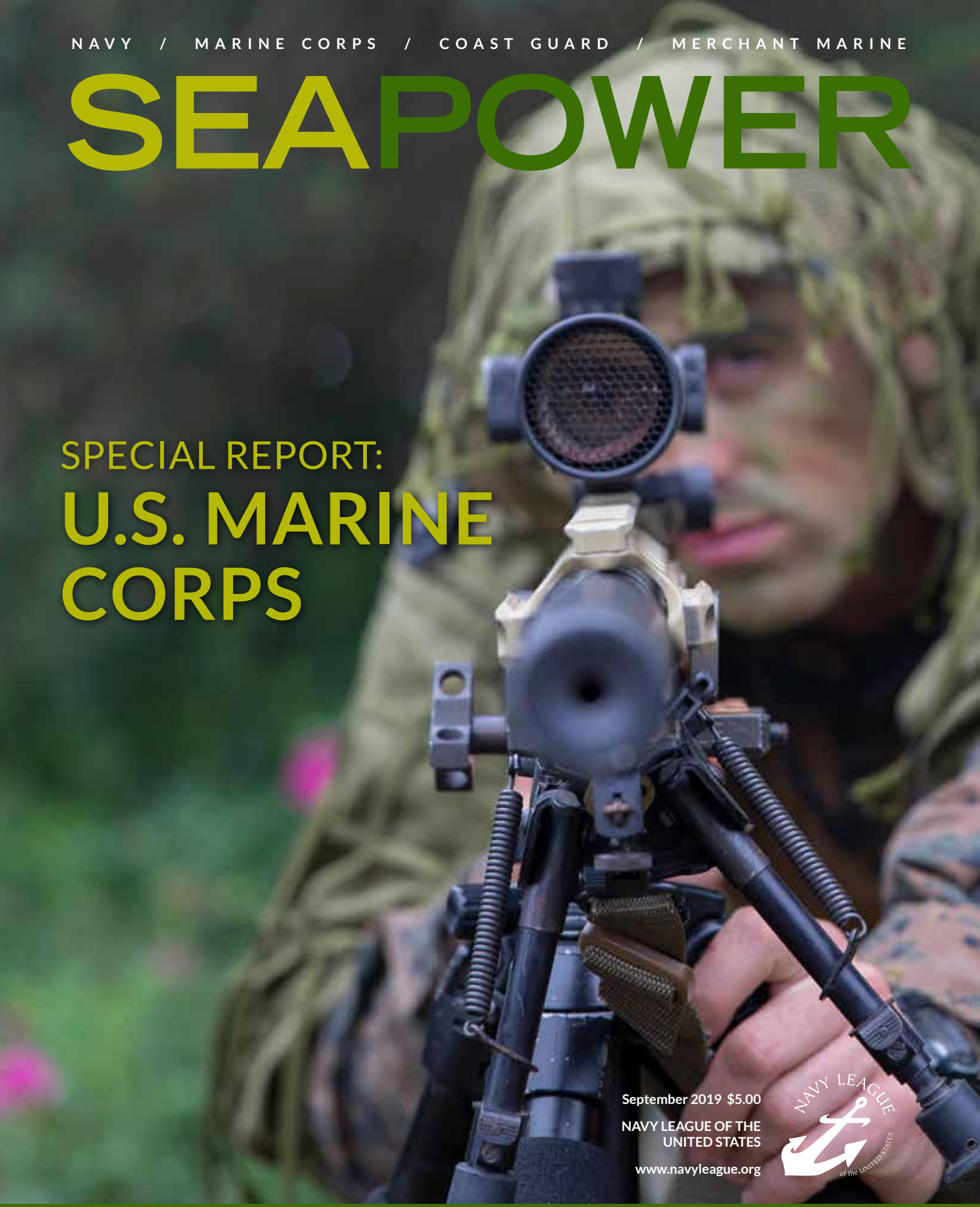

SPECIAL REPORT:
U.S. MARINE CORPS

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Energizing the Field

BY WILLIAM A. STEVENSON III, NAVY LEAGUE NATIONAL PRESIDENT

Our Navy League's future is brilliant. History shows that organizations with the ability to remain relevant over time are the ones that can adapt quickly and seek new opportunities.

We have a rich legacy, tremendous credibility and committed volunteers. In large part, these attributes are what make us the premier service organization for the sea services. We must not become complacent and expect that we will remain on top. Embracing change will always be a requirement for us to effectively carry out the Navy League's mission at the highest possible level.

At the national level, our senior leadership is joining me in looking at ways to refresh the Navy League brand to energize our base and help draw in new members. We need our members and councils to think of new ways to elevate our brand and our organization as a whole — be it a new type of monthly meeting format, hosting a local event or capitalizing on existing events in your community by attending as a council, etc.

Change can be challenging, but at the heart of each of these new opportunities is a basic tenet of growing our membership — engagement. Even in the age of social media and the internet, nothing can be more impactful than face-to-face interaction in your community. This remains the best and strongest way to grow our councils, and it's a critical need for our 35,000-person membership to grow to the levels we enjoyed a few decades ago.

We must nurture our relationships with our new members so we can grow that partnership into a lifelong commitment. The Navy League needs all our members to create a meaningful onboarding process for our new members, so they can feel the power and impact our organization has in serving our mission.

This process may seem daunting at times, but this why we joined the Navy League! We are here to develop new friendships and create meaningful events and opportunities with likeminded people who want to support the U.S. Navy, Marine Corps, Coast Guard and U.S.-flag Merchant Marine. The more the merrier, and it's our shared responsibility to energize our next generation of members, so our nation remains strong and our sea services remain supported for decades to come.

"Much has been given us, and much will rightfully be expected from us. We have duties to others and duties to ourselves; and we can shirk neither. We have become a great nation, forced by the fact of its greatness into relations with the other nations of the earth, and we must behave as beseems a people with such responsibilities."

— Teddy Roosevelt,

Inaugural Address, March 1905

Detailing the Marines' Future

BY DANIELLE LUCEY, EDITOR-IN-CHIEF

The U.S. Marine Corps recently welcomed its 38th commandant, Gen. David H. Berger. Not long after Berger's change of command, he detailed his priorities for the service in his "Commandant's Planning Guidance" document, with force design taking the top slot in his plan to be ready for any fight.

"The Marine Corps will be trained and equipped as a naval expeditionary force-in-readiness and prepared to operate inside actively contested maritime spaces in support of fleet operations," the document states. "In crisis prevention and crisis response, the Fleet Marine Force — acting as an extension of the fleet — will be first on the scene, first to help, first to contain a brewing crisis and first to fight if required to do so."

This issue of *Seapower* focuses on the Marines, both their challenges and innovations, but also how they are working with partner nations to enhance the state of global security.

On Page 22, special correspondent Daniel P. Taylor delves into the struggles of the V-22 Osprey, the tilt-rotor aircraft that while unique in capability is small in numbers, which makes it a readiness challenge. The article discusses the Marines' plans to overcome those issues, including reducing the V-22's maintenance needs and enhancing the fleet.

On Page 26, *Seapower* correspondent Otto Kreisher discusses the Corps' Ground Based Air Defense, which aims to take down any threats the enemy launches its way, from missiles to drones. The research will feed into the MADIS program of record, a system that will be hosted on Joint Light Tactical Vehicles to address any radar-based threats.

Special correspondent Daisy R. Khalifa rounds out our coverage with a look at how Marines are working to provide humanitarian and disaster relief throughout the Americas. The Marine Air-Ground Task Force-Southern Command is working closely alongside partner nations to ensure stability through crises, but it's also beneficial to strengthen ties in the region, with Russia fanning anti-U.S. flames in Cuba, Venezuela and Nicaragua. That story is on Page 30. Berger states in his planning document: "Our wargames have shown that in any great power conflict, our alliances are an essential factor to achieving success," and this story shows how that is proving to be true.

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CORRECTION: THE HISTORICAL PERSPECTIVE FEATURE ON PAGE 41 IN THE JULY/AUGUST EDITION OF *SEAPOWER* INCORRECTLY STATED THAT THE U.S. COAST GUARD HEAVY ICEBREAKER POLAR STAR ENTERED SERVICE IN 1978. THE POLAR STAR ENTERED SERVICE IN 1976. A SISTER SHIP, THE HEAVY ICEBREAKER POLAR SEA, ENTERED SERVICE TWO YEARS LATER, IN 1978.

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COVER PHOTO: MARINE CORPS CPL. LAWRENCE MCMAHON DEMONSTRATES THE M40A6 SNIPER RIFLE FOR A WEAPON SYSTEMS SHOWCASE DURING EXERCISE BALTIC OPERATIONS IN PALANGA, LITHUANIA, ON JUNE 15. PHOTO BY: MARINE CORPS LANCE CPL. ANTONIO GARCIA.

ISTOCK

Lawmakers Grant Pentagon's Wish List Before August Recess

PARTIES AGREE ON TWO-YEAR BUDGET DEAL THAT GIVES DoD $738 BILLION FOR FISCAL 2020 — 3.1% ABOVE 2019

Christmas came a few months early for the Defense Department, which received just about everything on its wish list — including a new Navy chief — from Congress in the days before lawmakers left town for the month-long August recess.

The smell of jet fumes is a mighty motivator on Capitol Hill, frequently driving lawmakers to find compromise that seemed unattainable just weeks before.

That was again the case this year as Democrats and Republicans agreed to a two-year budget deal on defense and nondefense spending levels that boosts discretionary spending above the levels prescribed in the 2011 Budget Control Act. It is the latest — and last — in a string of agreements that has undone the stringent caps mandated in the law, which extends only until 2021.

For the Pentagon, that means $738 billion in fiscal 2020, or 3.1% above this year's defense spending levels, and $740.5 billion for fiscal 2021. Under the 9-year-old spending law, defense accounts would have been funded at a significantly more modest $633 billion and $644 billion had Congress not reached another deal.

Next year's defense figure is still some $12 billion below what President Donald Trump and GOP hawks on Capitol Hill had pushed for the Pentagon, but was nonetheless embraced by the commander-in-chief as "phenomenal" for the military. The $738 billion for fiscal 2020 is essentially on par with the numbers military leaders projected last year for the fiscal year and $5 billion above the spending levels endorsed by the House, controlled by Democrats.

It's about more than just the size of the accounts. The budget deal will give the Defense Department and other federal agencies the financial stability they crave.

With the deal now in place, Congress could conceivably wrap up the annual defense authorization and appropriations bills before the Oct. 1 start of the fiscal year. A 2020 defense appropriations bill enacted in September would allow the department to avoid another stopgap continuing resolution or — worse — another government shutdown.

The House has already passed its version of the defense spending bill, and Senate appropriators plan to consider their own version of the measure when they return to Washington the week of Sept. 8. The goal, Senate appropriators have said, is to move the defense bill through the chamber and into conference negotiations

U.S. NAVY / John Kowalski

Perhaps the most divisive issue among lawmakers this year was budget language out of the House that would ban development of W76-2 lower-yield submarine-launched nuclear weapons, which are carried on Trident II missiles like this unarmed weapon launched this year from the Ohio-class ballistic missile sub USS Rhode Island.

with the House as quickly as possible, with an eye on their Oct. 1 fiscal deadline.

The size of the defense pot will certainly help lawmakers speed the final bill through both chambers and to Trump's desk. A lower topline would have forced difficult decisions, pitting members' priorities against one another.

While they will need to find $12 billion in cuts from the president's request, appropriators — particularly in the Senate — are skilled at claiming unused prior-year dollars to fund priorities and making hundreds of small cuts rather than eliminating, for example, an entire ship or several fighter jets.

On the authorization bill, which sets Pentagon policy and prescribes funding levels but is not actually a money measure, both the House and Senate have passed their versions of the legislation. House and Senate Armed Services Committee staff worked through August to resolve some of the differences in the two bills, and the panel leaders hope to work on the major issues and push a compromise measure to Trump's desk in late September.

But the authorization measure could prove to be a more difficult climb than the appropriations bills. Perhaps the most divisive issue is language in the House bill that would ban development of the W76-2 lower-yield submarine-launched nuclear weapons.

Republicans, who unanimously opposed the typically bipartisan bill during the House floor vote, have argued the provision would make the country less safe, limiting options and harming credible deterrence. Democrats have countered that the ban is about submarine safety and preserving the ballistic missile submarines for strategic missions.

Trump has threatened to veto the policy bill, enumerating his concerns with the House measure in a 10-page statement of administration policy. Republicans on the Senate Armed Services Committee are expected to push back against the House language on lower-yield nukes, which is not in their own bill.

Senate Fast-Tracks Esper During Confirmation Push

The Pentagon started August without a Senate-confirmed defense secretary in place for the previous eight months.

At one point, the Pentagon had to turn to its order of succession — and Navy Secretary Richard Spencer — to briefly step in as the department's fourth leader in less than a year while Mark Esper awaited Senate confirmation to the Cabinet post.

The Senate moved quickly on Esper, easily confirming the Army secretary before leaving for the recess. Senators also filled other top Pentagon posts, elevating U.S. Army Gen. Mark Milley to be the chairman of the Joint Chiefs of Staff and David Norquist to be deputy defense secretary.

But the most whiplash-inducing confirmation was the nomination of Adm. Michael Gilday, then a three-star admiral, to become the Navy's top uniformed officer, the chief of naval operations. The Senate confirmed Gilday as the new CNO on a voice vote just one day after his confirmation hearing and a few hours after the Armed Services Committee huddled behind closed doors to send his nomination to the floor.

The flurry of pre-recess confirmations capped a busy summer for Armed Services members, who have helped push through the chamber 4,500 military nominees since just the beginning of the summer. And that doesn't even include Esper and Norquist.

Senate Armed Services Chairman James M. Inhofe said in an Aug. 2 statement the panel adjusted its schedule and process to clear as many nominations as possible.

