NAVWAR Highlights Information Warfare’s Role in Connecting a Joint Future Force at WEST 2023

Release from Naval Information Warfare Systems Command

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24 February 2023

From Kara McDermott

SAN DIEGO – Naval Information Warfare Systems Command (NAVWAR) leaders and technical experts highlighted digitization, automation, and agile software delivery as key tenants to connecting a joint future force during WEST 2023 at the San Diego Convention Center, Feb. 14-16.

Gathering with a contingent of other information warfare (IW) commands, the team shared the IW mission and priorities with attendees through speakers, panels, subject matter experts, and technology demonstrations at the three-day conference and exposition.

The lead for the IW community, Vice Adm. Kelly Aeschbach, commander, Naval Information Forces, touched on readiness, capability, and capacity by noting that people are the weapon systems in information warfare.

“Our biggest challenge right now is facing demand,” she said. “We are needed everywhere, and I cannot produce enough information warfare capacity and capability to distribute it everywhere that we would like to have it. That remains a real pressing challenge for me – how we prioritize where we put our talent and ensure that we have it in the most impactful place.”

As a part of the IW speakers’ series, Rear Adm. Doug Small, commander, NAVWAR, answered questions on a variety of subjects including risk management, future opportunities and constraints for continuous connectivity, and how unmanned systems play into Project Overmatch. As a Navy high-priority initiative, Project Overmatch is aimed at connecting platforms, weapons, and sensors together in a robust Naval Operational Architecture that integrates with Joint All-Domain Command and Control for enhanced Distributed Maritime Operations.

“Networking for unmanned systems is a core part of what we are trying to do,” said Small. “We are charged with making sure

all the components of the architecture, what the CNO called the ‘connective tissue,’ reaches every single one of those platforms to include unmanned systems. Everything from networking to the computing plant onboard to how it communicates.”

Small also joined top leaders from across the Navy, Marine Corps, and Coast Guard on a panel to discuss what is being done to provide clarity in the requirements and acquisition processes, recruiting and retaining the right talent in a competitive hiring environment, and explaining their toughest challenges and areas of opportunities.

“As we continue to bring digital platforms to ships with modern methods of software delivery, we are using new ways to tap into our amazing talent pool,” said Small. “With events like script-a-thons and coding challenges, we are pushing to get the very best from our Sailors and Marines who are absolutely experts in their fields.”

Back at the IW Pavilion, attendees had the opportunity to meet informally with dozens of program managers, business portfolio managers and subject matter experts through the engagement zone program. Open to all registered attendees with no appointment needed, these one-on-one and small group conversations discussed capabilities, service offerings, and opportunities for partnerships.

“WEST and other similar industry forums are vital to program managers to ensure we’re aware of commercial technologies we can leverage for the Fleet,” said Capt. Kris De Soto, program manager, Communications and GPS Navigation Program. “I was excited to participate in the event and the engagement zone and very pleased that we were able to meet so many of our industry partners in one place.”

In addition to the engagement zone, the IW pavilion also hosted a variety of technology demonstrations as a way to

share insights into Navy tools, capabilities, and tactics so attendees could understand opportunities for collaboration or support.

“This year, Naval Information Warfare Center (NIWC) Pacific is showcasing a wide breadth of our capabilities, with many of them showing the power of digitization and automation to the Fleet and for overall joint service readiness,” said Amanda George, business portfolio manager at NIWC Pacific.

One of those demonstrations was CyberKnight, a toolset that provides a method to automate the analysis of security technical implementation guides for command, control, communications, computers, intelligence, surveillance, and reconnaissance systems.

“CyberKnight is beneficial because the operating system type it analyzes is prevalent throughout the Department of Defense (DoD),” said Michael Price, cyber assessment and authorization branch head at NIWC Pacific. “It speeds up onerous requirements, allowing the security and engineering teams to address any security risks in a more timely fashion.”

NIWC Pacific also demonstrated their Space and Stratospheric Systems Program, where they have developed a small satellite and payload integration lab that enables rapid prototyping and demonstration of capabilities for Navy and other DoD sponsors in a government-owned and operated environment.

“Working jointly with other services is the best way to move fast,” said Jason Bousquet, NIWC Pacific space systems branch head. “Every organization has something of value to offer with contributions in technical expertise, experience, and valuable lessons learned. Knowledge gaps are filled quickly allowing for accelerated progress and increased success.”

