

US Marine Corps Successfully Tests Iron Dome-Based Air Defense Prototype



The U.S. Marine Corps has tested Rafael's Iron Dome ground launcher and Tamir interceptor with its Medium-Range Interceptor Capability prototype, G/ATOR radar and Common Aviation Command & Control System. *RAFAEL*

HAIFA, Israel – The U.S. Marine Corps conducted a successful live-fire test of Israel-based Rafael's Iron Dome ground launcher and Tamir interceptor missile integrated with the USMC Medium-Range Intercept Capability prototype, Rafael said July 18.

The test included the Marine Corps' Ground/Air Task Oriented Radar and Common Aviation Command & Control System.

"This demonstration proves that we do now have a relevant capability," said Don Kelley, program manager for ground based

air defense at PEO Land Systems, immediately following the successful test.

“Once again, Rafael’s systems have proven that they are capable of seamless, optimized integration with other defense systems,” said Brig. Gen. (Res.) Pinhas Yungman, executive vice president and head of Rafael’s Air Defense Systems Directorate.

“This test has proven the Iron Dome Tamir Interceptor and associated ground components can be integrated quickly and efficiently in any relevant defense architecture and intercept various aerial threats successfully in complex and advanced scenarios,” said Moshe Patel, head of the Israel Missile Defense Organization within Israel’s Ministry of Defense. “We look forward to further partnerships with the U.S. Armed Forces on air and missile defense.”

Xerox Elem Additive and U.S Navy Deploy First Metal 3D Printer at Sea



The amphibious assault ship USS Essex (LHD 2), shown here in 2018, now has an ElemX liquid metal printer onboard. *U.S. MARINE CORPS / Cpl. A. J. Van Fredenberg*

NORWALK, Conn. – Xerox Elem Additive Solutions announced July 18 that an ElemX liquid metal printer was recently installed onboard USS Essex (LHD 2), making it the first metal additive manufacturing machine deployed on a U.S. naval vessel.

The ElemX was placed on the ship earlier this month in Pearl Harbor, with at-sea trials beginning immediately. The installation is the latest step in the U.S. Navy's strategy of using additive manufacturing to increase operational readiness for the fleet. It also builds on the relationship between the U.S. Navy and Xerox Elem Additive that began with the Naval Postgraduate School in Monterey, California, receiving the first installation of the ElemX in 2020.

“The military supply chain is among the most complex in the world, and putting the ElemX on USS Essex means Sailors can now bypass that complexity and print parts when and where they need them,” said Tali Rosman, GM of Elem Additive. “We are

proud to continue our partnership with the Navy to help them advance their additive manufacturing capabilities and execute their long-term vision.”

The ElemX leverages Xerox’s liquid metal additive manufacturing technology that uses standard aluminum wire. Unlike other metal 3D printing technologies, there are no hazardous metal powders with ElemX and no need for special facility modifications or personal protective equipment to operate the machine. The printer also requires minimal post-processing and therefore provides a faster time-to-part. This ability to produce reliable replacement parts on-demand reduces the dependency on complex global supply chains for deployed forces.

To withstand various sea states and environmental challenges that U.S. naval warships encounter, the ElemX was installed in an industrial shipping container to ruggedize it. Trials have already begun to establish operational guidelines and technical feasibility studies to determine applications and use cases. A team on USS Essex will design and print shipboard items and provide feedback to NPS and Commander, Naval Surface Force Pacific.

The ElemX 3D printer was commercially introduced in February 2021, and since then Elem Additive Solutions has expanded operations, including opening an Additive Manufacturing Center of Excellence in Cary, North Carolina. The ElemX is a safer and simpler metal 3D printer, addressing supply chain resiliency for transportation, aerospace, defense and industrial manufacturing.

U.S. Affirms Support for Philippines Over Disputed Islands



Philippine Navy frigate BRP Antonio Luna (FF 151) arrives at Joint Base Pearl Harbor-Hickam to participate in the Rim of the Pacific 2022. *U.S. NAVY / Mass Communication Specialist 3rd Class Demetrius J. Williams*

MANILA, Philippines – Demonstrators gathered outside the Chinese embassy in Manila on July 12 to mark the sixth anniversary of 2016 international court arbitration ruling that invalidated Beijing’s vast territorial claims in the South China Sea. The Philippines say China continues to harass its vessels and personnel near the disputed islands and in the country’s exclusive economic zone.

In a statement issued by the U.S. Embassy in Manila on July 12, U.S. Secretary of State Antony Blinken called on the

Peoples Republic of China to comply with the decision by an arbitration tribunal after the Philippine government complained in 2013 about China's increasingly assertive claims and aggressive actions around its islands in the South China Sea.

China has unilaterally claimed that virtually all islands in the South China Sea belongs to it.

