Northrop Grumman to Rapidly Develop Marine Corps CCA with Kratos' Valkyrie UAS

This agile solution integrates Northrop Grumman's proven mission systems with Kratos' mature Valkyrie. (Photo Credit: U.S. Marine Corps)

From Northrop Grumman, Jan. 8, 2026

BALTIMORE – Jan. 8, 2026 – Northrop Grumman (NYSE: NOC) was competitively awarded the U.S. Marine Corps' Marine Air-Ground Task Force Uncrewed Expeditionary Tactical Aircraft (MUX TACAIR) Collaborative Combat Aircraft (CCA). This award combines Northrop Grumman's uncrewed capabilities and autonomous leadership with Kratos' Valkyrie uncrewed aerial system to work alongside crewed fighters to provide air dominance in high-threat environments.

Northrop Grumman will develop and rapidly deliver platforms

that include:

- **Advanced Mission Kit:** Northrop Grumman's cost-effective mission kit is inclusive of sensors and software-defined technologies designed specifically for uncrewed aircraft. The mission kit's flexible technology can perform various kinetic and non-kinetic effects, making the platform a combat-ready asset.

- **Open Architecture Autonomy Software:** Northrop Grumman's open architecture autonomy software package – known as Prism – will manage the aircraft's operations autonomously.

- **Valkyrie Uncrewed Aerial System from Kratos Defense and Security Solutions:** Fully equipped for a variety of missions that will include conventional takeoff and landing capabilities, enhanced runway flexibility with a modular airframe and payload bays for customizable effects.

Experts:

Krys Moen, vice president, advanced mission capabilities, Northrop Grumman: "Northrop Grumman remains at the forefront of advanced sensing capabilities, delivering innovative solutions that meet the needs of the warfighter with unmatched speed and reliability. This enhanced capability set ensures optimal performance for both crewed and uncrewed platforms."

Steve Fendley, president Kratos Unmanned Systems Division: "The integration of the Kratos Valkyrie aircraft system configured with the world's best multifunction mission systems from Northrop Grumman results in a high-capability CCA at a price point that enables the uncrewed systems to be deployed

in mass with crewed aircraft.”

Details:

Northrop Grumman has packaged its sensors and other mission capabilities into a smaller envelope, resulting in a more cost-effective solution that is compatible with an uncrewed platform. Combining existing product lines and proven capabilities, Northrop Grumman, Kratos, and commercial partners developed a missionized CCA that includes survivability, connectivity, lethality and supportability elements. With more than 20 successful flight demonstrations in operationally relevant environments, Northrop Grumman and Kratos are offering the U.S. Marine Corps a low risk, expedited path to MUX TACAIR mission capability and persistent joint crewed and uncrewed expeditionary operations.

Transportation Secretary Sean P. Duffy Taps New Leadership for U.S. Merchant Marine Academy

Rear Admiral (select) Tony Ceraolo & Dr. Johnathan Gajdos will lead the charge in restoring the Academy's prominence and military readiness

From the U.S. Department of Transportation, Jan. 8, 2026

WASHINGTON, D.C. – U.S. Transportation Secretary Sean P. Duffy today announced Rear Admiral (select) Tony Ceraolo as Superintendent and Dr. Johnathan Gajdos as Provost at the U.S. Merchant Marine Academy. Both men bring decades of experience in public administration, military leadership and education.

Under the leadership of President Trump and Secretary

Duffy, Rear Adm. (sel) Tony Ceraolo and Dr. Gajdos are focused on restoring the Academy to an institution worthy of the sacrifices made by these young patriots and strengthening its academic programs so midshipmen are fully prepared to serve, lead, and defend our great nation.

President Trump's Executive Order on Restoring America's Maritime Dominance directed a revitalization of the Academy earlier this year. Secretary Duffy swiftly signed a partnership with the U.S. Army Corps of Engineers to modernize campus facilities, upgrade simulators and navigation labs, and completely overhaul the IT system. The Secretary also spearheaded the restoration of the Christ on the Water painting. These initiatives aim to ensure the Academy is attracting the best and brightest to serve as our nation's merchant mariners.

"Rear Admiral Tony Ceraolo and Dr. Johnathan Gajdos are precisely the leaders the U.S. Merchant Marine Academy needs at this critical moment—especially after the last administration neglected the Academy and its midshipmen," said **U.S. Transportation Secretary Sean P. Duffy**. "These men bring the experience, discipline, and vision required to reverse years of decline at the Academy, restore America's maritime power, and prepare the next generation of American patriots for service to our country."

"I am honored and excited to serve as the 15th Superintendent of the U.S. Merchant Marine Academy at a pivotal moment for both the Academy and our nation. With unprecedented focus, support, and momentum behind the maritime sector, this is an exciting time to lead" said **Rear Adm. (sel) Tony Ceraolo, Superintendent at U.S. Merchant Marine Academy.** "I look forward to working alongside our exceptional faculty and staff to educate, mentor and graduate leaders of exemplary character—men and women fully prepared to advance our

nation’s national security, economic success, and marine transportation needs.”