Jara Tripiano, NIWC Pacific’s chief engineer, closed out the IW pavilion speakers’ series by acknowledging that there is increased recognition of the importance of *how* capabilities

are developed and delivered, and how it truly matters at an operational level.

“In support of Project Overmatch, we recently delivered a software package via the Overmatch Software Armory’s continuous integration/continuous delivery pipeline over-the-air to an operational platform,” she said. “In the future, we want that to be the norm. That WILL be the norm.”

Co-sponsored by the Armed Forces Communications and Electronics Association (AFCEA) International and the U.S. Naval Institute (USNI), WEST 2023 is the premier naval conference and exposition on the West Coast.

About NAVWAR

NAVWAR identifies, develops, delivers, and sustains information warfighting capabilities and services that enable naval, joint, coalition, and other national missions operating in warfighting domains from seabed to space and through cyberspace. NAVWAR consists of more than 11,000 civilian, active duty and reserve professionals located around the world.

USCGC Vigilant’s crew returns home following 28-day Florida Straits patrol

Release from Coast Guard Atlantic Area

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USCGC Vigilant’s crew returns home following 28-day Florida Straits patrol

CAPE CANAVERAL, Fla. – The crew of the USCGC Vigilant (WMEC 617) returned to their home port in Cape Canaveral Saturday following a 28-day patrol in the Florida Straits.

Patrolling in support of Homeland Security Task Force – Southeast and Operation Vigilant Sentry in the Seventh Coast Guard District’s area of responsibility, Vigilant’s crew conducted maritime safety and security missions while working to detect, deter and intercept unsafe and illegal migrant ventures bound for the United States.

During the patrol, Vigilant assisted with the interdiction of a grossly overloaded vessel with 311 Haitian migrants on

board. The crew provided migrants with food, water, shelter and medical aid until the migrants were repatriated back to their country of origin.

“This interdiction was a great example of the Department of Homeland Security’s outstanding interagency coordination and cooperation,” said Cmdr. Jay Guyer, Vigilant’s commanding officer. “I’m extremely proud of Vigilant’s crew in how they execute this dynamic and difficult mission with professionalism and humanity.”

Vigilant is a 210-foot Reliance-class medium endurance cutter. The cutter’s primary missions are counter drug operations, migrant interdiction, enforcement of federal fishery laws and search and rescue in support of U.S. Coast Guard operations throughout the Western Hemisphere.

Joint, Combined Exercise Shows Marine Littoral Regiment Idea is on ”Right Track’

U.S. Marines with 3d Marine Littoral Regiment, 3d Marine Division present arms during the redesignation ceremony of 3d Marines to 3d MLR aboard Marine Corps Base Hawaii, March 3, 2022. The 3d MLR will serve as a key enabler for joint, allied, and partnered forces, will integrate with naval forces, and will enable multi-domain maneuver and fires within contested spaces. The transition of 3d Marines to 3d MLR is in accordance with Force Design 2030 and one of the first major steps to facilitating a shift as the Marine Corps divests in legacy capabilities and builds a force that is optimized for operations envisioned within the Commandant's Planning Guidance. (U.S. Marine Corps photo by Cpl. Patrick King)

ARLINGTON, Va. – Now that the first Marine Littoral Regiment has been created, U.S. Marine Corps leaders say they're experimenting to determine how best to equip the pioneering unit as the forward-based eyes and ears of the fleet inside a contested maritime environment.

The 3rd Marine Regiment was **redesignated the 3rd Marine Littoral Regiment** (MLR) in a March 3, 2022 ceremony at Marine Corps Base Hawaii, where the new regiment will continue to be headquartered. The first of three planned littoral regiments for the Indo-Pacific region, the 3rd MLR is a key part of the Marines' ambitious force redesign to contend with near-peer

militaries like China and Russia.

”We have not only built the organization, now we are equipping it, experimenting and doing the testing and evaluation with those concepts we’ve come up with,” Marine Corps Col. Lance Lewis told the National Defense Industrial Association (NDIA) **Expeditionary Warfare Conference** Feb. 22. ”We’re definitely on the right track when it comes with MLRs,” added Lewis, the Assistant Vice Chief of Naval Research at the Office of Naval Research (ONR), ”That is how we are going to enable the Stand-In Force.”