Blinken said the Arbitral Tribunal, which was constituted at The Hague under the 1982 Law of the Sea Convention, delivered a unanimous decision, which is final and binding on the Philippines and the PRC. "In its ruling, the Tribunal firmly rejected the PRC's expansive South China Sea maritime claims as having no basis in international law. The Tribunal also stated that the PRC has no lawful claim to the areas determined by the Arbitral Tribunal to be part of the Philippines' exclusive economic zone and continental shelf. We also reaffirm that an armed attack on Philippine armed forces, public vessels, or aircraft in the South China Sea would invoke U.S. mutual defense commitments under Article IV of the 1951 U.S.-Philippines Mutual Defense Treaty."

In a May address at George Washington University, Blinken said China is advancing unlawful maritime claims in the South China Sea and undermining peace and security, freedom of navigation, and commerce.

Philippine Foreign Secretary Enrique Manalo said Tuesday called the 2016 arbitration ruling an "indisputable" decision.

"These findings are no longer within the reach of denial and rebuttal and are conclusive as they are indisputable," said Manalo. "The award is final."

Despite rhetoric by the previous president of the Philippines, Rodrigo Duterte, where he said the Philippines would move away from U.S. influence and establish closer ties with China, he later had a change of heart when his

overtures failed to deliver results.

The new Philippine President Ferdinand Marcos Jr., who assumed office on June 30, and his government are expected to seek closer ties with the U.S. And today, the U.S.-Philippines partnership remains strong.

In August of last year, Adm. John C. Aquilino, commander of U.S. Indo-Pacific Command, traveled to the Philippines to mark the 70th anniversary of the U.S.-Philippine Mutual Defense Treaty and reaffirm the U.S. commitment to the alliance with the Philippines.

“Both of our nations have made it clear that we are committed to the alliance, and that we remain prepared to fight alongside and defend each other using all of our capabilities to preserve peace and stability in the region – just as we have before,” Aquilino said.

On May 23 of this year, Aquilino and the chief of staff of the armed forces of the Philippines, Gen. Andres Centino, signed the Maritime Security (Bantay Dagat) Framework at USINDOPACOM headquarters on Camp Smith, Hawaii. According to a statement from INDOPACOM, “Bantay Dagat” is a Tagalog term that means “Guardian of the Sea,” illustrating U.S. and Philippine resolve to improve regional maritime domain awareness and confront maritime challenges together. The framework is designed to enable a holistic, intergovernmental approach to maritime security through the interoperability of U.S. and Philippine maritime forces and option to include interagency organizations, and is a testament to the strength of the U.S.–Philippines alliance.”

The Philippine navy’s 2,600-ton, 351-foot guided-missile frigate BRP Antonio Luna (FF-151) is currently participating in the 2022 Rim of the Pacific exercises off Hawaii.

Boeing, U.S. Navy Demonstrate Manned-Unmanned Teaming with Super Hornet



A Block III F/A-18 Super Hornet takes off from Lambert International Airport in St. Louis. As the most advanced Super Hornet ever built, the Block III is equipped to run the app-based solutions of the future. *BOEING*

ST. LOUIS – Boeing and the U.S. Navy have completed a series of manned-unmanned teaming (MUM-T) flight tests in which a Block III F/A-18 Super Hornet successfully demonstrated command and control of three unmanned aerial vehicles, the company said July 15.

Boeing system engineers connected Block III's adjunct processor, known as the Distributed Targeting Processor –

Networked (DTP-N), with a third-party tablet to team with the UAVs. Boeing developed new software loads for the DTP-N specific to running the third-party tablet and transmitting commands. The software development, tablet connection to the fighter and all flight tests were completed in less than six months.

“Block III Super Hornet is executing on its guarantee of hardware – installed today – that is ready to receive the software of the future,” said Ben LeGrand, Boeing director of Mission Systems. “Block III Super Hornet will integrate third-party systems and software with minimal modifications.”

Boeing partnered with the F/A-18 & EA-18G Program Office (PMA-265), Air Test and Evaluation Squadrons 23 and 31, Naval Air Warfare Center-Weapons Division at China Lake, California, and a third-party vendor on the demonstration. During the test flights, F/A-18 pilots entered commands into the tablet, which were processed and transmitted through Block III’s hardware. The UAVs executed all commands given by F/A-18 pilots during tests over a two-week period.

“This successful MUM-T demonstration represents a significant step toward the Navy’s vision for distributed maritime operations. It highlights the potential of unmanned concepts to expand and extend the Navy’s reach,” said Scott Dickson, Boeing’s director for Multi-Domain Integration. “As part of a Joint All-Domain Command and Control network, teams of UAV conducting ISR missions led by the latest Super Hornets equipped with network-enabled data fusion and advanced capabilities would provide warfighters across the Joint Force with significant information advantage.”

“Future fighter pilots will be the quarterback of the skies, orchestrating commands and controlling UAVs from the integrated Block III touch-screen cockpit,” said Mark Sears, Boeing vice president and program manager of F/A-18, EA-18G programs. “Block III Super Hornet is the bridge to the future

and is a risk reducer for the Navy that is delivering on teaming, networking and interoperability now.”