The Oklahoma Republican stressed, however, that his panel didn't "cut any corners" in vetting the nominees. In many cases, Inhofe said, the panel did extra work to ensure members did their due diligence.

"Our work isn't done yet — far from it — but we are in a much better position as we continue to fill these important civilian and military leadership posts," Inhofe said in an Aug. 2 statement. ■

Reporting by Megan Scully.

Naval leadership — James Geurts, assistant secretary of the Navy for research, development and acquisition, and Gen. Gary L. Thomas, assistant commandant of the Marine Corps — and Gyrene Engineering Management members drink water on July 18 during ANTX East from a water generator.

U.S. NAVY / Kelley Stirling

July ANTX Exercises in N.C. Yield Wealth of New Ideas, Say 3 Top Navy Officials

The latest in a series of advanced naval technology exercises (ANTX) provided a lot of new ideas on how to improve maneuverability, communications, logistics and force protection in the highly contested environments expected in a future fight against a peer competitor, a trio of top Navy Department officials said Aug. 1.

But the most exciting thing about the recent ANTX was the demonstration of how the U.S. Navy and the Marine Corps are working together to meet the challenges of a great power confrontation, James Geurts, the assistant Navy secretary for research, development and acquisition, said at a Pentagon briefing. It was a way "to kind of close the distance between ideas, wherever they came from" and, by using some of the new acquisition authorities, to get new technologies out into the field quicker.

Geurts said they have about a 12- to 18-month window to move technologies through the acquisition process and into the hands of Sailors and Marines, instead of a "20-year development program." By bringing together the requirements and acquisition officials with the operators, "we tend to find a bunch of new ideas that we didn't think of when we didn't get all those together," he said.

The briefing focused mainly on the ANTX held July 9-19 at Marine Corps Base Camp Lejeune, North Carolina, in which Geurts said 53 new technologies were presented by 32 organizations, from large corporations to a company with three people, and were tested in the field. Some of those technologies could be moved into the acquisition process, while others would be cited for additional development.

Maj. Gen. Mark Wise, the deputy commander of Marine Corps Combat Development Command, said, "When we start looking at what that future fight might look like and the things we will need to enable it, this has become a really great way to start ferreting out some of those technologies that will enable our Sailors and Marines to do that." Wise mentioned technologies, including unmanned air, land, surface and undersea systems, that could help with force protection and logistics at comparatively low cost.

Michael Stewart, the deputy director of integrated warfare, said by using the ANTX process, "we're trying to increase the decision speed ... trying to leapfrog [the normal acquisition process] and do it fast." It was "all about being a smart buyer."

Gulf of Guinea Mission a 'Learning Experience' for U.S. Personnel

The U.S. military training engagements with less-developed militaries, such as the ongoing African Partnership Station mission in the Gulf of Guinea, are also a learning experience for the American personnel, because it can expose them to the level of military technology they could encounter in counter-insurgency missions, a senior Navy officer said.

"We are blessed with the resources we have. But we do understand that a lot of these nations … are still developing those capabilities," Capt. Frank Okata, commander Task Force 63, U.S. Navy Europe-Africa Command, said Aug. 7.

"It also helps us, too. It helps our [civilian] mariners, our Sailors, Coast Guardsmen, and Marines with greater mental agility and flexibility when we deploy to an unanticipated place, because we've been exposed, over the length of our careers, been exposed to the very high-end machinery of warfare to the very low end," Okata said by phone from Naples, Italy.

"As we see in the continuing instability in the world that gravitates to the lower end of warfare, … it is important that we also know how to operate at the level of our partners," he said.

Okata was briefing reporters on the current partnership engagement mission of the USNS Carson City to half a dozen nations along the Gulf of Guinea. The expeditionary fast transport ship with a civilian master and crew was reinforced by a military detachment of U.S. Sailors; a Coast Guard law enforcement team; medical and religious personnel; plus Portuguese, Spanish and Italian sailors.

"This kind of engagement is instrumental in improving maritime security along the African coastline, territorial seas and exclusive economic zones, so that our African partners can be successful and prosperous, securing their waterways and maintaining surveillance," Okata said.

U.S. NAVY / John F. Williams

Sailors assigned to the Center for Security Forces detachment in Chesapeake, Virginia, demonstrate the TRACER system.

Sailors Use Augmented-Reality Gear to Train for the Fight

The Sailors file into the room, their weapons ready and their adrenaline flowing. They operate as a team in a seamless manner. Their mission: to secure an active-shooter situation and apprehend the holographic perpetrator. Commands are given to the shooter, within the augmented-reality (AR) headset. The shooter surrenders, and the Sailors' mission is accomplished.

The Office of Naval Research (ONR) Global TechSolutions program has teamed with Naval Surface Warfare Center (NSWC) Dahlgren, U.S. Army Combat Capabilities Development Command and two industry partners, Magic Leap Horizons and Haptech Inc., to develop an AR training environment.

The Tactically Reconfigurable Artificial Combat Enhanced Reality (TRACER) project was recently tested at the Center for Security Forces (CENSECFOR) Detachment Chesapeake, on Naval Support Activity Northwest Annex, in Currituck County, North Carolina.

TechSolutions is ONR Global's rapid-response science and technology initiative that develops prototype technologies to address problems voiced by Sailors and Marines within about 12 months.

The TRACER system consists of a Magic Leap One AR headset, a backpack processor and a Haptech instrumented weapon, designed to deliver realistic recoil. TRACER uses software developed by Magic Leap Horizons as part of the U.S. Army's Augmented Reality Dismounted Soldier Training (ARDST) project, providing advanced weapons tracking and allowing trainers to create multiple and adaptable simulation scenarios for security personnel to experience.

"Our training system is built mostly from commercial, off-the-shelf products, so we are using widely available gaming gear," said Patrick Mead, TRACER project lead from the Human Systems Research and Development branch at NSWC Dahlgren.

"All of these technologies combine … to give us extremely accurate weapon and movement tracking capabilities as well as highly immersive simulation visual, auditory and haptic feedback. Ultimately, TRACER provides Sailors with dynamic, engaging and less predictable training scenarios that would otherwise be too costly or time-consuming to create in the real world."

The mission at CENSECFOR is to train Sailors from divergent career fields in U.S. Navy security force fundamentals, code of conduct, antiterrorism and expeditionary warfare training to achieve maritime-interdiction and irregular warfare superiority.

"We can integrate this AR virtual training environment into our existing curriculum, and it allows us to be very reconfigurable," said Cmdr. Kim Littel, CENSECFOR's training innovation director. "We can go in and we can change the scenarios, or we can change the opposition forces and the threat that they pose."

For Sailors who often must train and remain proficient while at sea, flexibility is crucial.

According to Littel, the necessary space required to conduct training operations on a ship is limited, and the opportunity to conduct training without impeding on regular operations is scarce. TRACER will help mitigate those issues and increase proficiency.

"In an environment where we're taking students from the fleet, from their primary jobs, to train them, we need to maximize the limited time we have to make them as proficient as possible," Littel said. "This technology provides a huge advantage by being quickly adaptable to different scenarios, geographic locations and opposition forces. Using this technology, we can conduct training almost anywhere, anytime."

Reporting by Otto Kreisher and Seapower *staff.*

A cockpit instructor for Lockheed Martin Aeronautics references data on the cockpit display of an F-35 Lightning II, which has a maintenance system called ALIS that connects to a hub in Fort Worth, Texas, requiring 100 Mbps connectivity — more than any U.S. Navy ship can provide.

Networked Navy is Here, But the Network Isn't

CRUISE SHIPS HAVE SEVERAL TIMES OVER WHAT THE U.S. FLEET DOESN'T — ENOUGH BANDWIDTH

BY EDWARD LUNDQUIST, SPECIAL CORRESPONDENT

Naval forces must be networked with adequate bandwidth for the high-end fight. A host of assets and personnel must be connected by means of a robust and resilient tactical grid — ships; aircraft; Sailors and Marines afloat and ashore; unmanned systems on, under and above the sea; and even individual sensors and rounds of ordnance.

This is not a new vision. According to the U.S. Navy's 2004 Transformation Roadmap, "FORCEnet is the operational construct and architectural framework that will provide the capability to deliver the persistent and comprehensive surveillance; rapid networked command; and common, accurate battlespace picture necessary to support decision-making at a tempo that overwhelms an adversary's capability to react and respond."

FORCEnet was considered the "enabling capability for a fully networked naval force, connecting it to the similarly networked joint force that will be linked together by the internet protocol-enabled global information grid."

"FORCEnet" is a term that is no longer in vogue, but the need for a "transformational" networked force lives on. In trying to implement the FORCEnet vision, the sea services have undertaken efforts to create closed and secure networks, backed by significant investment and development. A new system could be obsolete by the time it is installed.

As it stands today, the Navy and Marine Corps don't have enough bandwidth or connectivity to establish or manage a fully connected force. But the answer might be at their fingertips.

Nearly everyone has a phone that connects to a global network. If that phone adheres to established industry standards, it can call any other phone or connect to the web by way of the nearest cellphone tower at a rate of up to 20 megabytes per second (Mbps). That's today. Tomorrow's 5G phone will be even faster and more capable.

As much as the military spends trying to keep up with the pace of technology, it pales in comparison to commercial telecommunications companies such as Vodaphone, Verizon and AT&T. One path forward for the Navy and Marine Corps is to leverage that investment and use these technologies, tools and networks, which would need to be modified to provide the security and information protection the military demands.

But warfighters at sea and ashore find that communicating and sharing both routine administrative and more urgent tactical traffic on legacy networks is not as simple as calling home.

An Expeditionary Strike Group (ESG), with an LHD, LPD and LSD, has a large variety of assets and personnel able to be networked. All must be connected to share knowledge while planning and executing tactical operations. A significant amount of more routine administrative traffic — logistics, maintenance and personnel and pay reports — require daily sharing. Today, some ships have as many as 1,800 clients on a network that must share information on a 10 to 12 Mbps bandwidth pipe — an LHA or LHD has a 30 to 40 Mbps connection for all of its traffic — while a single family at home with a top-tier internet plan can have around 1 gig of bandwidth, equal to 1,000 Mbps.

> ***"Our adversaries would enjoy a significant advantage by sharing knowledge and planning unhampered by a lack of bandwidth."***
>
> — A LARGE DECK COMMANDING OFFICER

One large deck commanding officer said the lack of bandwidth was inhibiting innovation and feared that "our adversaries would enjoy a significant advantage by sharing knowledge and planning unhampered by a lack of bandwidth."

Autonomous systems, including those enabled by artificial intelligence, will be able to do more with less human instruction or interaction, but there will still be data — sometimes lots of it — coming back from these platforms. These systems may be part of a task force, operating independently, or in a stand-by mode waiting to respond to an adversary entering its area or activating upon command.

Data such as full-motion video from an unmanned aerial vehicle (UAV) or synthetic aperture sonar data from an unmanned surface vehicle (USV) is bandwidth-intensive. Large numbers of simple systems — such as a UAV aboard an amphibious ship headed for a landing operation to scan a beach head — need only rudimentary command-and-control datalinks. But simple or sophisticated, the current tactical networks are inadequate to meet all the data transfer requirements from such systems.

Vessels with limited connectivity, such as the expeditionary fast transport, might be used to launch ScanEagle unmanned aircraft or Knifefish mine-hunting unmanned underwater vehicles (UUV). Those unmanned systems will have to be linked to somewhere.

Newer platforms such as the littoral combat ship feature remote monitoring of engineering systems.

U.S. NAVY / Mass Communication Specialist 2nd Class Eduardo Otero

> ***I didn't even have the bandwidth to download security patches that the Navy was pushing to the fleet. I had to get a waiver.***
>
> — A FORMER LHA COMMANDING OFFICER

The F–35 Lightning II joint strike fighter (JSF) has a maintenance system called the Autonomic Logistics Information System (ALIS) that connects to a hub in Fort Worth, Texas, requiring 100 Mbps connectivity — more than any Navy ship can provide. On an LHD or LHA with an embarked F-35B squadron, for example, half or more of its bandwidth is dedicated to ALIS during JSF operations.

When bandwidth is limited, commanders are forced to prioritize. One former LHA commanding officer said he had to assign different blocks of time so he could conduct tactical operations as well as routine business to manage personnel and supply functions. "I didn't even have the bandwidth to download security patches that the Navy was pushing to the fleet," he said. "I had to get a waiver."

Some Navy ships have deployed with augmented capability, such as the "Internet at Sea" used by cruise ships, which allows crew to video chat with families and friends back home without impacting the ship's Non-Secure Internet Protocol Router Network (NIPRNet) and the classified SIPRNet, or Secret Internet Protocol Router Network.

In fact, today a single cruise ship — such as Royal Caribbean's Oasis of the Seas, which carries 5,400 passengers plus 3,000 crew — has 1.2-gigabit-per-second (Gbps) capability, representing less than 1% of the cruise ship's bandwidth, and can handle every device on board. Compare that to an Aegis guided missile destroyer, with a crew of 330 and a network capacity of only 8 to 10 Mbps — not enough to support two cellphones streaming video at the same time.

While the Pentagon and the military branches have invested in the research, development, and employment of new and better networks and the radios and terminals that use them, it takes time to field systems and get them to the fleet. In that time, a system can become obsolete.

Meanwhile, the commercial telecommunications industry, fueled by huge research and development budgets and an insatiable demand from customers for more, faster and better networks and devices, has left the military systems far behind.

SES is a company that has a constellation of medium-Earth orbit satellites that provide coverage from the equator to 65 degrees north or south, using steerable beams that can allocate capacity where needed. A cruise ship with several antennas can track several beams from one or more satellites at a time.

"All a ship needs to do is find a place to put the antenna, and they have 600 Mbps to 1.2 Gbps of connectivity," said Al Thomas, a retired Navy captain now with Trustcomm, which is partnered with SES, Motorola and Verizon to provide a commercial, off-the-shelf-based Maritime Dynamic Over-the-Horizon Targeting System (MDOTS).