The Marines’ evolving Expeditionary Advanced Base Operations concept envisions littoral operations by specialized mobile, low signature units within larger distributed maritime operations areas. Plans call for the MLRs to be organized, trained and equipped to support sea control and sea denial operations as part of a larger naval expeditionary force integrated with the joint force and allied and partnered forces.

Currently the MLRs are divided into three elements: a littoral combat team made up of a one infantry battalion equipped with a ship-killing missile battery, an anti-aircraft battalion, and a combat logistics battalion. All three elements were dispersed over three separate islands in their debut inclusion in RIMPAC 22
, the huge joint multinational maritime exercise in Hawaii. The MLR provided multi-domain awareness to the Combined Task Force, the Combined Force Maritime Component Command, and the Combined Force Air Component Command.

As the “eyes and ears of the fleet,” Lewis said, ”You need not only to restructure, but how do you maneuver those forces around the battlefield so it’s not a standard set of battalions but a different task organization, and then how do you now equip those forces.”

Navy to Christen Future USNS Cody

Release from the Department of Defense

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The Navy will christen its Spearhead-class expeditionary fast transport, the future USNS Cody (EPF 14), during a 10:00 a.m. ceremony Saturday, February 25, in Mobile, Ala.

The Honorable Matt Hall, Mayor of Cody, Wyo., will deliver the ceremonial principal address. Additional speakers include Vice Adm. Francis Morley, principal military deputy to the Assistant Secretary of the Navy for Research, Development, and Acquisition; The Honorable Greg Reed, president pro tempore of the Alabama state senate; Rear Adm. Bruce Gillingham, Surgeon General of the Navy; Rear Adm. Michael Wettlaufer, commander, Military Sealift Command; Mr. Rusty Murdaugh, president, Austal USA; and Mr. Stan Kordana, vice president of Surface Systems, General Dynamics Mission Systems.

In a time-honored Navy tradition, Averil Spencer, the ship's sponsor, will christen the ship by breaking a bottle of sparkling wine across the bow. Spencer is the daughter of the Honorable Richard V. Spencer, 76th Secretary of the Navy.

"This ship is the first to honor the city of Cody, Wyoming, a city that proudly embodies America's independence and fighting spirit," said Secretary of the Navy Carlos Del Toro. "The future USNS Cody will also be the first Flight II configuration in its class, bringing enhanced medical capabilities in addition to its high-speed sealift mobility and agility. I look forward to the depth that this

expeditionary fast transport will add to our fleet."

The future USNS Cody will join the fleet as one of nearly 100 U.S. Navy ships operating globally each day ensuring freedom of the seas, protecting international law, and strengthening relationships with Allies and partners.

The Navy's Military Sealift Command will operate the future USNS Cody, the first Flight II configured Spearhead-class expeditionary fast transport (EPF). The ship is named in honor of Cody, Wyo., and is the first ship in naval service named after the city.

EPFs, formerly designated as Joint High Speed Vessels, are all-aluminum catamarans that provide high-speed, shallow-draft transportation capability to support the intra-theater maneuver of personnel, supplies, and equipment for the Navy, Marine Corps, and Army. EPFs enable the rapid projection, agile maneuver, and sustainment of forces in response to a wide range of military and civilian contingencies such as Non-Combatant Evacuation Operations (NEO), Humanitarian Assistance, and Disaster Relief (HADR).

The Flight II ships will enhance the medical mission capability of the EPF's mission portfolio. With an embarked medical unit, the Flight II EPF will have two operating rooms, the ability to support approximately 41 medical patients, and 147 embarked forces. Flight II EPFs will have an 11M RIB and MV-22 capability.

Media may direct queries to the Navy Office of Information at (703) 697-5342. More information on the Expeditionary Fast Transport (EPF) can be found at: https://www.navy.mil/Resources/Fact-Files/Display-FactFiles/Article/2226179/expeditionary-fast-transport-epf/

USCGC Dependable returns home after a 50-day patrol in the Florida Straits and Windward Pass

USCGC Dependable’s (WMEC 626) crew operates alongside USCGC James (WMSL 754) in support of Operation Vigilant Sentry in the Florida Straits off the coast of Key West, Florida, Jan. 21, 2023. Dependable’s crew patrolled the Coast Guard’s Seventh District area of operations to conduct maritime safety and security missions. (U.S. Coast Guard photo by Fireman Olliver Miller)

Release from Coast Guard Atlantic Area

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VIRGINIA BEACH, Va. – The crew of the USCGC Dependable (WMEC 626) returned to their homeport in Virginia Beach Thursday following a 50-day maritime safety and security patrol in the Florida Straits and Windward Pass.