Sikorsky Delivers Third Production CH-53K To U.S. Marine Corps



Sikorsky delivered a seventh CH-53K Helicopter to the U.S. Marine Corps. The heavy lift helicopter will be based at Marine Corps Air Station New River in Jacksonville, North Carolina. *SIKORSKY*

STRATFORD, Conn. – Sikorsky, a Lockheed Martin company, delivered the third low-rate initial production CH-53K King Stallion helicopter ahead of contract schedule to the U.S. Marine Corps, the company said July 14.

This aircraft, built in Sikorsky’s digital factory, is the

first CH-53K from the Lot 2 LRIP contract awarded by the U.S. Navy in 2019, and the seventh overall delivered to the fleet. The CH-53K's heavy-lift capabilities exceed all other U.S. Department of Defense rotary wing platforms and is the only heavy-lift helicopter that will remain in production through 2032 and beyond.

This CH-53K heavy lift helicopter joins the six in operation at Marine Corps Air Station New River in Jacksonville, North Carolina. The CH-53K is the only sea-based, long range, heavy lift helicopter in production and will immediately provide three times the lift capability of its predecessor.

"This Connecticut-built CH-53K aircraft is a credit to our employees and their skills embracing digital tools and other advanced technologies to continue the Sikorsky legacy of building modern, safe, reliable rotorcraft. Our nationwide supply chain supports the active production line as we prepare to deliver two more CH-53K helicopters later this year," said Bill Falk, director, Sikorsky CH-53K program. "We look forward to continuing our progress toward next year's full rate production decision."

The CH-53K helicopter was born in a digital environment, and now its digital thread connects design, manufacturing, training, and sustainment teams. This network, that includes everything from work instructions to maintenance manuals, is based on the helicopter's single, continuous data thread that stays consistent from initial design all the way through sustainment. Today, all of Sikorsky's aircraft programs are born in a digital environment. The power of this digital thread drives affordability, producibility and reliability across the aircraft lifecycle.

Earlier this year Sikorsky secured a contract to build 12 CH-53K heavy lift helicopters for Israel under a U.S. Navy Foreign Military Sales agreement.

The signed letter of offer and acceptance between the U.S. government and Israel states first deliveries of the baseline aircraft are planned for 2025.

The CH-53K helicopters will replace the Israeli Air Force fleet of modified CH-53D Yasur helicopters, which have been in Israel's inventory for over 50 years.

Marine I-CsUAS Works to Defend Against Drones



Program Executive Officer Land Systems recently started fielding the Installation-Counter small Unmanned Aircraft Systems, depicted in this simulated graphic, to select Marine Corps installations. *U.S. MARINE CORPS / Andrew Reynolds*
MARINE CORPS BASE QUANTICO, Va. – The battle to keep Marines

and their critical assets safe is constantly evolving. As technology advances, so does the need to field more cutting-edge equipment to counter threats, such as those posed by small unmanned aerial systems.

With these challenges in mind, Program Executive Officer Land Systems is fielding the Installation-Counter small Unmanned Aircraft Systems, the Marine Corps Systems Command Office of Public Affairs and Communication said July 14.

Known as I-CsUAS, the system is designed to protect Marine Corps installations by detecting, identifying, tracking and defeating small UAS.

“The Marine Corps, and DoD in general, required the capability to defend against SUAS years ago,” said Don Kelley, program manager for Ground-Based Air Defense at PEO Land Systems. “The threat of SUAS is only proliferating every day. The bottom line is, we need to provide this capability to our Marines as rapidly as possible.”

I-CsUAS features an integrated system equipped to carry out all phases necessary to counter small unmanned aerial systems such as commercially available drones, said Kelley. The system will primarily provide a service to ensure Marines or security forces have the capability to defend installations against SUAS at all times.

Maj. Kyle Yakopovich, fixed site project officer for Program Manager Ground Based Air Defense at PEO Land Systems, said I-CsUAS is intended to defeat commercial off the-shelf Group 1 and Group 2 UAS. I-CsUAS also provides detection, tracking and identification capabilities.

“What makes this system interesting is it fuses multiple modalities together into a single system,” Yakopovich said. “This allows us to more accurately detect, track and identify [small unmanned aircraft systems].”

Yakopovich said the program's system is equipped with a few different components for better detection and ultimately, defense. The Long-Range Sentry Tower is comprised of a radar system and an optical sensor, and works in conjunction with a passive radio frequency detection capability to present the operator with a visual depiction of the threat's flight path. While each of the towers' sensor components are already widely in use, Yakopovich said I-CsUAS is special because it uses machine learning and artificial intelligence to constantly and autonomously analyze the sensor data faster and more accurately than a human operator. The system enhances the capability to detect, track, and identify the threat while reducing the amount of manpower previously required to perform these actions.

Yakopovich also said the I-CsUAS also has a separate non-kinetic defeat capability that has proven itself capable in other programs within PM GBAD. Using this capability, a Marine who has detected an intruding sUAS is able to disrupt the sUAS communication link. This enables Marines operating the LRST-42 or LSTR-82 tower will be able to determine the drone's point of origin.