MDOTS uses commercial telecommunications satellites with dedicated high bandwidth service to significantly reduce the time required to identify and engage targets as well as support unmanned systems and logistics networks such as ALIS. All activity will be encrypted, and there will be cyberdefense throughout the network.

MDOTS was successfully demonstrated at the Marine Corps' Advanced Naval Technology Exercise (ANTX) East 2019 at Camp Lejeune, North Carolina. At ANTX 2019, Naval Sea Systems Command (NAVSEA) and Navy Information Warfare Command (NIWC-East) demonstrated MDOTS and extended the network to the tactical edge ashore using a 4G/5G architecture. Naval Surface Warfare Center in Dahlgren, Virginia, is developing MDOTS to address the Navy's dynamic targeting needs. NAVSEA expects to prototype MDOTS at sea next year.

According to Thomas, the MDOTS prototype could be a solution to share real-time large volumes of data between warfighting units at the edge for command and control while also supporting ALIS as well as other networking needs for combat operations.

> ***If you can show that you can receive threat information faster and respond to attacks more in near-real time, you stand to lose fewer ships. That should get people's attention.***
>
> — LINCOLN BLOOMFIELD
> CHAIRMAN EMERITUS, STIMSON CENTER

Thomas said such a capability could provide a "bubble" of coverage over a strike group that would be secure, cyber-safe and function like wireless cellular service.

Instead of developing and buying the capability, Thomas said the Navy can contract for the service, with less up-front cost and the ability to have the system constantly refreshed with the latest commercial technology.

Lincoln Bloomfield, a former DoD and State Department official and chairman emeritus at the Stimson Center who is now advising Trustcomm, said the pilot project promises to validate the concept and gather data to determine the value of this disruptive capability.

"If you can show that you can receive threat information faster and respond to attacks more in near-real time, you stand to lose fewer ships. That should get people's attention," Bloomfield said.

With modern logistics inventory systems, a company like Walmart knows when items are being sold and automatically restocks them. Likewise, the Navy could know when ammunition or other critical items are being expended and automatically load out or route logistics resupply ships like T-AKEs to meet the fleet priorities. That capability requires connectivity.

Bloomfield points to the F-35 as an exquisite piece of information technology in terms of tactical intelligence collection and transmission of data to the network. "It's fully loaded as both an information collector and transmitter. But if the fleet doesn't have the bandwidth, they can't fully utilize the aircraft and take advantage of its capability as it was designed," he said.

The concept is self-evident, and Bloomfield predicts the data will validate that, but he admits that "how to move from here to there is hard."

U.S. NAVY / Mass Communication Specialist 2nd Class Conor Minto

The littoral combat ship USS Fort Worth conducts patrols in international waters of the South China Sea in 2015. As a demonstration, Fort Worth conducted its deployment with a commercial satcom installation, which gave it more networking bandwidth than an aircraft carrier and served as a possible solution to the Navy's current bandwidth shortage.

He said adopting this model may involve changing legacy structures, equipment and manpower assignments. But, he said, getting more bandwidth to the fleet will reward first adopters among senior ranks and lead to manpower being assigned to more challenging and relevant roles.

"To not use that commercial cloud and IT processing technology seems to me to be an avoidable mistake. We don't need to design something internally and have it become an organic program of record years from now when the baseline commercial technology is moving so fast. The smart thing to do is incorporate the best-in-class, upgradable commercial technology and cyber-protect it," Bloomfield said. "It's all quite feasible." ■

ALERTS SOUND ON MARITIME LOGISTICS

AS SEA SERVICES COMPETE AGAINST RUSSIA AND CHINA, SEVERAL EXPERTS SEE SERIOUSLY LACKING SEALIFT CAPABILITY

BY OTTO KREISHER, SEAPOWER CORRESPONDENT

U.S. NAVY / Petty Officer 1st Class Mike DiMesti'co

The oiler USNS John Lenthall travels alongside the amphibious assault ship USS Kearsarge during a replenishment on June 25. Lenthall is among 21 tankers and fleet oilers, but a report this spring from the Center for Strategic and Budgetary Assessment recommended that number be increased to 69 tankers and oilers.

The U.S. Navy and Marine Corps are aggressively changing course and refocusing their resources and training to prepare the fleet and expeditionary forces for a "Great Power Competition" with China and Russia. But a growing number of Navy officers and defense analysts are warning that current and planned maritime logistics capabilities are seriously inadequate to sustain forward-deployed combat forces in an extended fight against such peer competitors.

This deficiency would be particularly severe in a high-intensity conflict against China, which is rapidly developing military capabilities specifically aimed at keeping U.S. forces far from their shores and able to threaten Pacific Ocean-based logistical support facilities, the critics warned. A fight against a resurgent Russia could be a repeat of the 1940s "battle of the Atlantic" with a small Military Sealift Command (MSC) force and an American Merchant Marine fleet — a fraction of the size of the World War II armada — trying to evade scores of sophisticated Russian submarines in a desperate effort to reinforce and supply U.S. forces in Europe.

"Failing to remedy this situation, when adversaries have U.S. logistics networks in their crosshairs, could cause the United States to lose a war and fail its allies and partners in their hour of need. An unsupported force may quickly become a defeated one," said a comprehensive report released this spring by the Center for Strategic and Budgetary Assessment (CSBA).

A similar warning was issued by retired Navy Capt. Pete Pagano, who wrote in the May edition of the journal Proceedings: "The combat logistics force must be able to sail in harm's way and defend itself, with enough ships in inventory to absorb losses and still

> ***"The operating environment is changing," going from "unchallenged sea to contested waters. ... I would maintain that the debate over whether we're sailing in contested waters is over."***
>
> — REAR ADM. DEE L. MEWBOURNE, MSC COMMANDER

sustain Navy forces at sea. The Navy will not possess sufficient surface combatants to meet this demand signal, even if it reaches its goal of 355 ships."

Last October, the U.S. Maritime administrator, retired Rear Adm. Mark Buzby, said the Navy told his agency that it would not be able to escort sealift and supply ships during a major war. For those ships to survive, crews have been told to "go fast and stay quiet," with the latter referring to reduced electronic signaling. But MSC ships, with sustained speeds of 15 to 20 knots, can't go as fast as 30-knot Navy warships.

Also, in May, defense analyst Loren Thompson wrote in Forbes that the well-trained and equipped U.S. military is facing "a big operational challenge that few policymakers or politicians are even aware of — its ability to get to the fight is wasting away. So even with the most capable fighting force in history, the United States might find itself unable to respond effectively to future military contingencies. ... Until recently, military planners could at least assume the safety of commercial sea lanes outside war zones. But now even that assumption is being called into question."

'Unchallenged Sea to Contested Waters'

MSC Commander Rear Adm. Dee L. Mewbourne in 2017 told *Seapower*, "The operating environment is changing," going from "unchallenged sea to contested waters. ... I would maintain that the debate over whether we're sailing in contested waters is over." Looking at the situation today, "there is a persistent threat to the ships that are going through those areas," Mewbourne added, citing missile attacks on U.S. and other ships sailing near Yemen and China's growing sea-denial capabilities.

"The question might be, 'Will it be like it is, or could it get worse?' I would suggest it's the latter," Mewbourne said, showing a graph depicting a rising curve of the threats from China and Russian and a nearly flat line of likely U.S. sealift capability to meet that threat.

The most comprehensive analysis of the threats to maritime logistics was the 124-page CSBA report, "Sustaining the Fight, Resilient Maritime Logistics for a New Era," which Navy Secretary Richard V. Spencer praised, saying "this is a critical issue for the [Department of the Navy]. We have not funded it, and we really have to get after it.

Spencer noted that the National Defense Strategy recognized the logistical problem, "and we have to stay ahead of it." He saw the report as "a forcing function."

'Brittle' Maritime Logistics Forces

The CSBA report said that although the defense strategy listed "resilient and agile logistics" as one of the eight capabilities that had to be strengthened for the great power competition, the Navy's latest 30-year shipbuilding plan reduced the funding for maritime logistical forces and "further reduces the logistical forces as a proportion of the fleet." It also noted that "decades of downsizing and consolidation" have left U.S. maritime logistics forces "brittle" and contributed to the decline of the U.S. shipbuilding industry and the Merchant Marine, which is expected to carry the bulk of military material and equipment for an overseas contingency.

To create a logistical force able to prevail in a major conflict with a peer competitor, CSBA recommended increasing that force from the current 299 ships to at least 364 by 2048. Most of those ships are not included in the Navy's target of a 355-ship battle fleet.

The largest increases CSBA proposed would go to refueling capabilities, from the current 21 tankers and fleet oilers to 69; the towing and salvage fleets, from five to 25; and maintenance and repair, from two tenders to 17.

The report also recommended growing cargo and munitions support from 12 ships to 25 and creating a

combat search and rescue (CSR) and increasing medical care capability from the current two large and aging hospital ships to seven. That would include platforms for CSR helicopters and MV-22 tilt-rotor aircraft and small "expeditionary medical ships," based on the expeditionary fast transports currently being built.

This larger logistical support force would include several new ship types — including a variety of tankers and smaller oilers able to refuel combatants and commercial tankers to move fuel forward to replenish fleet refuelers. The CSBA report also urged that munitions ships be able to reload vertical launching system (VLS) tubes at sea and that new tenders be able to repair surface combatants and even unmanned surface vessels.

Still in Need of an 'Expeditionary Navy'

Much of the CSBA recommendations were supported in a July 24 opinion article in Real Clear Defense by surface warfare Capt. Anthony Cowden, who wrote: "A navy that cannot rearm itself at sea, that cannot conduct ship systems repairs organically" without use of a friendly port "is not an 'expeditionary' navy. … The United States needs an expeditionary navy, and that's not what it has."

The CSBA report echoed the call from the congressional sea power subcommittees to expand and modernize the sealift fleet, much of which is old and still powered by ancient, inefficient steam power plants. The report endorsed the congressional plan to have U.S. shipyards build a variety of new ships using a common hull under the Common Hull Auxiliary Multi-Mission Platform concept and buy used cargo vessels off the international market.

Spencer supported that two-track plan, but said, "I can't afford a lot of $400 million new ships," when he could buy a lot of surplus ships for much less. He said he has been "up on the Hill asking for some money" to update the sealift fleet.

CSBA estimated the cost of buying the additional ships and different capabilities at $47.8 billion over 30 years, which the report said would be $1.6 billion a year above what the Navy plans to spend on its maritime logistics capabilities.

U.S. NAVY / Bill Mesta

The Military Sealift Command dry cargo and ammunition ship USNS Robert E. Peary (T-AKE 5) pulls into Naval Station Norfolk on July 27. Robert E. Peary was returning after providing logistical support for the Harry S. Truman Carrier Strike Group composite training unit exercise.

The need for that spending was illustrated by the CSBA report's co-author, Harrison Schramm, who said the Chinese are focusing on counter-logistics in their campaign plans because "they know that forward-deployed naval forces are limited by magazine size." Once the onboard munitions are expended, the U.S. fleet's capabilities are drastically diminished, Schramm said. That problem is aggravated, he added, by the Navy's inability to reload vertical launching system (VLS) tubes without use of a functioning port.

The report stressed a point that Buzby also made: The U.S.-flagged Merchant Marine has shrunk to a degree that it would be of limited help in providing logistical support in a major conflict. And, CSBA noted, leasing cargo ships or tankers from larger international fleets is complicated by the fact that China owns or controls a substantial portion of those ships. And Buzby also warned that if the U.S. tried to expand its civilian Merchant Marine for a crisis, it would have trouble manning those ships — because of an estimated shortage of more than 1,000 qualified mariners. ■

Showing the T-EPF's array of capabilities — including as a launch platform for a variety of unmanned systems — crew members train in July on deployment of a Knifefish unmanned undersea vehicle on the USNS Spearhead, the first expeditionary fast ship.

THE FLEET'S PICKUP TRUCK

MILITARY SEALIFT COMMAND'S SPEEDY CATAMARANS PROVE THEIR WORTH

BY RICHARD R. BURGESS, SENIOR EDITOR

Operational since 2012, the Military Sealift Command's (MSC) Spearhead-class of expeditionary fast ships (T-EPFs) have made their mark on U.S. naval and joint operations and are now sought after by fleet commanders for a multitude of tasks in their respective areas of responsibility. Eight T-EPFs are in service with six more scheduled for delivery from the ship's builder, Austal USA.

The Spearhead class T-EPF is a 2,400-long-ton aluminum-hull catamaran powered by four MTU 8000 diesel engines. They feature a large roll-on/roll-off cargo bay with a capacity for 600 short tons of cargo and a helicopter landing pad. They feature a command center for use by embarked units and airline-style seats for 312 passengers.

Over seven years of operations, the Spearhead class has shown its versatility and the list of tasks it performs has been expanded.

"In addition to their primary design function of logistical support for a variety of roll-on/roll-off cargo and associated personnel, the T-EPFs have been tasked to support things like theater cooperative support, humanitarian assistance/disaster relief efforts, exploratory engagement in unique or rarely visited locations, and as a test platform for a variety of UAV and UAS systems," said James Shine, expeditionary fast transport/high-speed transport program manager at MSC.

"The easiest way to describe it is that, on any given day, we have at least six different mission types occurring across the eight ships actively in service," Shine said. "And rarely does any one ship have back-to-back mission sets that are the same; the ship that supported theater military exercises was next employed hauling [Defense Department] cargo before being used as an independent support ship for theater cooperative support in austere conditions. This required the ship to shift focus from personnel/communication support to achiev-

ing the lightest weight possible … to carry the most cargo and then to shift to bringing hotel service enhancements like additional water-making capabilities."

Versatile, Expansive Mission Bay

Shine said the biggest advantage of a T-EPF is its expansive and unobstructed mission bay.