In support of Homeland Security Task Force – Southeast and Operation Vigilant Sentry in the Seventh Coast Guard District's area of responsibility, Dependable's crew conducted multiple interdiction evolutions and collaborated with other Coast Guard cutters and task force aircraft to continue the critical mission of maintaining safety at sea.

During the patrol, Dependable's crew processed, cared for and repatriated approximately 500 migrants. While operating in the Florida Straits, Dependable worked with other law enforcement entities, including Customs and Border Protection and the Florida Fish and Wildlife Conservation Commission to detect, deter and intercept unsafe and illegal ventures bound for the United States.

"The crew has been training to conduct migrant interdiction operations since July 2022," said Lt. Cmdr. Dana Prefer, Dependable's executive officer. "In preparation for the recent uptick in migration ventures, we worked hard to qualify over 50 crew members to stand watch and care for the migrants embarked onboard the cutter. The training and preparation paid off as it was truly a team effort to interdict, process and care for just about 500 migrants throughout our patrol."

Dependable is a 210-foot Reliance-class medium endurance cutter with a crew of 70. The cutter's primary missions include counter drug operations, migrant interdiction, enforcement of federal fishery laws, and search and rescue in support of Coast Guard operations throughout the Western Hemisphere.

USMC Calls for GPN

U.S. Marines with Headquarters Company, Headquarters Regiment, 2nd Marine Logistics Group, stage vehicles in support of Exercise Trident Juncture 18 on Camp Lejeune, N.C., Aug.27, 2018.

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New Marine Corps Logistics Plan Calls for Pre-Positioned Stocks to be Integrated into a Global Positioning Network

ARLINGTON, Va. — The Marine Corps is refining its logistics concepts in conjunction with the commandant's Force Design 2030 to provide sustainable logistics in a contested environment. The plan includes integrating its pre-positioned stocks into a Global Positioning Network (GPN), the Corps said in a Feb. 23 press teleconference.

The plan – Installations and Logistics 2030 – was released Feb. 23 by Marine Corps Commandant Gen. David H. Berger, who said in the accompanying release that, "[a]ny student of military history understands the critical nature of logistics and sustainment capabilities. We are focusing on diversifying distribution models, resourcing and improving sustainment capabilities, and ensuring the most resilient installations."

"One broken link in a supply chain can result in an untethered force," said Lt. Gen. Edward Banta, deputy commandant for Installations and Logistics. "A web mentality assures sustainment of the force and can absorb disruption."

Logistics Upgrades Needed

The plan directs myriad studies and experiments to re-vamp the logistical systems and make them more forward and resilient, modify force structure tailored the Stand-In Force operating inside an enemy's engagement zone, and to and able to take advantage of emerging technologies, including unmanned systems, tele-maintenance, 3D printing, and alternative energy sources.

"Stand-in Forces are small, low signature, mobile, relatively simple-to-maintain-and-sustain forces designed to operate across the competition continuum within a contested area," the release said. "They are the leading edge of a maritime defense-in-depth in order to intentionally disrupt the plans of a potential or actual adversary."

"We are changing our global posture with a new Global Positioning Network (GPN) that leverages afloat and ashore capability sets for responsiveness," Banta said. "The GPN also matures our relationships with partners and allies for access, basing, and overflight. Within the GPN we will be pushing higher echelons of maintenance further forward, as well as leveraging the already existing global presence of commercial industry partners. An example here is the ability of forklift

operator to reach over to a Caterpillar dealer in the region, versus having to order a part from back in the Continental United States."

The new document says that the current logistics concept "relies on deliberate, multi-modal movement of equipment and supplies across a linear logistics and supply chain, requiring large warehousing and trans-shipment nodes to break down, consolidate, and repackage shipments for delivery to the end user. Our supply chains have been developed for efficiency, not effectiveness. One broken link in the supply chain can result in an untethered force."

The GPN will be designed to be a supply web instead of a supply line.

"Instead of relying on a singular, vulnerable chain, we must build a more resilient supply web that can adapt to temporary broken links or obstructions," the new document said. "Improving sustainment will demand global logistics solutions that are non-linear and distributed, have a smaller physical footprint at any one site, and limit the vulnerability of forward forces."