PM GBAD's Fixed Site Product Manager Jessica McCauley said the Marine Corps plans to use this technology to defend critical assets, following the requirement set forth in Title 10 of the U.S. Code, which outlines the role and responsibilities of our nation's armed forces.

"The I-CsUAS protects the facility by detecting, tracking identifying the drone and empowering law enforcement to defeat it," McCauley said. "We are delivering a system to select installations, providing them the ability to conduct that kill chain in order to protect critical assets against small UAS threats."

"These small commercial off-the-shelf drones – they're everywhere," Yakopovich said. "You can't walk into a park

without seeing them, and our enemies know how to use them. If you follow the news you can read articles about these drones being used as weapons of war in places like Ukraine, and those drones are capable of doing similar damage here at home. We're delivering these systems to CONUS locations and defending certain assets aboard those installations that have been deemed critical to national security.

"Use your imagination of how much damage and chaos could be done by these small commercial off-the-shelf drones by attacking or otherwise harassing domestic Marine Corps installations. That's why we're doing this – to protect those assets and to enable the warfighter to do what the warfighter should be doing, which is keeping his focus oriented toward the enemy."

Navy Rethinking 'Full-Mission Capability' Definition with F-35s in Distributed Ops, Whitesell Says



An F-35C Lightning II, assigned to the “Argonauts” of Strike Fighter Squadron 147 prepares to land on the flight deck of Nimitz-class aircraft carrier USS Carl Vinson (CVN 70) on June 17, 2021. *U.S. NAVY / Mass Communication Specialist Seaman Caden Richmond*

ARLINGTON Va. – The Navy’s “Air Boss” said fifth-generation strike fighters are redefining the concept of full mission capability and changing the way a four-plane division operates in distributed maritime operations.

Vice Adm. Kenneth Whitesell, commander, Naval Air Forces and commander, Naval Air Force, U.S. Pacific Fleet (the Air Boss), addressed the concept while speaking July 13 at a naval aviation seminar hosted by the Center for Strategic and International Studies and the U.S. Naval Institute and sponsored by HII.

Responding to a question from moderator Ward Carroll about the full-mission-capable rates of Navy F-35Cs during the 2021 deployment on board USS Carl Vinson, Whitesell said taking a “30,000-foot view of the way the [carrier] air wing is going to be employed is going to be completely different.”

“The air wing’s not going to be employed the same way [as

before],” Whitesell said. “The F-35 is the perfect exemplar of that. The way we employ that platform. ... There is no defensive and offensive combat spread [where] you break out into some of the traditional missions that we would have done five or 10 years ago. Employing the Joint Strike Fighter as they employed it as a [four-plane] division [was] definitely more spread out. The way information is shared amongst the platforms makes up for any deficits that an individual aircraft may have.

“The way we think of mission capability and full mission capability – we have to think about it in a distributed and in this case in a full division or greater employment mode through Distributed Maritime Ops,” the admiral said. “Fitting into the bigger vision of Distributed Maritime Ops, a single platform can have degradations, but because of the information sharing between the platforms, we have to think about how we’re going to define full mission capability, not platform-specific, but truly mission specific. It’s a different way of looking at things.”

Sev1Tech Proposes Solutions for Moving Navy Shipyards into the Digital Age



USS Pasadena (SSN 752) arriving at Norfolk Naval Shipyard in 2020 for a Drydocking Selected Restricted Availability.
NORFOLK NAVAL SHIPYARD / Daniel DeAngelis

ARLINGTON, Va. – As the U.S. Navy makes a huge investment in upgrading and modernizing its four public shipyards, one company is proposing ideas to move shipyard processes from the Industrial Age to the Digital Age using digital information technology.

The Navy is investing more than \$20 billion over 20 years to modernize its shipyards under the Shipyard Infrastructure Optimization Plan, or SIOP. Much of the effort involves modernizing century-old dry docks and other heavy infrastructure.

Patrick Fitzgerald, senior vice president for Navy Missions of Sev1Tech, is a former Naval Information Warfare Center Atlantic Enterprise Systems Department Head and a manager with a long background in information technology. He told *Seapower* his company is well positioned to contribute to the SIOP the digital transformation of the Industrial-Age processes of Navy

shipyards and to “generate a really significant return on investment” and enable the shipyards to “get the ships out to the fleet when needed and fully ready to perform their mission.”

Fitzgerald said the SIOP is a “once-in-a-century thing that our country needs to safeguard itself. “Unfortunately, a lot of the federal government has not moved to the information age; it’s still very Industrial Age processing.”

Among the ideas Sev1Tech is floating is the use of augmented reality or virtual reality in training the shipyard workers. Fitzgerald said that technology makes for “much more effective training programs that improve knowledge retention.”

The workers “make fewer errors when they actually perform the maintenance. They can verify that a part is being installed in the correct space, [which] will help eliminate re-work for a variety of tasks.”