"The large, open area really allows for a variety of configurations of cargo, vehicles, refrigerated containers and mission support modules, while retaining the ability to provide personnel access, damage control access, and the ability to move trailers to support [rigid-hull inflatable boat] and [unmanned underwater vehicle] launching," he said. "Similarly, the passenger seating area provides flexibility for training or meetings and has even been reconfigured to support a proof-of-concept execution of surgical tasks while underway."

The Spearhead class, along with the Austal USA-built Independence-class littoral combat ships, brought aluminum hulls back to the fleet, which mostly is about steel hulls. Shine said the T-EPF's hull is holding up "reasonably well."

"There has been a lot of learning regarding the aluminum hull form, but overall it has been good," he added. "We are closely monitoring the hull as it ages, including the partnership with American Bureau of Shipping to gather a variety of hull-performance information to form the foundation of condition-based inspections and surveys. While there have been some dramatic instances of cracking in the area around the main propulsion diesel engine exhausts, the latest ships are being delivered with modifications in these areas that should resolve those issues, and there is planning to retrofit the older ships of the class."

The T-EPFs being built now are incorporating improvements based on experience to date with the class.

"The T-EPF 11 will [be delivered] with a more robust bow that will provide an improved sea-keeping capability, and T-EPF 10 will be retrofit later this year," Shine said. "There have been lessons learned that are also being applied and forward-fit into the class to improve corrosion prevention, machinery life cycles and [to] accommodate changing vessel utilization."

Shine said that some of the changes have been implemented "to better support the variety of adaptive force packages that are brought aboard by the embarking elements."

Examples of these modifications include Multi-Mission Mast to support specific command, control, communication, computers and intelligence (C4I) needs as well as adjustments to the galley to support featuring an actual menu and not reheated rations, he said. "This also includes things like adding services connections in the mission bay to support its use as more than just a large storage area; expansions of the firemain, potable water and drainage systems; LAN [local-area network]/internal communication connections; and electrical distribution improvements [so] the ship is able to accommodate useable office space, laundries, personal fitness areas and even small repair shops."

Small Crew, New Platform

Capt. Susan Orsini is the first ship's master of USNS Trenton (T-EPF 5), having assumed command in October 2014. She is the only woman among the crew of 24 civilian mariners currently on board. The ship's operating area is the East Coast of the U.S. and the Mediterranean Sea. Orsini said she likes the small crew size and the challenge of operating a new platform.

"It's a new class of ship that we are still learning about," Orsini said. "Its strengths, weaknesses, where it fits into the MSC and Navy scheme, pushing the lim-

U.S. NAVY / Mass Communication Specialist 2nd Class Christopher Veloicaza

The Military Sealift Command fast expeditionary transport ship USNS Fall River (T-EPF 4) pulls into the Sembawang Wharves in Singapore following its last Pacific Partnership mission stop in Thailand.

U.S. NAVY / Master-at-Arms 1st Class Alexander Knapp

U.S. NAVY / Grady T. Fontana

U.S. Marines walk past Military Sealift Command's high-speed transport USNS Guam (T-HST 1) after the Guam's christening ceremony in April. The ship is an aluminum catamaran designed to be fast, flexible and maneuverable, even in austere port conditions, making the vessel ideal for transporting Marines and their gear quickly.

Catamaran Makes a Mark in Support of Marine Missions

USNS Guam's Master Testifies to Former Commercial Ferry's Versatility, Value to Corps

BY RICHARD R. BURGESS, SENIOR EDITOR

A former commercial ferry catamaran modified for Military Sealift Command (MSC) is supporting the U.S. Marine Corps in the Pacific. The 1,646-ton high-speed transport USNS Guam (T-HST 1), the former Hawaiian Superferry Huakai that was acquired by MSC in 2012, has replaced the long-serving leased high-speed vessel Westpac Express.

George A. Baker, the Guam's master, said he has been "involved in the USNS Guam for much longer than I have been sailing on her as master. I was onboard for part of a shipyard period while the vessel was still a Hawaii Superferry named Huakai. I signed onboard the USNS Guam as master on 26 October 2017, in Panama City in preparation for her Pacific crossing and have been

U.S. NAVY / Lt. Mary Smith

Sailors move supplies from Naval Base Guam on board the expeditionary fast transport ship USNS Brunswick (T-EPF 6) in September in preparation for Valiant Shield, a biennial Navy-U.S. Marine Corps training exercise.

its of the capability. I like the opportunity to bring innovative ideas to the table in order to satisfy our customers' needs. It's never boring.

"Part of the draw to the EPF platform [is that] our tasking is seldom what the ship was designed to do," she said. "My orders always contain 'BPTs,' be prepared to: UNREP/VERTREP [underway replenishment/vertical replenishment], transfer personnel, support small boat ops, support helicopter ops, and Trenton has done all of those things. The most interesting mission is the last-minute one that has to happen due to real-world events, and you know the whole crew is putting forward their best efforts. Those are the best missions."

Learning to Appreciate Aluminum Hulls

Orsini pointed out the challenge of "having 'steel-ship fleets' appreciate the differences of aluminum ships. There are some fundamental premises for steel ships, such as putting them to sea to ride out bad weather, that just do not work for aluminum ships. That being said, everyone I have worked with up the chain of command who is new to

aluminum ships has been incredibly supportive and eager to appreciate what we can bring to the table, while understanding our limitations."

Capt. Erwin F. Lao has been master of USNS Millinocket (T-EPF 3) for three-plus years, commanding a crew of 26 — 24 men and two women. His ship operates in the western Pacific Ocean in support of the U.S. 7th Fleet. Lao appreciates the speed and maneuverability of the T-EPF.

"It is a unique experience steaming at 35 knots transiting Singapore Strait while all other ships are making 12 to 18 knots," Lao said. "Secondly, T-EPF vessels are very maneuverable and are equipped with four MPDE [main propulsion diesel engine] jets that could provide 50,000 [horsepower]. Either transiting in narrow channels or docking/undocking during arrivals and departures, tug assistance is not a necessity but for emergency use only."

Lao also cited the advantages of the T-EPF's shallow draft.

"Considering T-EPF vessels' shallow draft, we have the opportunity to visit austere ports that no other class of MSC ships had visited," sailing on her since."

Prior to the USNS Guam, Baker was master of the HSV Westpac Express for 15 years. The USNS Guam replaced the Westpac Express in providing long-range service to III Marine Expeditionary Force (III MEF) in Japan. Baker commands a crew of 16 men and two women.

"The USNS Guam is a unique platform capable of quick onloads and offload, usually taking four hours or less in a port," Baker said. "This would be with a load of 880 Marines and 400 short tons of cargo, both quadcons [8-foot-by-8-foot-by-8-foot containers] and baggage pallets as well as dozens of vehicles, both Humvees and MTVRs [medium tactical vehicle replacements]. This vessel is capable of loading almost anything the Marines have in their inventory. We have loaded LVSR [Logistic Vehicle System Replacement] with their trailers full of bridging equipment or boats, amphibious assault vehicles, light armored vehicles and a wide assortment of Marine air wing [ground support equipment].

"Prior to the arrival of the Westpac Express in 2003 in Okinawa, III MEF depended heavily of air support. The advantage of a high-speed transport, such as the USNS Guam and the Westpac Express, was that a whole battalion and their gear could be moved in one lift that would take the vessels about a day to transit from Okinawa to Korea or Yokohama versus 10 to 14 C-130s over the period of a week or more. The cost comparison was the one lift by the HST would cost about the same as one or two aircraft, thus a significant saving on the cost of an overall exercise."

Baker said the Guam "is relatively new in this theater and has not done the range of missions that the Westpac Express did. The … Guam has been focused on the Marines exercises on the Korean peninsula and on mainland Japan, mostly going to Yokohama, for Camp Fuji exercises and to Iwakuni at the [Marine Corps air station]

there. Prior to the USNS Guam's conversion, she did humanitarian relief during the 2018 Haiti earthquake. Due to the nature of these vessels, the time from the actual disaster occurrence to the vessels being able to get underway and arrive on scene supporting aid is only days."

"Operating and navigating a vessel such as the Guam presents its own challenges, especially at the speeds which we travel. I have seen almost 40 knots during one transit. That coupled with the heavy traffic we routinely operate around presents unique challenges not usually faced by today's Merchant Mariners."

The Guam's small crew also gets tasked with some longer days when it visits multiple ports in a single day, sometimes in two different countries.

"We have arrived in Iwakuni, Japan, to Med-moor [Mediterranean mooring], which entails using both anchors to hold us as we back towards the dock, close enough to get mooring lines and the ramp down, finish loading or a discharge and a few hours later arrive in Pohang, South Korea, for another cargo operation."

Baker said that one of the most interesting missions to date for the Guam was the ship's delivery to the western Pacific.

"Due to our fuel capacity, we ran at a reduced speed for fuel conservation and stopped in Hawaii after a 10-day passage from the Panama Canal Zone," he said. "The voyage took a slight dogleg south at the beginning of the transit due to a hurricane well to the north and weather in the Gulf of Tehuantepec, in Mexico. The transit had about a 24-hour window to spare before heavy weather affected the Hawaiian Islands. The next part of the transit was in between two weather systems, but we were now able to run at speed and went from Hawaii to Saipan in six days, to await weather and refuel. The last leg proved to be the toughest as we encountered heavy weather with Okinawa just in sight." ■

he said. "I started my career in MSC onboard ammunition ships, where ports of call are limited due to draft limitations."

Lao said the T-EPF also has its challenges.

"Operating a T-EPF ship in this part of the world is always a challenge with regards to machinery maintenance and repair," he said. "The constant demands on each mission, which can result in short-notice changes of schedule, contribute to difficulties in shipping parts and equipment."

Since 2016, the Millinocket has participated in several exercises in the southwest Pacific, including Cooperation Afloat Readiness and Training (CARAT), a series of annual bilateral military exercises conducted by the U.S. Navy with several member Association of Southeast Asian Nations.

"The Millinocket supported the transport of personnel and equipment and the sea-phase aspect of the exercise, which involved vessel board search and seizure, search and rescue, photo-exercise and refueling-at-sea approaches," Lao said.

The Millinocket also participated in the Sama-Sama 2018 training exercises at pier-side events and at sea in the Philippines.

Lao's said his ship also supported Komodo 2018, a "biennial multilateral naval exercise hosted by Indonesia and participated by 37 countries aims to strengthen the bonds of friendship and cooperation among participating countries."

Praise for the T-EPF

Fleet and task force commanders have praised the T-EPFs in their areas of responsibility.

"The expeditionary fast transport ships continue to prove their value in [the] 7th Fleet," said Rear Adm. Joey Tynch, commander of Logistics Western Pacific. "From Pacific Partnership, the largest annual humanitarian assistance/disaster response mission in the Indo-Pacific, to the 25th Anniversary of CARAT, the ships answer the call. They are able to get people and supplies where they're needed, when they're needed — often getting to the places where other ships can't."

"The [July 2019] deployment of USNS Carson City to the Gulf of Guinea enables our partners to improve maritime security along their coastlines, territorial seas and exclusive economic zones," Adm. James G. Foggo III, commander of U.S. Naval Forces Europe-Africa, added in a Navy release. "Maritime security is critical for coastal nations as seaborne trade is the lifeblood of global trade. When maritime trade freely sails across the seas, economic development and opportunities for prosperity are possible."

A VBAT vertical takeoff and landing UAS prepares to launch from the flight deck of the USNS Spearhead.

U.S. NAVY / Mass Communication Specialist 2nd Class Anderson W. Branch

"We have a lot of experts embarked aboard Carson City to work alongside our Gulf of Guinea partners in areas they have asked for assistance, such as maintenance and medical engagements," said Cmdr. Howard Gray, lead planner for Carson City deployment.

Shine pointed out how the fleet of T-EPFs is easing the burden on the rest of the fleet.

"We free up other platforms to execute their primary roles by providing the opportunity to fill in gaps that occur," he said. "While the EPF does not have anywhere near the capabilities of other mission-specific ships in the MSC inventory, with the proper planning, it has demonstrated the ability to provide focused support on a relatively ad hoc basis. This not only provides a more appropriately sized platform for smaller missions that would be an inefficient use of the larger ships, but, as demonstrated in some recent Pacific Partnership missions, can also expand the effectiveness and geographic coverage of the purpose-built ships."

Shine expects that by the time the last planned T-EPF 14 enters service, it will be configured for higher-endurance missions than Spearhead.

"Currently, [Program Executive Office-Ships] is working with the shipbuilder to not only incorporate and forward-fit more of the fleet-desired changes, but also recognizing that the utility of the class is leaning towards longer-duration embarkation of mission personnel," he said. "As such, they are looking to push into areas that have not yet been installed, such as with the addition of another RIB [rigid-inflatable boat] workboat and making the berthing accommodations less short-duration transportation style and more longer term by adding more personal storage, additional head/shower facilities, self-service laundries and the underlying hotel services infrastructure." ■

OSPREY'S READINESS STRUGGLES

A DECADE AFTER FIELDING, 4 OUT OF 10 MV-22S ARE UNAVAILABLE FOR COMBAT — BUT INITIATIVES ARE UNDERWAY TO IMPROVE, MARINE OFFICIALS SAY

BY DANIEL P. TAYLOR, SPECIAL CORRESPONDENT

Ever since the V-22 Osprey entered service for the first time in 2007 — nearly two decades after its first flight — the tilt-rotor aircraft has been in heavy use by the U.S. Marine Corps and has seen action in Iraq, Afghanistan, Libya and Kuwait. But there is one stubborn problem that continues to plague the program: readiness.

The aircraft was long delayed in reaching the field due in no small part to deadly accidents during its development and a hefty price tag, but when it finally did arrive, the V-22 gave the Marines the versatility the service craved — an aircraft that could land on the deck of an amphibious assault ship like a helicopter but speed off like a fixed-wing aircraft when necessary. While the battles over development and procurement are long over, the Pentagon continues to struggle with a stubbornly low availability rate for an aircraft that serves not just the Marines but also the U.S. Air Force and, eventually, the U.S. Navy.