The Marine Corps maintains prepositioned stocks of weapons, equipment, and supplies on Military Sealift Command ships at Diego Garcia and the Marianas, plus a stock at a facility in Norway. The Corps will be integrating its pre-positioned stocks into the GPN.

In response to a question from Seapower Magazine about the pre-positioned stocks, Col, Michael Mulvey, Futures branch head for Logistics Vision and Strategy said, "[We] are looking at an integrated global positioning network now. So that's, that's a combination of both afloat and ashore platforms that enables campaigning. So that's steady state operations that Marines will do from day to day. And by having that forward position [with] the equipment and capabilities inside the

first island chain and in the Indo Pacific, we can transition much more efficiently from campaigning to a conflict scenario if we need that."

"The logistical challenge in front of us is massive. But the risks of not implementing change are clear – the Naval Expeditionary Force becomes unnecessarily vulnerable, particularly while operating in forward and distributed formations," Berger said in the new document. "Transforming our current installations and logistics related capabilities, capacity, and resiliency to support the future force more effectively, while reducing risk to our units, Marines, Sailors, families, and allies and partners is paramount. The time for action is now."

Installations and Logistics 2030 can be downloaded from the USMC website.

Boeing Sets F/A-18 Production Completion Date as Defense Business Pivots to Future Work

A Boeing-built F/A-18 Super Hornet takes off from Lambert International Airport in St. Louis. Boeing will continue to deliver new Block III Super Hornets to the Navy through 2025. (Boeing photo)

Release from Boeing

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– Defense, Space & Security plans St. Louis workforce growth supporting new and next-generation military aircraft programs and services

– F/A-18 Service Life Modification will continue through the mid-2030s; advanced capabilities development and upgrades for global fleet continuing for decades

ST. LOUIS, Feb. 23, 2023 – Boeing [NYSE: BA] expects to complete new-build production of the F/A-18 Super Hornet fighter aircraft in late 2025 following delivery of the final U.S. Navy fighters. Production could be extended to 2027 if the Super Hornet is selected by an international customer.

To meet demand for defense products and services, Boeing plans to continue hiring year-over-year for the next five at its St. Louis site. More than 900 people were hired in the region last year.

“We are planning for our future, and building fighter aircraft is in our DNA,” said Steve Nordlund, Boeing Air Dominance vice president and St. Louis site leader. “As we invest in and develop the next era of capability, we are applying the same innovation and expertise that made the F/A-18 a workhorse for the U.S. Navy and air forces around the world for nearly 40 years.”

The F/A-18 production decision allows Boeing to:

- **Redirect resources to future military aircraft programs:** To support work on the next generation of advanced crewed and uncrewed aircraft, Boeing plans to build three new, state-of-the-art facilities in St. Louis. These facilities, as well as the new Advanced Composite Fabrication Center in Arizona, and the new MQ-25 production facility at MidAmerica St. Louis Airport, represent more than a $1 billion investment.

- Boeing has invested $700 million into St. Louis infrastructure upgrades during the past decade, enabling the introduction of new design and build techniques streamlining processes and improving first-time quality.

- **Ramp up production of critical new defense programs:** Boeing St. Louis will increase production of the world’s first all-digital training system, the T-7A Red Hawk, and the world’s first carrier-deployed autonomous refueling aircraft, the MQ-25 Stingray, along with ongoing production of new F-15EX Eagle IIs and 777X wing components.
- **Focus on modernization and upgrade efforts:** Boeing will continue to develop advanced capabilities and upgrades for the global F/A-18 Super Hornet and EA-18G Growler

fleet. Throughout the next decade, all Block II Super Hornets in Service Life Modification will receive the Block III capability suite. Boeing will also continue to add advanced electronic attack capability as part of ongoing Growler modifications.

Since the F/A-18 debuted in 1983, Boeing has delivered more than 2,000 Hornets, Super Hornets and EA-18G Growlers to customers around the world including the U.S. Navy, Australia, Canada, Finland, Kuwait, Malaysia, Spain and Switzerland.