He also said applying data analytics would result in better parts-demand forecasting and help minimize issues with the global supply chain. Data analytics also would improve auditability, lower the warehousing complexity and costs and reduce or eliminate the time a ship waits for a part to arrive.

Digital twin modeling of the actual layout of the shipyard facilities as they evolve over time can improve shipyard processes.

“Once we get that initial model set, you can start doing simulations on that for the evolving needs and the evolving capabilities,” Fitzgerald said. “It really optimized the layout for the workflow.”

Use of drones is one way to save time and improve productivity, he said.

“The walking that the folks at the four public shipyards do every day is absolutely insane,” Fitzgerald said. “At the end of the day you have to leave the security to get a part and then come back. That’s a lot of lost labor time not directly serving the mission and helping us get that ship out on time. Having the networks in place where a person working on a ship realizes they needed a part that they didn’t expect they needed – if it’s a lightweight part – a drone could potentially fly out a five-pound package to the edge of the ship so they don’t have to walk all the way across the base to get it from a warehouse.”

Fitzgerald pointed out that the Navy owns the airspace over its shipyards and therefore could set the policy of drone operations within the yard.

“We could save hours of an employee’s time every day walking back and forth to get parts or checklists,” he said. “That’s massive for what it could mean to getting a ship out of the shipyard on time and back to the fleet where it needs to be.”

He also advocates leveraging 5G and other wireless communications and use of tablets and other support devices.

With a tablet that can go classified when [a worker goes] into a classified space – and given access to the data and drawings they need dynamically, and as soon as they walk out of that space, no longer have access to that information. That would reduce the complexity of managing them, reduce the risk of that information getting compromised, and give them what they need at the right time when they need it,” he said.

“The investment in IT relative to the investment in the capital infrastructure is pretty small to get a really big yield,” Fitzgerald said.

Reservist's Innovative Idea is a Winner in Navy Waypoints Contest



Lt. Cdr. Jonathan Calhoun (center) holds the i3 Waypoints trophy after Vice Adm. John Mustin (back row, middle) announced Calhoun's "Leveraging Mobile Technology to Streamline Mobilization" as the winning entry of the inaugural i3 Waypoints. Calhoun is surrounded by the other final presenters (front row), the finalist panel and production staff (back row). *U.S. NAVY / Chief Mass Communication Specialist Elisandro T. Diaz*

FORT MEADE, Md. – A Navy Reservist's innovative concept for adapting a mobile application to better enable mobilization is a winning idea.

Lt. Cdr. Jonathan Calhoun, a Selected Reserve member attached to U.S. Fleet Forces Command Maritime Operations Center (N3 FCC) in Norfolk, Virginia, submitted his entry, "Leveraging Mobile Technology to Streamline Mobilization," as part of the "i3 Waypoints" effort to find new or better ways for the Navy Reserve to operate.

Vice Adm. John B. Mustin, chief of Navy Reserve and commander, Navy Reserve Force, announced the winning entry of the inaugural i3 Waypoints in a streaming broadcast on July 14.

Calhoun's entry was one of 107 received and evaluated by a panel of judges.

Calhoun initially thought of his idea during a mobilization exercise where he realized shifting many of the mobilization requirements to a secure mobile platform would make the process faster and more efficient for both Sailors and Navy Reserve Center staff.

"Empowering Sailors to use their mobile device to complete a significant portion of pre-mobilization requirements will improve the overall experience for the modern-day Sailor and save critical time during mass mobilizations to get warfighting-ready Sailors on station faster," said Calhoun.

Calhoun's entry envisions a mobile application to reduce duplicative administrative requirements for both members and mobilization staff, save critical time by auto-populating data fields across multiple documents, provide real-time transparency and progress status for members and leadership throughout the process, and enable clear and customizable views and reports.

Additionally, the app could remove the difficulties some Reserve members have accessing Common Access Card-enabled sites outside an Navy/Marine Corps Internet environment and would "ensure our ability to mass mobilize, predictably, at scale, and with seamless administration activation workflows"

as outlined in the Navy Reserve Fighting Instructions 2022.

“We are already moving out on the design for Lt. Cdr. Calhoun’s mobile application,” said Mustin. “His idea to add mobile technology to our distributed activation process helps us achieve our goal of mobilizing the entire Selected Reserve force of 50,000 in 30 days, if required.”

Mustin conceived of the i3 Waypoints program as an approach to “innovate something entirely new; improve on something already established; or integrate several ideas, products or processes rendering the former completely obsolete.”

The annual competition is designed to fast-track transformative ideas from across the Navy directly to the highest levels of the Navy Reserve, without filters or bureaucratic barriers.

The competition is open to anyone in the U.S. Navy—Selected Reserve, Training and Administration of the Reserve, Individual Ready Reserve, Active Duty and civilians, in all ranks, rates and grades.