MV-22Bs line up to take off from the flight deck of the amphibious assault ship USS Bataan in July. "The Osprey is our most in-demand and deployed aircraft," a Marine spokesman says, but the tilt-rotor's mission-capable rate remains low — even as several initiatives are underway to try to improve the readiness of the aircraft.

U.S. NAVY / Mass Communication Specialist Seaman Levi Decker

Currently, four out of 10 of its Ospreys are unavailable for combat, according to the Marine Corps, which means the program is a long way from the goal of 80% overall readiness set by former Defense Secretary Jim Mattis. Several media outlets reported earlier this year that the overall readiness rate of the aircraft was even more dismal — 52%.

The question of why readiness is so low is complicated, but the uniqueness of the aircraft may be a large factor.

Richard Aboulafia, vice president of analysis at the Teal Group, said that the limited number of users of the V-22 makes it tough to have an adequate stock of V-22 spares available.

"Normally, a pool of users — services and countries — can share costs and inventories, but the Marines are the only sizeable user, and the [Air Force] CV-22 community probably focuses on its own systems and missions," Aboulafia said. Even when the Navy gets [Carrier Onboard Delivery] V-22s, the Marines will still oversee budgeting. Adequate provisioning is further complicated by the shipborne nature of the platform."

Better Readiness With Block C

But the Marine Corps says that while the overall availability rate may be low, training and deployed squadrons have higher overall readiness levels. The service also says it's taking significant steps to improve the aircraft's overall readiness.

Capt. Christopher Harrison, a Marine Corps spokesman, said that while the availability of the Marine MV-22 fleet is currently at around 60%, he also noted that training squadrons and deployed aircraft, which have a common Block C configuration, regularly report an 80% mission-capable rate.

The Marine Corps is trying to improve availability with the V-22 Readiness Program (VRP), which Harrison described as a "top priority" of the service, Harrison said.

"VRP takes a holistic approach to readiness recovery by providing contract maintenance support, increased engineering support and improved training for our maintainers and increased component supply depth and breadth," he said in an email response to questions from *Seapower*. "VRP also consists of two major aircraft modification plans: The Common Configuration-Readiness and Modernization [CC-RAM] initiative and nacelle improvements."

CC-RAM aims to improve on availability rates by modernizing older Block B aircraft with upgraded avionics and components to produce the Block C, which are in production now. In addition to having "readiness enhancements," making more of the fleet in the Block C configuration streamlines maintenance and sustainment, Harrison said.

Meanwhile, the nacelle improvement initiative includes improving wiring harnesses and making the nacelle easier to maintain, he said. "We believe we'll see an additive positive effect on readiness by introducing more reliable systems, streamlined procedures and improved maintainability."

Analytics in Use to Improve MCR

In addition to those two initiatives, the Marines are using analytics to reduce scheduled maintenance and spot emerging trouble areas, which could improve mission-capable rates by as much as 15%, he claimed.

CC-RAM started in January 2018 and four aircraft are currently undergoing modifications.

"The Osprey is our most in-demand and deployed aircraft," Harrison said. "At any given moment, five to seven VMMs are forward-deployed. The MV-22 transformed the way the Marine Corps conducts assault support. Capable of self-deploying, the Osprey's speed, range and lift allows it to sustain and move the MAGTF [Marine Air-Ground Task Force] anywhere in the world, and it is routinely at center stage for humanitarian assistance operations."

Boeing — which produces the aircraft jointly with Bell — said in a statement that fleet enhancements and upgrades that are funded through the Defense Department budget outyears include an improved engine inlet separation system; a cockpit engine health indicator; component reliability and safety improvements for swashplate, rudder, conversion actuators, O2N2 concentrator and shaft-driven compressor; and rotor blade time-on-wing improvements.

Bell Boeing received a performance-based logistics and

engineering (PBL&E) contract in January that includes other initiatives meant to boost the reliability of the aircraft. "Bell Boeing have the flexibility to incorporate data analytics into maintenance efforts, yielding innovative approaches such as predictive and condition-based maintenance to improve aircraft availability and readiness," their statement reads.

The company supports three customers: the MV-22 for the Marine Corps, the CV-22 for Air Force Special Operations Command, and the CMV-22 for the Navy. In all, more than 350 aircraft are scheduled to be built, Boeing said.

A total of 129 Block B Ospreys will get the CC-RAM upgrade, Boeing said. The last of those aircraft was built in 2011. "Boeing expects to see a marked improvement in the mission-capable rate of Ospreys that go through CC-RAM," according to the company.

The company also expects to see "marked improvement" in availability rates through the nacelle improvement initiative.

Other investments are being made to address the problem of the mission-capable rate. Boeing reportedly spent $115 million and two years transforming a 350,000-square-foot facility near Philadelphia into a fuselage factory for V-22s. The facility will be home to the CC-RAM program, making it a key part of the push to improve readiness. ■

First Lt. Taylor Barefoot programs a counter-unmanned aircraft system on an LMADIS. LMADIS is a maneuverable, ground-based system, mounted to a Polaris MRZR that can detect, identify and defeat drones with electronic attack.

THREATS FROM THE AIR

MARINES TESTING, DEVELOPING NEXT-GENERATION SYSTEMS TO COMBAT AIRBORNE THREATS RANGING FROM ENEMY UAS TO CRUISE MISSILES

BY OTTO KREISHER, SEAPOWER CORRESPONDENT

U.S. MARINE CORPS / Lance Cpl. Dalton S. Swanbeck

After decades of being able to view the skies above them as a sanctuary for friendly air assets, the Marine Corps is hustling to develop several systems to protect their forces from air threats ranging from cheap but dangerous aerial drones to sophisticated cruise missiles.

Although none of these systems are in production or fielded, several prototypes are deployed with Marine units for operational evaluation, said Donald Kelley, program manager for the Ground Based Air Defense (GBAD) Program Office.

The program office was stood up two years ago under directions from then-Marine Corps Commandant Gen. Robert B. Neller to expedite fielding systems to shield deployed Marines from the newest airborne threats — from armed unmanned aerial systems (UAS) already in use by international terrorists or other nonstate actors to conventional aircraft and cruise missiles that could be fielded by Iran, China or Russia in a future fight.

Systems under development to counter hostile UAS would use "soft-kill" means such as radio frequency to disable or divert them or "hard-kill" tools such as lasers, man-portable missiles or heavy machine guns, which also could be effective against fixed- or rotary-wing aircraft. For defense against cruise missiles, the GBAD office is looking for a new medium-range missile, Kelley said.

The Absence of an Air Threat — Until Recently

In the years before World War II, the Marines established defensive battalions as part of their assigned missions to take and defend forward naval bases. Those units, armed with anti-air weapons and coastal-defense artillery, were engaged in the heroic but futile defense of Wake Island. Greatly enhanced battalions fought throughout the war in the Pacific. Reoriented into Low Altitude Air Defense (LAAD) units, they remained active in the Korean War, the Vietnam War, Operation Desert Storm and the post-9/11 conflicts

but faced diminished threats with almost total U.S. air supremacy.

The absence of air threats is in doubt now with the emergence of readily available armed UAS and the prospect of attacks by helicopters and fixed-wing aircraft and cruise missiles in any fight against near-peer or peer adversaries.

In response to those emerging threats, on Aug. 17, 2017, the Marine Corps made the decision to stand up the GBAD program office within the Land Systems office and Kelley became the first manager. The program now "is focused on several lines of effort," Kelley said.

Already deployed is a "dismounted, man-portable system," Kelley said, which means the shoulder-launched Stinger guided missile. The heat-seeking Stinger has limited range and altitude capability and relies primarily on visual sighting.

Marines also have a "fixed-site system" called EMADIS, or Expeditionary Marine Air Defense Integrated System. EMADIS deploys to temporary locations, such as forward operating bases (FOBs), "or sites where we would have Marines in harm's ways," he said. This system is evolving into IMADIS, with the "I" standing for installations, because the UAS threat "doesn't care whether you're CONUS [continental U.S.] or OCONUS [overseas]."

The Marines also deployed to U.S. Central Command for operational assessment the LMADIS system, with the "L" standing for light. LMADIS is mounted on two Polaris MRZR all-terrain vehicles, one with command functions and one carrying a radio frequency (RF) transmitter to jam UAS guidance systems. Marines in the theater are using the highly mobile LMADIS to protect convoys or FOBs against the UAS threat.

The Marines' LMADIS may have been used to disable an Iranian UAS that was approaching the amphibious assault ship USS Boxer as it transited the Strait of Hormuz on July 25.

MADIS: Replacement for the Stinger

In addition to providing interim defenses against UAS, the deployed systems also are helping to develop the capabilities and concepts that will go into GBAD's program of record, which is a maneuver or mobile system called MADIS.

MADIS will be hosted on a pair of Joint Light Tactical Vehicles (JLTV), which are replacing most of the legacy Humvees.

"You could think of MADIS as the replacement for the current Stinger program that the Marines have," Kelley said. A larger and heavier system than LMADIS, MADIS is expected to have a small mobile radar sensor and both a "soft-kill" capability and a kinetic — or "hard-kill" — defense against aircraft.

Kelley said he expects MADIS to reach Milestone C, which would permit the start of production in the fourth quarter of 2020.

"We're in the process of doing design reviews to make sure we have the design right and integrated into the systems [that] will give us the [desired] capability, which is from Group 1 UAS up to fixed-wing and rotary-wing aircraft."

While MADIS is expected to start with a RF kill for UAS, it also may have "drone-on-drone" capability to use friendly unmanned air vehicles to knock down threatening UAS, Kelley said. GBAD also wants to have a laser weapon on its program of record, and deployed Marines are testing a system called the Compact Laser Weapon System (CLaWS). Kelley was not able to say, for classification reasons, what power level the deployed CLaWS had. Boeing has developed versions ranging in power from 2 to 10 kilowatts.

The complete MADIS will have an integrated radar to provide longer range detection and tracking of aerial threats. The program is evaluating a relatively small system called the RPS-42 tactical air surveillance radar with deployed Marines. But it likely will want a more capable system for its program of record. Kelley emphasized that his office is focusing on proven, available systems to reduce the time and cost to field operational air defenses.

New Cruise Missile, Middle-Tier Defense Capability

That approach is evident in his other line of effort, to counter cruise missiles, Kelley said. "We have a demonstration that is going here this quarter, that is

U.S. MARINE CORPS / Lance Cpl. Dalton Swanbeck

A Marine Corps LMADIS (circled) may have been used to disable an Iranian UAS that was approaching the amphibious assault ship USS Boxer as it transited the Strait of Hormuz on July 25.

called the Medium Range Air Intercept Capability. … We are taking and integrating Marine Corps components to provide that capability to defeat the threat of cruise missiles. We are looking at having that out there in the future."

The anti-cruise missile program is operating under a "middle tier" acquisition process "to acquire that limited capability that the commandant has asked us to provide," Kelley said. Middle tier is an accelerated procurement process authorized by the 2016 National Defense Authorization Act. It is separate from the standard, notoriously cumbersome Department of Defense 5000-series acquisition system and "allows us to move quicker through the process," he said.

Middle tier provides up to five years of prototyping to get to a production decision, then requires accelerated procurement, Kelley explained.

Early this year, the Marines issued a request for information (RFI) from industry for a "low-cost fire-control radar system capable of tracking medium-range cruise missiles." The RFI put a priority on a radar that is fully developed and capable of providing longer range detection for future air defense systems.

Although the Marine Corps is expanding the deployment of its advanced Ground/Air Task Order Radar (G/ATOR) from aviation control units to ground combat elements, G/ATOR is not part of Kelley's programs, he said. GBAD had been part of the G/ATOR office but "when we became the commandant's high-priority program, we became our own program office and given the charter to pursue those lines of effort."

In its pursuit of the more expensive and sophisticated cruise missile defense, the GBAD office has "heavily leveraged the Army's counter rocket, artillery and mortar program," Kelley said. The Marines invite officials from the U.S. Army program, which has deeper pockets, to all GBAD program reviews. The two programs stay in close contact, he said.

Kelley said he still in building his staff, but "I have no intention to build a huge program office." The commandant ordered the office to move quickly to field these new air defenses, and "the best way to accomplish that is to have a small staff." Kelley said he "keeps telling my team, do not fall in love with your components," because the threat is evolving, and their systems will have to change to respond.

Although GBAD is under a lot of pressure to quickly provide defenses against the evolving threats, Kelley said, "the best news of all is, we know what is important to the Marine Corps and the commandant," who has given the office "his full support. You can't be in a better position." ■

U.S. Marines Sgt. Andrew Lepley (right) and Cpl. Sabrina Davis with Special Purpose Marine Air-Ground Task Force–Southern Command discuss team maneuvers during jungle warfare training at Soto Cano Air Base in Honduras on July 22.

ON MISSION IN LATIN AMERICA

MARINES, SAILORS FOCUS ON DISASTER RELIEF AND HUMANITARIAN AID IN CENTRAL AMERICA WHILE TRAINING TO IMPROVE SECURITY CAPABILITIES

BY DAISY R. KHALIFA, SPECIAL CORRESPONDENT

In the ongoing effort to develop a Multinational Maritime Task Force in Latin America and the Caribbean, United States Southern Command (USSOUTHCOM) late this spring deployed Special Purpose Marine Air-Ground Task Force-Southern Command (SPMAGTF-SC) to Central America, marking the fifth year that this specialized team has been able to train for and provide humanitarian assistance and disaster relief to Central American countries.

With more than 300 Marines and Sailors from units across the United States, SPMAGTF is also made up of a multinational staff of partner nation service members from Brazil, Colombia, Peru, Chile, Argentina, Belize and the Dominican Republic.