USS Farragut (DDG 99) Arrives in the 4th Fleet AOR

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USS Farragut (DDG 99) Arrives in the 4th Fleet AOR

CARIBBEAN SEA - The Arleigh-Burke class guided-missile destroyer USS Farragut (DDG 99) arrived in the U.S. 4th Fleet area of operations for a scheduled deployment, Feb. 15. Embarked with the ship is U.S. Coast Guard Law Enforcement Detachment (LEDET) 406 to conduct counter narcotic operations in the region.

Joint Interagency Task Force-South (JIATF-S), located in Key West, Fla., conducts counter illicit trafficking operations, delivering a high return on a modest investment. In 2022, JIATF-S enabled the disruption of a total of 260,431 kilograms of cocaine and 139,821 pounds of marijuana. JIATF-S also enabled 901 arrests through maritime, land, and air seizure operations.

“We are here to enhance security in the Western Hemisphere,” says Cmdr. Nicholas Gurley, commanding officer of the USS Farragut. “We aim to break the vicious circle of threats, through direct and indirect means, while building a more effective, efficient, and resilient team.”

U.S. Naval Forces Southern Command/U.S. 4th Fleet supports U.S. Southern Command’s joint and combined military operations by employing maritime forces in cooperative maritime security operations to maintain access, enhance interoperability, and build enduring partnerships in order to enhance regional security and promote peace, stability and prosperity in the Caribbean, Central and South American region.

Investigation into 2022 F-35C crash aboard Carl Vinson complete

Release from Commander, Naval Air Forces Public Affairs

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By Commander, Naval Air Forces Public Affairs

22 February 2023

SAN DIEGO – The investigation into the F-35C Lightning II crash that occurred onboard Nimitz-class aircraft carrier USS Carl Vinson (CVN 70) on Jan. 24, 2022, is complete and was released on Feb. 16, 2023. The cause of the mishap was found

to be pilot error; however, the error was not a result of reckless actions or malicious intent. The pilot was current on all qualifications and designations and the aircraft was in compliance with all periodic maintenance and service inspections.

On Jan. 24, 2022, at approximately 1630 local time, the F-35C crashed onto the flight deck of USS Carl Vinson which was operating in the South China Sea. The pilot safely ejected and the aircraft skidded off the flight deck and into the sea.

A total of six personnel injured during this incident – the pilot and five other Sailors who were working on the flight deck at the time of the crash. All injured personnel have been released from medical care. The crash resulted in approximately $120,000 in damage to Carl Vinson's flight deck, as well as more than $2.5 million in damage to an EA-18G Growler that was struck by debris while staged on the flight deck.

We remain grateful to the highly trained Sailors aboard Carl Vinson who immediately responded to ensure that the pilot was recovered from the water, all injured personnel were cared for, and flight deck was cleared and re-set for operations. After a short pause in accordance with safety procedures, the rapid response from the crew enabled flight operations resume in less than an hour with minimal impact to mission requirements.

On Mar. 2, 2022, a team from U.S. Navy Task Force 75 and the Naval Sea Systems Command's Supervisor of Salvage and Diving (SUPSALV), embarked on the diving support construction vessel (DSCV) Picasso, recovered the F-35C wreckage from a depth of approximately 12,400 feet.

AS CLIMATE SHIFTS, U.S. NAVY FOCUSES ON BOLSTERING ARCTIC OCEAN OPERATIONS

Release from U.S. Fleet Forces Command.

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By LT Sarena Padilla & ENS Garner Fleming, U.S. National Ice Center

22 February 2023

WASHINGTON, D.C. - *First in a two-part series on how the Navy and its partners are working to improve Arctic operations as the sea ice melts due to warming temperatures.*

The Arctic is the next frontier for U.S. military operations, where the physical environment poses a major threat to achieving strategic dominance, managing assets and ensuring freedom of the seas.

The importance of the Arctic will only increase each year as the decline of the perennial sea ice continues and the ice edge shifts. It is imperative to strengthen the ability to

operate there in order to gain a strategic advantage. Effective operations will hinge on reliable environmental intelligence in a region where conditions can be severe.

The U.S. most recently Updated Its Strategy For The Arctic Region Last October with a new 10-year scope that seeks a peaceful, stable, prosperous and cooperative Arctic at the same time acknowledging strategic competition with Russia and China. Ongoing efforts include investing in technology that detects and tracks potential threats and improves our own capabilities to maneuver in the region. This is not a simple task due to the dominant role that Russia has in the Arctic, as well as the growing concern for China's desire to be an influential nation there.