Of the 107 entries received, five entries were subsequently chosen and presented to a panel hosted by Mustin, retired Vice Adm. Andrew “Woody” Lewis, Bruce E. Mosler, chairman, global brokerage of Cushman & Wakefield Inc., Navy Reserve Force Master Chief Tracy L. Hunt and 2021 Reserve Sailor of the Year Chief Yeoman (Select) Jasmyn Phinizy.

“The large number of creative, thoughtful strategic ideas submitted in a relatively short timeframe far exceeded our original expectations,” said Mustin. “It demonstrates our Reserve Force’s commitment to innovate, improve efficiencies, and reduce administrative burdens, allowing us to focus on warfighting readiness – our one and only priority. With such an enthusiastic response from the force, and so many great ideas to modernize the way we do business, we saw enough in this inaugural event to commit to making i3 Waypoints an

annual program. Very little is more important to us than keeping the direct pipeline open for creative ideas to flow to top leadership without filter or disruption.”

The other i3 Waypoints finalists, and their winning ideas, are:

- Lt. Brian Adornato, Naval Sea Systems Command, Surge Maintenance Sacramento: “Create a New Category of Personnel: Civilian Technicians”
- Cdr. Bobby Hsu, Director of Navy Staff, Office of the Chief of Naval Operations: “Official Navy Reserve YouTube Channel”
- Cdr. Sarah McGann, Navy Personnel Command (PERS-9), and Lt. Josh Didawick, Office of the Chief of Naval Operations for Manpower, Personnel, Training and Education: “New Policy for Reserve Retirement Education Across the Career Continuum”
- Cdr. Scott Mericle, Navy Reserve Operations, Plans and Policy (N5), Commander, Second Fleet: “Improve Active to Reserve Transition.”

The streamlined broadcast can be viewed here:

<https://www.navyreserve.navy.mil/Resources/I3-Waypoints/>

<https://www.dvidshub.net/video/850290/i3-waypoint-challenge>

<https://www.youtube.com/c/usnavyreserve>

Q&A: Rear Admiral Ronald J.

Piret, Commander, Naval Meteorology and Oceanography Command



Rear Adm. Ronald J. Piret. *U.S. NAVY*

Rear Adm. Ronald J. Piret is a native of Chico, California, and graduated in 1993 from the U.S. Naval Academy with a Bachelor of Science in Physical Oceanography. He holds master's degrees in oceanography and meteorology from the Naval Postgraduate School and national security and strategic

studies from the Naval War College, where he graduated with distinction.

Upon commissioning, Piret served in various operational positions, most notably aboard the Royal Navy's HMS Herald as the Operations Officer, and the USS Abraham Lincoln (CVN 72), where he served as the Meteorologist and Oceanographer during a deployment in the Western Pacific.

Ashore, he served as forecast duty officer at Naval European Meteorology and Oceanography Center, Rota, Spain; tactical hydrographic and meteorological officer at the Royal Navy School of Maritime Operations, HMS Dryad, Southwick, England; associate chairman of the Oceanography Department at the U.S. Naval Academy; deputy director of Operations for Expeditionary Warfare, Naval Oceanography Operations Command; executive officer, Naval Oceanography Operations Command; deputy assistant chief of staff for Requirements, Programs and Assessments, Commander, Naval Meteorology and Oceanography Command; Arctic affairs officer for the Oceanographer of the Navy onboard the Chief of Naval Operations Staff; fellow to the Naval Command College Class of 2017, Naval War College's Senior Officer International Program; executive officer, Naval Oceanographic Office; and chief of staff, Naval Meteorology and Oceanography Command.

Piret commanded the Provincial Reconstruction Team Uruzgan in southern Afghanistan working alongside multinational and interagency partners in support of Operation Enduring Freedom. Additionally, Piret commanded the Naval Oceanographic Office at Stennis Space Center, Mississippi overseeing the operation of the Navy's six T-AGS survey vessels.

Piret assumed command of Naval Meteorology and Oceanography Command and simultaneously became the Oceanographer of the Navy, Navigator of the Navy, and Hydrographer of the Navy in July of 2021.

Piret discussed the missions of Naval Meteorology and Oceanography Command with Senior Editor Richard R. Burgess. Excerpts follow.

With the change in fighting land wars in Southwest Asia to the competition with Russia and China, how does that shift affect focus of the Naval Meteorology and Oceanography Command?

PIRET: Naval Oceanography operates simultaneously at the strategic, operational and tactical levels of warfare in every theater around the globe. We pride ourselves in our ability to characterize the battle space and then predict changes in the environment over time. As part of information warfare, we can analyze where the potential hot spots will occur and position assets accordingly. Certainly, wherever the fleet goes, we go. But often have already been there. In terms of fleet operations, whether it be in the Western Pacific or in the North Atlantic, we're an integral part of every warfighting kill chain, whether it is the submarine force, the surface force, special warfare forces or the aviation force.

With current events, we do see some uptick in requests for operational support, and we are making sure that those carrier strike groups or those combatant commanders have the best understanding of the battlespace's environmental conditions so they can best posture or employ their assigned forces.