Though SPMAGTF's deployment technically falls from June to December to be pre-positioned during hurricane season, the organization is dedicated to expanding multinational participation and to establishing long-term regional security and force capability through recurrent military-to-military training events and other programs. Building on its success in past years — particularly in its partnering with Colombia — SPMAGTF will focus this year on work in Honduras, Guatemala, El Salvador and Belize.

"The [SPMAGTF-SC] is one of many ways U.S. Southern Command is strengthening partnerships here in Honduras and throughout Latin America and the Caribbean," U.S. Navy Adm. Craig Faller, Southern Command's commander, said at a ceremony on behalf of SPMAGTF on June 21 at Soto Cano Air Base, Honduras. "The depth and breadth of our engagement runs the gamut from security cooperation to humanitarian missions like this one to multinational exercises."

The U.S. Marine Corps' partnership with the Colombian marines (Infantería de Marina Colombiano) has been an important marker of progress not only for SPMAGTF but also for allowing the United States to follow through on its commitment to bolster capabilities of other less-robust Central American armed forces. To that end, this year's deployment of the task force will be the second consecutive year that a Colombian marine, Lt. Col. Eduar Alexander Michaels Bravo, will serve as deputy commander of SPMAGTF.

"The Colombian marines actually come into Central America and conduct a lot of these mil-to-mil training classes for the Central American countries, and, in my observation, this has been a very effective program," said U.S. Marine Corps Col. Robert Meade, commanding officer of SPMAGTF-SC. "The Colombian marines are a very professional organization, and they are very qualified to be able to teach some of these small unit tactical and small unit leadership courses to the less developed and more maturing Central American countries."

Meade said HADR response efforts are the main reason for SPMAGTF's annual deployment in Central America. Still, the task force provides a range of capabilities — from working with the militaries of partner nations to providing construction and engineering services in local communities.

U.S. MARINE CORPS / Cpl. Dante J. Fries

U.S. Southern Command Marines, part of SPMAGTF-SC, alongside U.S. airmen and soldiers from Joint Task Force Bravo prepare for a jungle warfare training exercise in Comayagua, Honduras, on July 21.

U.S. MARINE CORPS / Cpl. Mathew Rosado

"Our primary purpose for being down here is really what we call limited crisis response," Meade said in an interview with *Seapower*. "And what I mean by limited, it is primarily for humanitarian assistance and disaster relief response efforts. We view that as our higher level mission set. If there was a big hurricane that hit any number of Caribbean islands or some of the Central American mainland, then we are forward positioned to rapidly respond and support relief efforts if they are tasked by USSOUTHCOM."

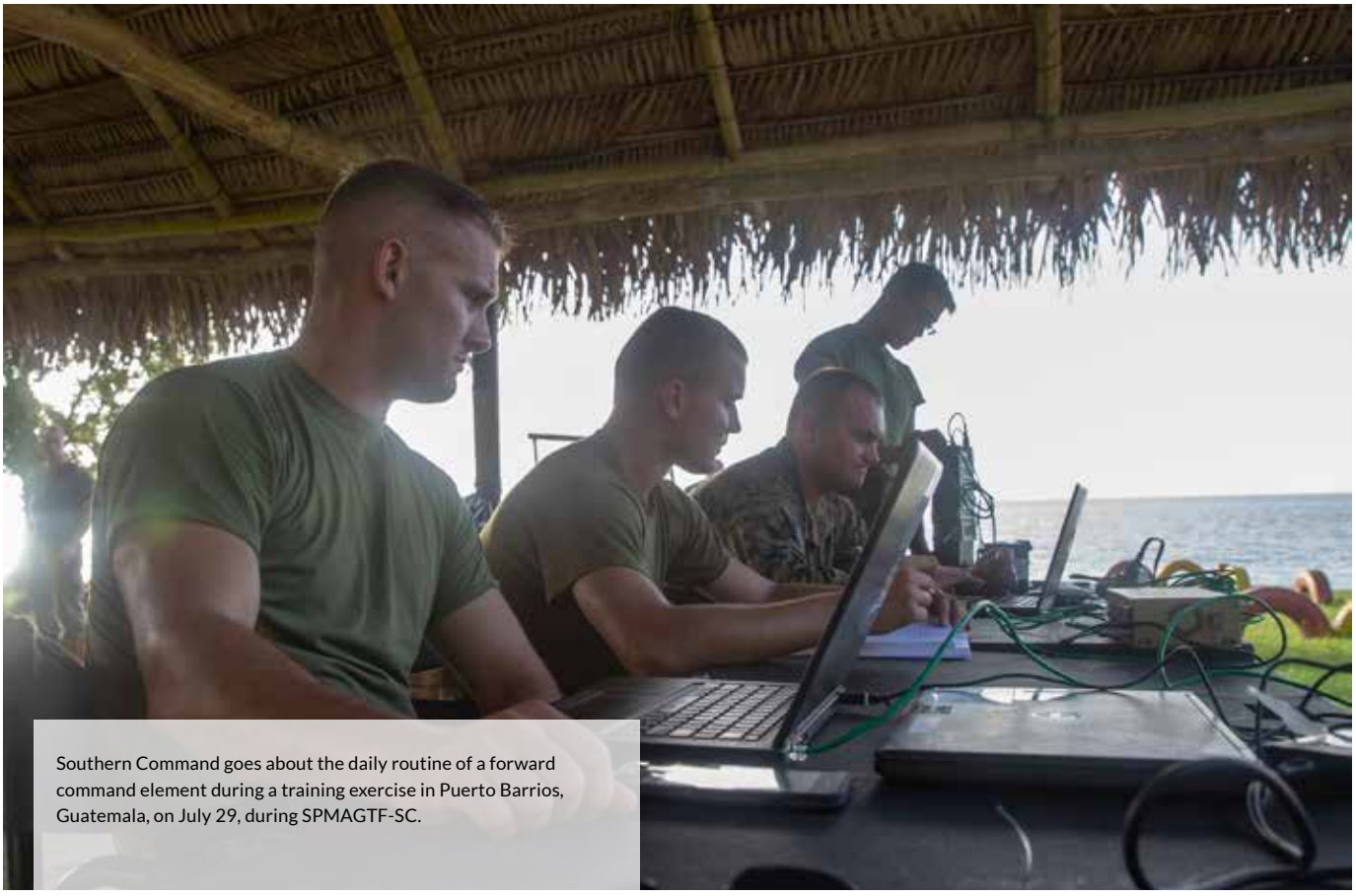
When Hurricane Matthew pummeled Haiti in 2016, SPMAGTF delivered more than 478,000 pounds of supplies. In 2017, SPMAGTF provided humanitarian aid and disaster response to the Caribbean after hurricanes Irma and Maria, forming the nucleus of Joint Task Force Leeward Islands, according to the organization's fact sheets.

"Because we have capability down here when we are not responding to HADR events, then we employ that capability," Meade explained. "What that looks like is primarily conducting regional exercises in both Central America and South America. We have security cooperation and training teams … right now in Belize, Honduras, Guatemala and El Salvador, and they are conducting mil-to-mil training.

"We also have mobile training teams that we send around to do episodic training with a lot of the countries in Central America as well as in South America."

In 2018, SPMAGTF-SC Marines assisted the Guatemalan government in its response to the Fuego Volcano eruption. They built 202 multi-family shelters and supporting facilities, helping more than 4,000 people left without homes.

"We conduct a lot of humanitarian and civil assistance projects, also known as engineering projects, to help the local communities in which we're operating. For example, we have a full refurbishment project that we are doing right now in Ocos, Guatemala. And, likewise, we are working on a couple of schools in Trujillo, Honduras, doing the same kind of thing — just trying to improve the school, do a refurbishment of the school, provide them a little bit better facility than what they



U.S. MARINE CORPS / Sgt. Stanley Moy

Southern Command goes about the daily routine of a forward command element during a training exercise in Puerto Barrios, Guatemala, on July 29, during SPMAGTF-SC.

have and getting a healthy local community."

SPMAGTF is sourced largely from Marines and Sailors from U.S. Marine Corps Forces Reserve, except for the aviation combat team. Numbering about 90 service members, the Aviation Element is from HMH-464, a squadron based out of Marine Corps Air Station New River in Jacksonville, North Carolina.

"One of our real centers of gravity of the organization is our aviation combat element. We have organic rotary-wing capability that gives us a whole lot of freedom of movement around the [area of operation], which would become particularly useful if we had to rapidly respond to an HADR event," said Meade, referring to the CH-53E heavy-lift transport helicopters used by the U.S. Marine Corps.

Meade said the 300-plus personnel of SPMAGTF, while not a large headcount, is enough to provide the support and do the work on which the force is focused. Echoing the tenets of the May 2019 USSOUTHCOM Strategy, "Enduring Promise for the Americas," Meade described not only the strong multinational elements of the SPMAGTF but also emphasized the importance of the interagency, or the "whole-of-government team," which involves the cooperative efforts of multiple U.S. government agencies.

"There is nothing that we really do down here that doesn't include the interagency," said Meade, who explained that the engineering projects they execute are coordinated through the U.S. embassies in those countries and that the SPMAGTF coordinates with the State Department on the various military training programs. "If we were to do an HADR response, it would be tied at the hip with [Office of U.S. Foreign Disaster Assistance, part of the U.S. Agency for International Development]. I don't think that I can overemphasize the importance of the interagency partnerships relative to our mission."

SOUTHCOM's "Enduring Promise" describes the strategic environment of the southern hemisphere as follows: "USSOUTHCOM is responsible for military-to-military relationships and the employment of U.S. forces in an area of responsibility encompassing

31 countries and 16 dependencies in Central America, South America and the Caribbean. The nations of this neighborhood are connected in every domain: land, air, sea, space and cyberspace."

Furthermore, the strategic document does not hesitate to address the threats in the hemisphere that have plagued Central and South American countries for decades, and are even more challenging today with China's economic overtures and Russia's interest in encouraging anti-U.S. sentiment, especially in Cuba, Venezuela and Nicaragua.

"The strengths and opportunities of our hemisphere are set against a complex array of threats and challenges. Governance and institutional capacity remain uneven across the region. Weak governance and corruption are among the most important challenges. They allow threats to flourish and provide opportunities for malign regional and external state actors to expand their influence. They also increase vulnerability to environmental shocks, including natural disasters.

"Transnational criminal organizations and violent extremist organizations threaten citizen safety, regional stability, and the national security of the United States and our allies and partners. These illicit networks exploit the interconnected nature of transnational trade and transportation systems to smuggle people, drugs, bulk cash, weapons and other contraband across borders. The region is the largest source of illicit drugs and illegal migrants to the United States. The use of bribery, fraud and violence by illicit networks disrupts legitimate economic opportunity and undermines the rule of law. Many transnational criminal organizations trafficking in drugs are better funded and organized than the security organizations that confront them."

Meade said the SPAMAGTF focuses largely on the maintenance and the task at hand. Even the projects to which they are directly committed, such as HADR and training, are pre-coordinated with the State Department and often require additional authorities, he added.

"We focus on the tasks we have in hand. But that being said, force protection is always a concern for any Marine Corps unit that is going to operate anywhere," Meade explained.

"We stay very well-coordinated with the Force Protection Attachment. We have our own intelligence sections and our own anti-terrorism force protection capability, [with which] we're constantly assessing the operating environments that we are either working in or going to work in. And so, we look to minimize our risk by making sure that we fully understand the operating environment and risks associated with those operating environments, making sure that we have put proper provisions in place to minimize those risks for our Marines and Sailors."

Members of the SPMAGTF team participated for the first time in Unitas Atlantic and Unitas Amphib 2019 in late August in Brazil. Established in 1959, Unitas, Latin for "unity," is a longstanding, multinational maritime exercise conducted annually in Latin America and the Caribbean to enhance security operations and improve coalition operations.

Furthermore, according Capt. Jose M. Negrete, director of communications strategy and operations for U.S. Marine Corps Forces, South, the August UNITAS exercise combined the Atlantic and amphibious aspects into one event, and the exercises included HADR efforts.

"For the first time, this exercise that is typically scripted to be more kinetically focused primarily on sea power, is actually going to be focused on humanitarian assistance and disaster response, and increasing those capabilities and interoperability [among] the partner nations that are working together during Unitas," Negrete said. "This has been a paradigm shift for us and our partners where we saw humanitarian assistance and disaster response as a galvanizing theme that all of our partners could really build around. It is going to be a learning experience for everyone. One of the biggest things that I learned here in the time that I've been here is really the appreciation and the complexity behind humanitarian assistance and disaster response — and especially when you start talking about a multinational force. Every country has its own methods, every country has its own procedures to do these things, and having this exercise really helps us get synchronization and a common procedure established so that we can be more effective when it comes down to responding to real-world situations." ■

Kratos Aerial Target's IOC Leads to 3rd Production Order From the Navy

BACKGROUND

The BQM-177A is the U.S. Navy's next-generation Sub-Sonic Aerial Target (SSAT). The recoverable target drone will replace the legacy recoverable BQM-74E (internationally the Chukar) target with a modernized subsonic target with increased capabilities.

SCOPE

The Navy has ordered 109 BQM-177As to date. The BQM-177 is designed for both land- and ship-borne operations and is operating in both the U.S. and foreign countries. The BQM-177i is an export version configured for international customers.

TIMELINE

Initial contract award and development of the Navy-specific BQM-177A began in 2011. Low-rate initial production (LRIP) was approved in November 2016. LRIP I of 45 SSATs began in June 2017. Kratos was awarded a $24.3 million contract modification in February 2018 for LRIP II of 30 BQM-17As. The first production BQM-177A was delivered in July 2018. The SSAT reached initial operational capability (IOC) on Feb. 27. A third LRIP order of $24.3 million, for 34 SSATs and support equipment plus spares, was awarded on May 28.