“When I had the opportunity for a campus visit during the selection process for this position, I was immediately impressed by the dedicated faculty, the motivated midshipmen, and the skilled staff, fully embracing the Academy’s critical mission,” said **Dr. Johnathan Gajdos, Provost at U.S. Merchant Marine Academy**. “As I assume the role of USMMA’s Provost, I am excited to support the work of our faculty as they educate America’s future merchant mariners and maritime leaders.”

About Rear Adm. (sel) Tony Ceraolo:

Before joining the Academy as Chief of Staff in 2023, Rear Adm. (sel) Ceraolo spent 34 years in the U.S. Coast Guard. Prior to his retirement, he served as the Executive Assistant to the Coast Guard Deputy Commandant for Operations. Earlier in his career, he served as a Senior Counselor to the Secretary of Homeland Security where he spearheaded and coauthored DHS’s first-ever Strategic Approach for Arctic Homeland Security, as well as Director for Maritime Security and Director for Arctic Region Policy on the National Security Council Staff at the White House.

His command experience includes service as Commanding Officer of two Coast Guard cutters, as well as a deployment as Commander of U.S. Coast Guard Patrol Forces Southwest Asia – the Coast Guard’s largest command outside the continental United States; and, as Sector Commander and Captain of the Port for San Francisco and Northern California.

Captain Ceraolo graduated with honors from the U.S. Coast Guard Academy. He earned a Master of Public Administration from Harvard University’s Kennedy School of Government, and a Master of Arts with Distinction in National Security and Strategic Studies from the U.S. Naval War College in Newport, Rhode Island. He is also a graduate of the Joint Forces Staff

College, a designated permanent cutterman, and an Eagle Scout.

About Dr. Johnathan Gajdos:

Prior to joining the U.S. Merchant Marine Academy, Dr. Gajdos spent more than 15 years in administrative and teaching roles at the Defense Language Institute Foreign Language Center (DLIFLC), the primary language education and training institution for the U.S. military. Most recently, he served as Associate Provost for Undergraduate Education, where he oversaw six schools providing full-time, intensive foreign language training in nine languages.

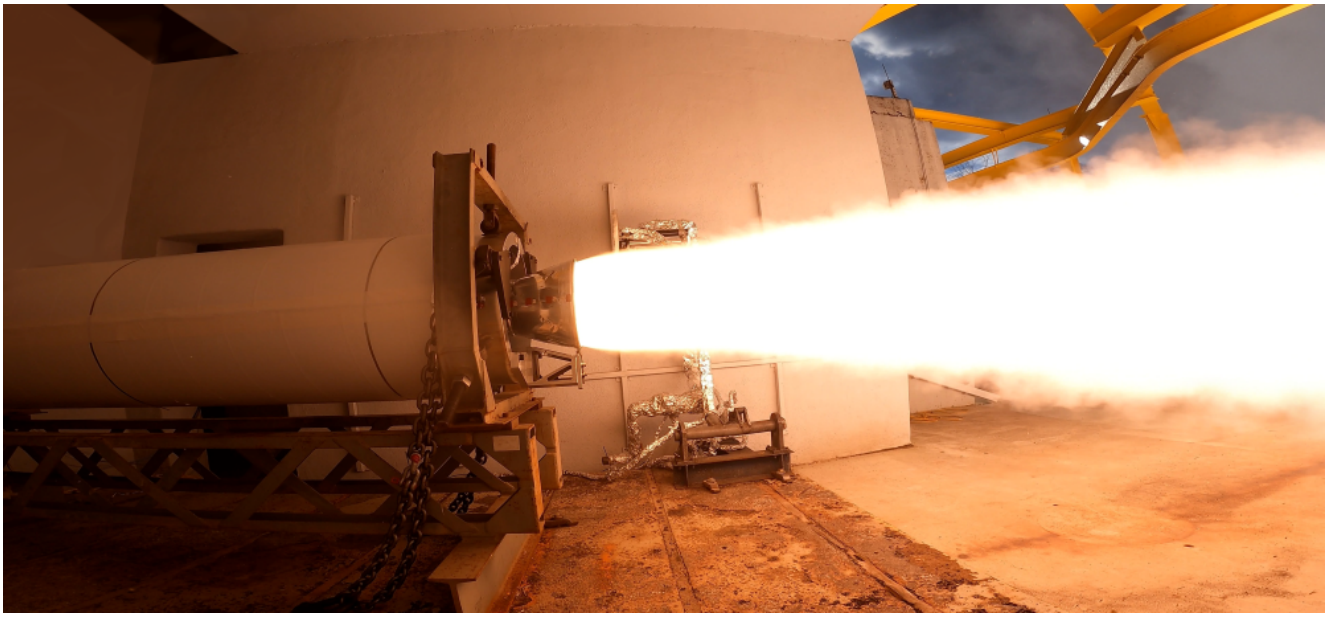
His prior assignments at DLIFLC include serving as dean of the Persian Farsi School, academic advisor at the Institute's Washington, D.C. office, and teaching team leader and instructor in the German program (earning the DLIFLC Civilian Instructor of the Year award from the Kiwanis Club of Monterey in 2013). Dr. Gajdos has also taught at Monterey Peninsula College, the University of Iowa, and Technische Universität Dortmund, Germany.