Are the Distributed Maritime Operations and Expeditionary Advanced Base Operations concepts changing the focus and missions of Commander, Naval Meteorology and Oceanography Command?

PIRET: We've been thinking about Distributed Maritime Operations for a while now and adjusting our own alignment to better deliver meteorological and oceanographic effects to the fleet. We recently invested in and realigned some of our Sailors to stand up two commands, Strike Group Oceanography Team Norfolk and San Diego. Those commands deploy Sailors

ready to meet DMO requirements.

With this realignment, Naval Oceanography is well positioned for distributed naval operations. Our teams of Sailors complete workups with carrier strike groups and amphibious ready groups, and they deploy with those forces. At the same time, we embed Mobile Environmental Teams on independent deployers to deliver specialized environmental information. Whether full SGOT teams onboard aircraft carriers or small teams onboard independent deployers, our Sailors serve as the onboard subject matter experts who work within the planning process and leverage our reach-back capability and the deep knowledge base we have at the Naval Oceanography Operations Command (Anti-Submarine Warfare Reach-back Cell and the Electromagnetic Maneuver Warfare Reach-back Cell). Naval Oceanography's Reach-back Cells enable the deployed teams to bring full weight at what naval oceanography to the fight.

CNMOC supports groups such as explosive ordnance disposal (EOD), mine countermeasures and special operations forces. What kind of support do you provide them?

PIRET: When it comes to the expeditionary warfare – whether that be mine-countermeasures, EOD or special operations – we're really talking about assured access and ability to maneuver ingress and egress. We have a deep understanding of the nature of those missions, and our Sailors and Officers are well-trained and deliver critical information to assure success. It's really important to those forces to understand the conditions in which they're operating. They also need to understand what changes will occur during their mission and how to egress safely.

We have a wide variety of deployable Sailors who work alongside the special warfare, EOD and the mine-countermeasures groups. We have Sailors who are specifically trained in those missions and have a deep understanding of those mission requirements. We also have reach-back capability

with our team in the Warfighting Support Center at Stennis Space Center where remote-sensing capabilities are leveraged with other partners within the information warfare community to highlight and mitigate challenges in various areas of operation.

It's not well known that we have the only operational geology lab in the Navy. We're experts in analyzing bottom sediment and how that sediment moves, which is critically important when it comes to understanding how a mine on the seafloor would be best detected if it's been buried.

Additionally, our Sailors are trained in the operational employment and piloting of unmanned underwater vehicles with side-scan sonar onboard, and able to map the ocean floor or in harbors as well and identify objects. Our Sailors can also access a robust historical database, and utilizing change detection algorithms, they can direct EOD units to areas where new objects can be investigated, and if needed, neutralized.



Piret discusses maritime strategy and cooperation with Denmark

Rear Adm. Martin la Cour-Anderson, Commander, Joint Arctic Command, at "The Geostrategic Importance of the Arctic" panel during the Sea-Air-Space Exposition. *U.S. NAVY / Mass Communication Specialist 2nd Class Kyleigh Williams*

The change in the Arctic with the ice melting and the interest by the Navy in doing more operations up there, is that changing your tasking a lot, or is it something you pretty much always done?

PIRET: As an Arctic Nation, the Navy has maintained a consistent presence in this challenging battlespace. Our presence and capability are regularly demonstrated at the bi-annual exercise, run by the Arctic Submarine Laboratory called Ice Exercise, or ICEX. We completed the most recent ICEX in March 2022.

Often with change, comes new opportunity and risk. The Arctic is no different. As ice in the high latitudes recede, opportunities to access natural resources, fisheries and more expeditious trade routes are starting to become the new normal. Part of the Navy's mission is to maintain freedom of the seas, which includes the Arctic.

At the forefront of monitoring and tracking worldwide ice conditions is the National and Naval Ice Center [USNIC]. In partnership with NOAA [the National Oceanic and Atmospheric Administration] and the National Weather Service, specifically the Ice Services Branch of the Ocean Prediction Center, USNIC observes, analyzes and forecasts ice for the better part of the last 65 years. This highly skilled team provides commanders the information they require to successfully operate in the harshest environment on Earth.

With eight Arctic nations in the world and a global economy, maintaining a peaceful and free Arctic that conforms to international rules-based order is not possible without our domestic and international partnerships. Internally, we partner with the US Coast Guard, NOAA/NWS operating in the

Arctic in order to better understand this environment. Internationally, we have strong partnerships with the Canadian Ice Service, Danish Meteorological Institute, Sweden, Norway, Finland, Denmark, Canada, and New Zealand and others through organizations such as the North American Ice Service, the International Ice Charting Working Group and the International Cooperative Engagement Program for Polar Research. These organizations, amongst others, are key to setting and maintaining international standards, collaborating to best understand this complex and rapidly changing environment, and creating the most effective conditions for mariners to safely operate.

CNMOC is one of the largest operators of unmanned undersea and unmanned surface vehicles in the world. How many of those vehicles do you operate and what do you do with them?