WHO'S WHO:

Steve Fendley is president of the unmanned systems division of Kratos.

The U.S. Navy's BQM-177A, the next-generation Sub-Sonic Aerial Target (SSAT).

GE MARINE

"The BQM-177A SSAT provides formidable threat emulation for air-to-air engagements. Its aerodynamic design and unmatched performance capabilities also make it the world's best choice for highly dynamic, high-subsonic, sea-skimming anti-ship cruise missile threat emulation.

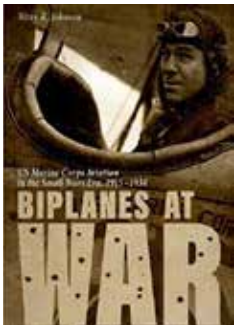
The BQM-177A provides key threat representation performance over the BQM-74E (predecessor program) and is designed for speed and maneuverability. The target is powered by a MicroTurbo TR-60-5+ turbojet engine. Capable of speeds in excess of 0.95 Mach and a sea-skimming altitude at less than 10 feet, the BQM-177A provides anti-ship missile threat emulation. The 17-foot-long BQM-177A has a max gross launch weight of 1,500 pounds and has a 7-foot wingspan. It can fly up to 40,000 feet above sea level.

This highly versatile aerial target system supports a broad range of mission requirements and threats, with a focus on affordability and modularity, by carrying and operating a wide array of internal and external payloads such as passive and active RF augmentation, electronic countermeasures, infrared augmentation, chaff and flare dispensers, and towed targets.

This LRIP III award, which followed the IOC achievement announced earlier this year, represents the final milestone prior to the expected full-rate production start the BQM-177A. Once in full-rate production, these programs have historically been decades long both in operations and production. We are proud to be the sole-source provider well into the future for this crucial high-performance system that emulates anti-ship cruise missiles for the U.S. Navy and our allies.

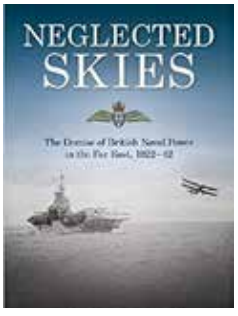
The first land-based operational site for the BQM-177A is Naval Air Station Point Mugu, California."

Interwar Marine Aviation, Royal Navy Versus Japan, Early U.S. Battleships and British Gunboats



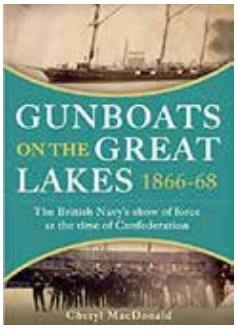
BIPLANES AT WAR: US Marine Corps Aviation in the Small Wars Era 1915-1934 By Wray R. Johnson. Lexington, Kentucky, 2019. 440 pages. $50.00
ISBN: 978-0-8131-7704-5

Between the two world wars, the Marine Corps fought several insurrections in Haiti, the Dominican Republic, Nicaragua and China and pioneered the use of aircraft in numerous roles that demonstrated the role of airpower in small wars. This book chronicles the Corps' development of close air support and dive bombing as effective ways for aviators to support ground forces. The Corps also used aircraft as personnel transports, for medical and casualty evacuation, humanitarian relief and civic duties such as election support of fledgling democracies. The lessons learned stood Marine aviation leadership in good stead as they applied them in support of Marine grunts in World War II and beyond.



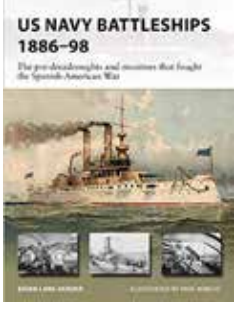
NEGLECTED SKIES: The Demise of British Naval Power in the Far East, 1922-1942
By Angus Brits. Annapolis, Maryland: Naval Institute Press, 2017. 244 pages. $34.95.
ISBN: 978-1-68247-157-9

The April 1942 clashes in the Indian Ocean between the British Eastern Fleet and the Japanese First Air Fleet is seen by the author as the end of British naval supremacy in the Far East and the culmination of the failure of Britain to develop a potent naval aviation force capable of countering the Japanese onslaught, which was long planned to drive Britain from the Japanese Empire's expanded area. Japanese aviators from five aircraft carriers overwhelmed British ships, including the sole Royal Navy carrier in the region, HMS Hermes. The Royal Navy largely was not able to take the offensive against the Japanese until 1944 when it was able to deploy carriers equipped with modern U.S.-designed carrier aircraft.



GUNBOATS ON THE GREAT LAKES 1866-68: The British Navy's Show of Force at the Time of Confederation
By Cheryl MacDonald. Toronto: James Lortimer & Co. Ltd., 2018. 192 pages. $24.95
ISBN: 978-1-4594-1122-6

The efforts of Irish nationalists, mainly former U.S. Civil War veterans, to invade Canada in 1866-1868 is a little-known chapter of U.S. history. The Fenians, as they were known, launched raids into Canada with the goal of seizing the remaining British colonies in North America to influence Britain to grant independence to Ireland. The author describes the gunboat diplomacy on the Great Lakes of three Royal Navy gunboats — Britomart, Cherub and Heron — that protected British interests. Though they never had to engage the Fenians, their presence reassured Canada's populace and helped to defuse the conflict.



U.S. NAVY BATTLESHIPS 1886-98
By Brian Lane Herder. Oxford, U.K.: Osprey Publishing Ltd., 2019. 48 pages. $19.00
ISBN: 978-1-4728-3502-4

This monograph describes the design, characteristics and careers of the U.S. Navy's first battleships, the pre-dreadnought experimental ships Maine, Texas, the three Indiana-class and the single Iowa-class battleships, plus the large monitors of the period. These ships reflected a revival of U.S. naval power following the Civil War over concern of the growing Spanish and Brazilian naval power and were a vast improvement over the wooden ships of the Civil War. The designs of these battleships emphasized heavy armament and armor over speed. The battleships and monitors were instrumental in the defeat of Spanish forces in Cuba and the Philippines, Filipino rebels, and the Chinese in the Boxer Rebellion. This book is well-illustrated and features numerous informative tables.

Seapower *does not review works of fiction or self-published books.*

From the Halls of Montezuma

BY DAVID F. WINKLER

For bragging rights in the realm of service seniority, the U.S. Marine Corps can lay claim to the oldest official song of the five branches of the U.S. military.

Copyrighted a century ago and published in Leatherneck, the hymn was quickly embraced by the some 70,000 who had filled the ranks of the Corps during World War I and fought with distinction in France, most notably during the battle for Belleau Wood. Fighting with tenacity, those Marines earned the grudging respect of their German enemy, who called them "Devil Dogs."

Given the recent combat experienced by the Marines for the country that helped America gain its independence, it seems fitting that the melody that serves as the backbone of the hymn has its roots in France.

The melody, originally called "Potpourri (Fantasie)," was composed by Jacques Offenbach for the opera "Genevieve de Brabant." Sung by two gendarmes, it was added to the 1867 revision of the opera that had first debuted in Paris in 1859. Of note, it is believed that the Marine Corps Band first played the melody in the late 19th century as its director, Francis M. Scala, sought to expand the ensemble's repertoire with some overseas imports.

The author of the lyrics remains unknown. A Marine Corps website states this: "Legend has it" that a Marine stationed in Mexico penned the words. The Library of Congress claims that one — or possibly two — early verses have been traced to Col. Henry C. Davis, who wrote them during the early part of the 20th century. On the 1919 sheet music, L.Z. Phillips is credited as the lyricist. However, the phrases used in the hymn had been part of the Marine Corps vernacular for several years entering the 20th century.

Ironically, for a service that takes tremendous pride in its history, the hymn's opening stanza does not proceed in chronological order. The "halls of Montezuma" refers to the Marine assault of Chapultepec Castle in Mexico City in September 1847 that contributed to ending the Mexican-American War. Of course, the "shores of Tripoli" is in reference to the Battle of Derna that occurred in May 1805 on the eastern approaches of Tripoli where Marines, led by Lt. Presley O'Bannon, were the key component of a mostly mercenary force that had been assembled by William Eaton to mount an overland expedition from Egypt into present-day Libya. The outcome of the battle led to a treaty concluding the First Barbary War.

The opening stanza has never changed. The third and fourth stanzas were rewritten nine decades ago. The pre-1929 words read: "Admiration of the nation / We're the finest ever seen / And we glory in the title / Of United States Marines." Since then Marines have proudly belted out: "First to fight for right and freedom / And to keep our honor clean / We are proud to claim the title / Of United States Marine."

The other change came in the second stanza in November 1942: "We fight our country's battles / On the land as on the sea" was edited to "We fight our country's battles / In the air, on land and sea" to include the aviation component of the Marine Corps.

Continuity helps explain why the words are easily voiced by Marines (once a Marine, always a Marine) when the hymn is played during parades, concerts, reunions and so forth. In contrast, "Anchors Aweigh," which predates the Marine Corps hymn by a dozen years, debuted at the 1907 Army-Navy game and contained lyrics germane to that academic institution. Master Chief Petty Officer of the Navy John Hagan, the eighth MCPON, drafted lyrics in 1997 to make "Anchors Aweigh" more appropriate for the whole service. Two decades later, with versions having differing lyrics in circulation, not everyone in the Navy is singing off the same sheet of music. ■

David Winkler is a historian with the Naval Historical Foundation. He is celebrating two decades of writing in this space for Seapower.

Sailing, Science and Shipmates

SEA CADETS LEARN ABOUT THEIR BOAT, THE WATER, AND LIFE ABOARD A SCHOONER ON THE GREAT LAKES

BY PETTY OFFICER 2ND CLASS SARAH KALETA, CINCINNATI DIVISION, CINCINNATI, OHIO

This summer, I had the opportunity to experience hands-on sailing training across the Great Lakes. My six-day transit took place aboard a two-mast gaff rigged schooner, the Appledore IV. We began our journey in the Saginaw River and proceeded to Lake Huron, Saint Clair River, Lake Saint Clair and the Detroit River, and the trip finished in Lake Erie.

The schooner's home port is Bay City, Michigan, where we boarded on June 28 and headed to Buffalo, New York, for the tall ship festival on the Fourth of July. For the next week, the other two sea cadets and I were taught basic seamanship by six crew members — how to make working coils and ballantines, where the peak and throat of the sail were, and much more.

Our daily schedule involved four-hour watch rotations in which our designated team of three people would rotate positions every half hour. My team's watch times were 0400 to 0800 [4 a.m. to 8 a.m.] and 1600 to 2000 [4 p.m. to 8 p.m.]. My first watch position was bow watch, where one sits at the front of the boat with a walkie talkie looking for and warning the helmsman of any objects or ships in the way of the schooner's course. This job is designed to prevent collisions with other watercraft and accidents resulting from running over debris.

The next position was the helm, my favorite job. It's not every day that you get to say you drove a 48-ton, 85-foot schooner! The helmsman steers the boat with a wheel that looks like something off a pirate ship. Surprisingly, the wheel only needed to be turned one spoke at a time to make large-degree changes in course. We were able to use GPS to stay on our desired true north heading. The digital system was in front of the helm and included an aerial image of the schooner on a map, directing its course with one line and showing where it was being steered on the other. The GPS also showed the course of steerage, current course, ETA, speed, and more. Even though we had access to this technology, the crew taught us that it's still an important skill to plot points on a map the old-fashioned way in case the electricity goes out. Using a compass, calculator, map and parallel slide ruler, we were taught how to plot current and future coordinates along with a time estimate for transit. That way, the boat is never truly lost.

The third position in watch rotation was the person who would go through ship checks. These underway checks took place every hour on the half hour and were recorded on the navigation table in the aft cabin. The checks included data recording for the engine, below deck, navigation, weather and batteries. Engine function checks involved recording oil pressure, engine temperature and rpm. Below deck and bilge checks were made to ensure there was no excess water or oil in certain areas of the boat.

By the third day, we were on Kelleys Island, where we later had liberty for a couple of hours. I was able to hike more than eight miles and view the glacial grooves on the island, and I learned about glacial formations thanks to my biologist crewmate. We also took out small sailboats and attempted to steer with a rudder and moved the sail — a lot harder than it sounds.

On our way to the north side of the island, we did a man overboard drill. I volunteered to ride the rescue boat out to recover the "victim." Our time was 4 minutes, 11 seconds; I was told that the average for trained crew is 4 minutes, so we were not that bad off for being trainees! Afterwards, we swabbed the deck covered in dead mayflies with a fire hose trash pump and brushes to scrub off the remaining bug debris. I was fortunate to have a biologist for a bunkmate who taught me a lot about insects and their correlation with water health. I found it very interesting that you can tell whether water is clean or polluted by the capability of flies to thrive in certain conditions.

The Great Lakes sailing training was the best I have ever had with the Sea Cadet Corps by far. In addition to sailing, I was able to learn about freshwater ecosystems, weather patterns and water currents. My desire to learn more about the water, aquatic life and weather over this trip has led me to decide to major in oceanography or environmental engineering. I am very thankful to have experienced all I did on the water, even beyond the sailing. Plus, I got to visit the Great Lakes for the first time! I highly recommend this training to anyone interested in marine biology and ocean life or those trying to find a college major that interests them.

This article was edited but is a reprint from Sea Cadet Quarterly, a publication of the U.S. Naval Sea Cadet Corps.

U.S. NAVAL SEA CADET CORPS

From left: Seaman Georgiy Sakharov, New York LPD-21 Division Petty Officer 1st Class Matthew Zampaloni and United States Division Petty Officer 2nd Class Sarah Kaleta of Cincinnati during sailing training on the Great Lakes.

U.S. NAVAL SEA CADET CORPS

Kaleta (right) with Bay Sail crew member Mary Merkel.