ARCTIC ENVIRONMENT PRESENTS CHALLENGES FOR THE NAVY

The Arctic Ocean is in many ways an uncharted domain for conducting military operations. It will be no easy feat to operate effectively because the Arctic is a hostile environment for modern vessels within ice-infested waters.

Currently, the U.S. has a limited icebreaking capability that is completely reliant on the U.S. Coast Guard, with the Coast Guard cutters Healy and Polar Star handling all pathfinding needed to ensure safe transit. This shortfall is driving the production of the next generation of Polar Security Cutters, a joint Navy and Coast Guard program to address the dire necessity for increased icebreaking operations in the near future. The first new Polar Security Cutter is expected to be delivered in 2025.

Along with an updated force, any future naval conflict will require leveraging technological advancements made in the past 80 years since the naval challenges of World War II, when the U.S. was last fully tested as a strategic force implementing older-era warfighting tactics. The Arctic presents conditions and challenges far different from those encountered in earlier

eras.

The future of warfighting will demand means beyond globally deployed strike groups and a prominent physical presence. Information warfare will be of greater importance as the challenges facing battlespace awareness, assured command and control and integrated fires are heightened in the austere environment of the Arctic.

Successful intelligence preparation of the operational environment, mastery of the electromagnetic spectrum and solid communications could very well be deciding factors for any conflicts in the high latitudes. Any future conflict will be settled in large part by how well information, including environmental intelligence, is gained, exploited and disseminated.

Technology that implements artificial intelligence/machine learning (AI/ML) methods could yield a warfighting advantage in predicting the physical battlespace. Current projects are underway across the fleet, many led by Office of Naval Research and Naval Research Laboratory, to address the need for advanced data assimilation to improve high-latitude environmental models for weather and conditions forecasting and predictions.

A variety of environmental data collected through in situ or remote means is necessary for these modeling efforts to be successful. The sea ice edge can vary by hundreds of miles overnight when faced with the dynamic meteorology present in the region.

Many analytical intelligence challenges can be partially to fully automated AI/ML, but even these innovative efforts require substantial data, among other resources, as a driving mechanism. It will be essential to fill the current environmental data gaps in the Arctic if the U.S. is to harness the technical advances made in computing and

successfully exploit technologies such as more sophisticated models and innovative AI/ML projects. Some small but highly effective naval commands have started paving a path forward to meet these shortfalls.

HOW THE U.S. NATIONAL ICE CENTER PLAYS A MAJOR ROLE

The U.S. National Ice Center (USNIC) is a tri-agency organization of the Navy, the National Oceanic and Atmospheric Administration (NOAA) and the Coast Guard with a mission to provide global to tactical scale ice and snow information, ice forecasting and related environmental intelligence services for the U.S. government.

Fewer than 50 uniformed, civilian and contract personnel comprise the USNIC on a daily basis with only a dozen of those individuals creating a variety of routine ice analyses for the Arctic, Antarctic, Great Lakes and other geostrategic locations where ice may form; a daily analysis of U.S. Northern Hemisphere snow and ice information to directly support assets and personnel in the field.

With such a small team, providing environmental intelligence to ensure safety of navigation in treacherous polar waters and economic prosperity within and along high latitude commercial routes and port regions is a vital task. Indeed, providing environmental intelligence in particular about sea ice proliferating in the Arctic Ocean is essential.

Several portions of the Arctic Ocean that have historically been covered with sea ice through at least parts of the winter will become increasingly ice-free in the coming years. This decrease in ice can result in shorter maritime trade routes, or completely new transpolar routes, becoming available, significantly decreasing maritime Arctic transit.

The Arctic is still largely unfamiliar in its delicate environmental complexities. The need for increased and enhanced observations continuously grows as the sea ice left

behind year after year becomes more fragile, thin and diminishes in extent, losing an equivalent area the size of South Carolina annually.

Characterizing the ice in the region requires various input sources whether it be satellite-derived data, sensing platforms like high-tech buoys or occasionally deployed personnel feedback while onboard icebreaking operations in the region. The limited in situ observations help increase near-real time environmental knowledge in the Arctic, but at current numbers, they form an incomplete picture and are not enough for fully forecasting and safely operating within such a complex, harsh domain.

In the next installment, we discuss how USNIC is bolstering sensor and analysis abilities in the Arctic.