PIRET: Naval Oceanography maintains and operates an inventory of nearly 200 unmanned underwater vehicles. These unmanned vehicles range from deep sea 6,000-meter vehicles to ocean gliders that collect data within the water column to remotely operated surface vessels, but they all aid in enhancing safety of navigation for our fleet.

Our team has developed deep expertise in unmanned operations over the last two decades. We've been using unmanned systems not only to sense the ocean and collect data, such as conductivity, temperature, and depth – which we can then turn into sound propagation models in the ocean – to surveying the ocean floor collecting boundary conditions, not only for navigation purposes, but also to use in modeling ocean dynamics for safe fleet operations. And then, of course, we have some experience in unmanned aerial vehicles as well, but not to the extent we have in unmanned surface and underwater vehicles. The Fleet Survey Team uses some unmanned surface vehicles to then chart harbors and bays in shallow water.

Many of the UUV systems we actually command and control from

our Glider Operations Center headquartered at the Naval Oceanographic Office at Stennis Space Center. One of the lessons we have learned over time, of course, is with unmanned vehicles, you really need to understand the environment to operate them successfully. That is something that we've been able to help the broader Navy implement in their operations as well.

You're adding another Pathfinder-class T-AGS oceanographic survey ship to the fleet. Some of those are around 20 years old. Do you see any need to recapitalize the T-AGS fleet in the foreseeable future?

PIRET: Certainly, the Chief of Naval Operations has highlighted the requirement for T-AGS vessels in his testimony. We are looking at what does the next class of survey vessels need to meet current and future fleet requirements.

Our current Pathfinder-class vessels remain world-class military survey ships. We have reinvested in them throughout their service lives. They have state-of-the-art survey equipment ranging from deep-water multi-beams to sub-bottom profilers and moving vessel profilers, so they can do a broad range work. But we are looking at, what does the next class of ship need to address to encompass, to be more versatile and better integrate unmanned systems into those vessels?

One of the requirements that we're looking at in the next class is optionally manned hydrographic survey launches. We need the ability to operate fully manned hydrographic survey launches deployed from a T-AGS vessel and then shift to remotely operated survey launches capable of full spectrum surveys from deep-water to littoral.

Through experience, we've also refined our ability smoothly shift from a deep-water bathymetry mission to operating unmanned underwater vehicles in ports in a relatively quick

fashion as well.



Piret congratulates AGC Megan Morehouse following the 2021 U.S. Navy Chiefs pinning ceremony at the Naval Construction Battalion Center in Gulfport, Mississippi, Nov. 19, 2021. *NAVAL METEOROLOGY AND OCEANOGRAPHY COMMAND / Lt. Bobby Dixon*
The latest Pathfinder T-AGS, USNS Maury, and the next one being built have moon pools for UUV operations. Is that working out well?

PIRET: Yes. We've learned a lot of lessons with the development of the Maury and we're continuing to improve on that design. With the new T-AGS 67, we're looking at what that deployment system needs to achieve, as some UUVs have gotten a little bigger and we've increased their mission time and been able to integrate more types of sensors. That seems to be ever evolving but there's a lot of potential there.

How does CNMOC and NOAA divide up oceanographic work between the two organizations?

PIRET: NOAA is charged with the hydrographic surveys for the

nation in U.S. territorial waters. The Navy is charged with the military surveys and produce charts in in partnership with the National Geospatial-Intelligence Agency in satisfying the Defense Department's global safety-of-navigation requirement. Those are the different roles and responsibilities between NOAA and the Navy, but we really do have a tight working relationship in terms of the survey standards, so when it's appropriate, data as well as improvements in technology can be shared. Also, we cooperate in the international venues and we're part of a number of commissions to help build capacity with partners across the globe.

But that's not where our partnership with NOAA ends. We've actually had a longstanding partnership in terms of data exchanges that extends to our work in atmospheric modeling as well as unmanned systems. Over the past several years, we've actually been collaborating in the deployment of gliders to measure heat content in the ocean and do a better job in modeling hurricane intensification along the U.S. East Coast as well as the Gulf Coast. That's really been a fantastic relationship.

CNMOC and your warfare specialty have been part of the information warfare community more than a decade now. Has that integration gone well, and do you see it having a multiplying effect on the service you give to the fleet?

PIRET: Integrating the information warfare skills sets has improved the lethality of the fleet. Frankly, with better understanding the battlespace, we reduce uncertainty and enhance the fleet's ability to maneuver effectively in the physical environment. And so, we're really increasing the effectiveness of those independent Information Warfare capabilities by bringing them together to more accurately and completely define the state of the battlespace and predict how it will evolve over time. This predictive capability improves weapons system employment our can better assess an adversary's weapons systems ability to effectively operate below, on, and

above the sea. This is where information warfare can increase our fleets' lethality.

Integrating information warfare teams further left in the Navy kill chains, we effectively reduce uncertainty in the combatant commanders' decision space regarding when, where and how they may most effectively employ forces.