U.S. NAVAL SEA CADET CORPS

NLUS / Qawnana Crockett

Richmond Navy Leaguers who joined the welcome party for the USS Arlington included (left to right) John Harler, past Richmond Council president; Mary "Robin" Beres, board member; R. Milton Owen, past president; Qawnana Crockett, manager of field services and training for the Navy League of the United States; and Harvey Lankford, current Richmond Council president.

Richmond Council Members Help Welcome Home USS Arlington, Kearsarge ARG's Sailors, Marines

The Navy League's Richmond Council, including four board members, helped welcome back to its homeport in Naval Station Norfolk, Virginia, the amphibious transport dock ship USS Arlington (LPD 24) on July 18 as part of the Kearsarge Amphibious Ready Group (ARG), which in total included more than 4,500 Sailors and Marines.

Among the hundreds in the greeting party were Richmond Navy Leaguers Harvey Lankford, current council president; John Harler, a past council president; Mary "Robin" Beres, a board member; and R. Milton Owen, another past president; as well as Qawnana Crockett, manager of field services and training for the Navy League of the United States, which is headquartered in Arlington, Virginia — LPD 24's namesake.

The Sailors and Marines of the Kearsarge ARG conducted their regularly scheduled seven-month deployment that saw them support maritime security operations, crisis response and theater support while also providing a forward U.S. Navy presence in Europe, Africa and the Middle East.

The Kearsarge ARG consisted of the Arlington, the amphibious assault ship USS Kearsarge (LHD 3), the dock landing ship USS Fort McHenry (LSD 43), Fleet Surgical Team (FST) 2 and FST 8, Helicopter Sea Combat Squadron 26, Tactical Air Control Squadron 21, components of Naval Beach Group 2 and the embarked staff of Amphibious Squadron 6. The 22nd MEU is made up of 2,500 Marines and Sailors and includes a command element, ground combat element, aviation combat element and logistics combat element.

Kearsarge and Arlington are homeported at Naval Station Norfolk, and Fort McHenry is homeported at Naval Station Mayport, Florida. The 22nd MEU is stationed in Camp Lejeune, North Carolina.

USS Arlington docked at Pier 9 in Norfolk for the July 18 welcome-home ceremony while USS Kearsarge came into Pier 10.

NLUS / Qawnana Crockett

USS Kearsarge, moored in Pier 10, arrived at Naval Station Norfolk, Virginia, about 30 minutes after the USS Arlington, which was moored at Pier 9.

NLUS / Qawnana Crockett

Children welcome their mother home from a seven-month deployment with the Kearsarge Amphibious Ready Group (ARG).

U.S. NAVY / Mass Communication Specialist 2nd Class Brandon Parker

Aviation Boatswain's Mate (Handling) Airman Sean Spellane (left) and Aviation Boatswain's Mate (Fuel) Airman Melanie Vaiangina raise the ensign aboard the USS Arlington (LPD 24) as it returns to homeport on July 18.

NLUS / Qawnana Crockett

John Harler, past Richmond Council president, welcomes Sailors coming ashore from the USS Arlington.

NLUS / Qawnana Crockett

Family members welcome a Sailor from the USS Arlington home to Norfolk.

Stevenson Joins Festivities Around USS Paul Ignatius Commissioning

Navy League National President Bill Stevenson was among the dignitaries to attend the commissioning July 27 of the Navy's newest Arleigh Burke-class guided missile destroyer, the future USS Paul Ignatius (DDG 117), during a ceremony at Port Everglades in Fort Lauderdale, Florida. Stevenson also attended the festivities associated with the ship's commissioning.

Navy League National Senior Vice President Patricia Du Mont, also a Fort Lauderdale Council member, took part in the festivities, as did National Treasurer Joseph Giambrone, a Broward County Council member who co-chaired the commissioning committee for the Paul Ignatius with Oscar Romano of the Fort Lauderdale Council. Mary Anne Gray, who is executive director of Broward Navy Days, was the chairperson of the commissioning committee.

The committee raised the funds needed to host the commissioning events and planned the weeklong activities for Sailors. After the commissioning, the Broward County Council adopted the ship. Larry Ott, president of that council, and Cmdr. Robby D. Trotter, commander of the USS Paul Ignatius since 2017, signed the adoption certificate.

The ship's namesake, Paul Ignatius, who was Navy secretary from 1967 to 1969, attended all the events, including the signing of the adoption certificate, as did members of his family. Ignatius, who was in the Navy during World War II, also was assistant secretary of defense for installations and logistics during President Lyndon B. Johnson's administration.

The ship's sponsor was Ignatius' wife, Nancy, who passed away in January. Their oldest granddaughter, Elisa, honored tradition during the commissioning when she gave the first order to "man our ship and bring her to life!"

BROWARD COUNTY COUNCIL / Marianne Giambrone

Navy League National President Bill Stevenson (left) with former Navy Secretary Paul Ignatius, namesake of the newest Arleigh Burke-class guided missile destroyer, the USS Paul Ignatius, at ship-adoption festivities.

BROWARD COUNTY COUNCIL / Marianne Giambrone

From left: Cmdr. Robby D. Trotter, commander of the USS Paul Ignatius, with his wife, Pamela, and Navy League National President Bill Stevenson at the Broward County Council ship-adoption festivities.

Watch the July 27 commissioning of the USS Paul Ignatius by scanning this QR code with your smartphone.

CAMDEN-KINGS BAY NAVY LEAGUE COUNCIL

Sea Service Person of the Year honorees at the Camden-Kings Bay's May 16 banquet.

Camden-Kings Bay Recognizes 26 With Annual Sea Service Awards

The Camden-Kings Bay Navy League Council hosted its annual Sea Service Person of the Year awards banquet on May 16 at Naval Submarine Base Kings Bay, Georgia, and the council honored 26 as 2018 Sailors, Coast Guardsman and Marines of the Year from all commands/units stationed at Kings Bay and in St. Marys, Georgia.

Each honoree received a certificate and gift tote with more than $200 in gift certificates made possible by the event sponsors. During the awards presentation, each honoree was given a council coin and took a photo with guest speaker retired Vice Adm. Albert H. Konetzni, council President Sam Colville and the command leadership team.

Konetzni, also new board member and known as "Big Al, the Sailor's Pal," used humor to inspire the honorees and the 145 guests in attendance. He was introduced by Sheila McNeill, past national president of the Navy League.

The honorees were: Missile Technician 1st Class (SS) Cody Arabie; Logistics Specialist (SW) 1st Class Samantha Mincey; Electrician's Mate (N) (SS) 1st Class Dustin Lee; Culinary Specialist (SS) 2nd Class Santos Alarcon; Master-At-Arms (SW) 1st Class Matthew Labiak; Machinist's Mate (N) (SS) 1st Class Christopher Dupree; Sonar Technician (S) 1st Class Preston Stanbridge; Hospital Corpsman 1st Class Christina Davis; Electrician's Mate (N) (SS) 1st Class Nathan Shaw; e Corp. Tyler Adkins; Hospital Corpsman 1st Class Tiffany Salveson; and Maritime Law Enforcement Specialist 2nd Class Nikura Shaw.

More honorees were: Gunner's Mate 1st Class Miguel Carreras; Sonar Technician (S) 1st Class Adam Kemblowski; Machinist's Mate Auxiliary (SS) 1st Class Anthony Graff; Machinist's Mate Auxiliary (SS) 1st Class Alexander Zufriategul; Electrician's Mate (N) (SS) 1st Class Joshua Roberts; Electronics Technician (SS) 1st Class Christopher Phegley; Machinist's Mate Auxiliary (SS) 1st Class John Coleman; Electronics Technician (SS) 1st Class Timothy Hicks; Machinist's Mate (N) (SS) 1st Class Gregory Saydyk; Machinist's Mate (N) (SS) 1st Class Samuel Bryan; Machinist's Mate (Watchmaker) (SS) 1st Class Jeffrey French; Electronics Technician (Radar) (SS) 1st Class Shane Beattie; Missile Technician (SS) 1st Class Ross Kaufman; and Machinist's Mate (N) (SS) 1st Class Mitchell Dennis.

Retired Vice Adm. Albert H. Konetzni, known as "Big Al, the Sailor's Pal" and the featured speaker at the May 16 Camden-Kings Bay banquet.

Membership Report

2019 TOP RECRUITERS		NEW MEMBERS
Carlyle Devoe	Honolulu, HI	49
Lynn Atkinson Drucker	Fort Lauderdale, FL	26
Enrique Acosta Gonzalez	Central Florida, FL	22
James T Black	Lake Merritt, CA	13
Andrew Bisset	Western Connecticut, CT	4

2019 TOP COUNCIL RECRUITING	NEW MEMBERS
San Diego	329
Honolulu	159
Central Florida	81
Hampton Roads	44
Jacksonville	42
New York	42
Imperial Valley	39
National Capital	34
Key West	33
Northern Virginia	32
Tampa	28
Treasure Coast	25
Western Connecticut	21
Bremerton-Olympic Peninsula	20
Charleston	19

WELCOME ABOARD AND THANK YOU TO MAY AND JUNE 2019'S NEW COMMUNITY AFFILIATE MEMBERS FOR CHOOSING TO SUPPORT THE MEN AND WOMEN OF THE SEA SERVICES AND THEIR FAMILIES THROUGH SUPPORTING THEIR LOCAL NAVY LEAGUE COUNCIL

COMMUNITY AFFILIATE	COUNCIL
Beckwith, Towery & Associates Merrill Lynch	Savannah
Doubletree by Hilton	Hampton Roads

Stevenson Announces National Vice President Appointments

Navy League National President William "Bill" Stevenson announced the appointments of the 2019-2020 national vice presidents (NVPs) in late July.

The appointments are Patricia Du Mont, Senior NVP of development and events; Polly Bozdech-Veater, NVP of awards; Doug Fulton, NVP of strategic partnerships; Lisa Gallinat, NVP of communications; Virginia Gibson, NVP of international affairs; Sinclair Harris, NVP of military affairs; Jonathan Kaskin, NVP of legislative affairs; Chris Townsend, NVP of membership; Thomas Pruter, NVP of youth programs; and John Vargo, NVP of ship commissioning and field services.

Massachusetts Bay Council Hosts New Spanish Naval Academy Grad

Arranged by the Massachusetts Bay Council, new member Stephanie Rando and her husband, Marc Rando, hosted a new graduate of the Spanish Naval Academy, 2nd Lt. Santiago Cuartero Marino, and provided tours of Boston-area sites.

Those attractions included the USS Constitution, where the group met the ship's commanding officer, Cmdr. Nathaniel Shick, who gave a brief rundown of the history and purpose of the vessel. They also visited Coast Guard Base Boston, with admittance to the Boston Operations Center and a tour of Boston Harbor on a patrol boat, followed by lunch at the historic Warren Tavern.

The tour of Boston-area sites continued to the skywalk at the Prudential Building and a trip to Gillette Stadium, home of the New England Patriots, where Marino tried on a Super Bowl ring and a No. 54 jersey, currently worn by Dont'a Hightower.

The Randos and Marino also visited Portsmouth, New Hampshire, where Porter Davis, president of the Portsmouth Council, facilitated tours of the Navy Yard and the USS Albacore, a research submarine in active use from 1953 to 1972.

Each year, the Madrid Council awards a trip to the United States for the top graduate of its naval academy. This year, Marino was hosted by Dave Gray, president of the Annapolis Council in Maryland, for several days and then traveled to Boston.

The Madrid Council paid for his travel and provided spending money, and the award was presented to Marino by Madrid's president and recently retired Admiral of the Fleet, Adm. Juan Rodriguez. Nicholas Hayes, a former Navy League national vice president, assisted with the presentation of the award and the logistics for Marino's trip to the United States.

The Randos' daughter, Samantha, is a plebe this summer at the U.S. Naval Academy.

The "Brain Brawlers," Pacifica High School Cadets (from left) Andre Nguyen, a senior; Nick Bungcayao, a junior; Lucia Le, who is a sophomore; Casey Li, a junior; and Kane Li, a freshman.

Newport Beach Council Salutes NJROTC 'Brain Brawler' Cadets

The Newport Beach Navy League Council sent out a hearty salute to five cadets from the Navy Junior ROTC program at Pacifica High School in Garden Grove, California, who scored near the top in the national annual Brain Brawl Championship in April.

The Pacifica High "Brain Brawlers" — Andre Nguyen, a senior; Nick Bungcayao, a junior; Lucia Le, who is a sophomore; Casey Li, a junior; and Kane Li, a freshman — outscored powerhouse teams from 47 other states and placed seventh nationally at the championship, held this year at Embry-Riddle Aeronautical University in Daytona Beach, Florida.

The Brain Brawl is an academic competition modeled after the TV game show "Jeopardy!" Cadets are asked questions from the NROTC Naval Science Curriculum, current events, entertainment and sports.

Pacifica's NJROTC was nationally recognized as a distinguished unit with academic honors for the second consecutive year. And two junior cadets will attend the U.S. Naval Academy's summer seminar this year, and five cadets will apply to the Naval Academy next year.

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- We of the Navy League of the United States stand for a strong America — a nation morally, economically, and internally strong.
- We believe that the security of our nation and of the people of the world demands a well-balanced, integrated, mobile American defense team, of which a strong Navy, Marine Corps, Coast Guard, and Merchant Marine are indispensable parts.
- We support all Armed Services to the end that each may make its appropriate contribution to the national security.
- We know that in a free nation an informed public is indispensable to national security and, therefore, we will strive to keep the nation alert to dangers which threaten — both from without and within.
- We favor appropriations for each of the Armed Services, adequate for national security, economically administered.
- We oppose any usurpation of the Congress's constitutional authority over the Armed Services.
- We urge that our country maintain world leadership in scientific research and development.
- We support industrial preparedness, planning, production.
- We support efforts of our government to achieve worldwide peace through international cooperation.
- We advocate a foreign policy which will avoid wars — if possible; if not, win them!

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- The new Marine commandant's directives challenge Corps traditions

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