Dr. Gajdos earned a Ph.D. and M.A. in Germanic linguistics from the University of Iowa; a Bachelor's in German from Georgetown University; and a Graduate Certificate in Public Administration from the University of North Dakota. A graduate of the Army Training and Doctrine Command Intermediate Leader Development Program, he has completed Army Management Staff College courses as well as Wharton Online's Leadership and Management Certificate program. He is a two-time recipient of the Army Civilian Service Commendation Medal and in 2025 was awarded the Army Meritorious Civilian Service Medal.

The U.S. Merchant Marine Academy, located in Kings Point, New York, educates and graduates licensed merchant mariners and leaders of exemplary character who will serve America's marine transportation and defense needs in peace and war. The U.S.

Merchant Marine Academy is administered by the Department of Transportation.

US Navy Selects Northrop Grumman for Second Stage Solid Rocket Motor Program



The second stage solid rocket motor completes a static fire test on November 21, 2025 in Elkton, Maryland. (Photo Credit: Northrop Grumman)
From Northrop Gruman, Jan. 7, 2026

ELKTON, Md. – Jan. 7, 2026 – Northrop Grumman Corporation (NYSE: NOC) was awarded a $94.3 million contract by the U.S. Navy to develop and qualify a new 21-inch diameter second-stage solid rocket motor (SSRM) for the Navy's extended-range missile programs to deter and defeat fast-moving air, surface and hypersonic threats.

- The SSRM is a low-risk, rapidly developed design that

enables the Navy to quickly and cost-effectively field an extended-range hypersonic defense capability.

- The high-performance 21” diameter rocket motor is engineered to significantly extend range and speed across various missions, including air warfare, surface warfare, land strike, and ballistic missile defense.

- The Navy has expressed interest for potential deployment of Northrop Grumman’s extended range propulsion technology across various platforms.

- Continued design and low-rate initial production of 60 units for testing and delivery will take place at Northrop Grumman’s Propulsion Innovation Center in Elkton, Md.

Expert:

Gordon LoPresti, senior director, propulsion systems and control, Northrop Grumman: “Being chosen by the U.S. Navy is an honor and a testament to our rapid development capabilities, production capacity and leadership in advanced propulsion solutions. The successful development and demonstration of our SSRM in just 10 months showcases our unique, affordable, and versatile extended-range capabilities that will equip the U.S. Navy to excel in its defense and deterrence missions. We are eager and prepared to rapidly qualify and produce these motors in quantities to meet the needs of the US.”

Details:

As the nation’s preeminent propulsion provider, Northrop Grumman continues to invest in facilities, capacity, and

technologies, to ensure the ability to produce advanced weapons and solid rocket motors affordably at scale. To meet the growing customer demand, Northrop Grumman has invested more than $1 billion since 2018 to enhance capacity and capabilities for weapons and missile components, including solid rocket motors. With decades of proven success and over one million solid rocket motors delivered, Northrop Grumman is a trusted provider of SRMs and advanced propulsion systems essential for defense, payload delivery and space exploration.

Northrop Grumman is delivering advanced propulsion and solid rocket motors at scale today and is investing in further expanding capacity to meet growing customer demand and support a resilient defense industrial base. Propulsion work takes place across six strategic sites in West Virginia, Utah and Maryland, totaling 10 million square feet of manufacturing space. We’re tripling capacity for small tactical SRMs at our West Virginia production facility, doubling production capacity for large SRMs in Utah, and increasing by 25% manufacturing capacity in Maryland to accommodate future high-demand programs, including air-breathing hypersonic propulsion solutions.

SECNAV, CNO, MCPON, Senior Navy Leaders Visit Bollinger Mississippi Shipbuilding

From Bollinger Shipyards

PASCAGOULA, Miss. – (January 9, 2026) – Bollinger Shipyards yesterday hosted The Honorable John C. Phelan, Secretary of The Navy (SECNAV) at its Bollinger Mississippi Shipbuilding facility in Pascagoula for his first official visit in the role. Joining Secretary Phelan was Adm. Daryl Caudle, Chief of Naval Operations (CNO), John J. Perryman, Master Chief Petty Officer of The Navy (MCPON) and Jason L. Potter, Assistant Secretary of The Navy for Research, Development, and Acquisition (ASN RDA). Their collective presence underscored the Navy's commitment to advancing workforce development, platform innovation, and procurement reform across the shipbuilding sector.

The visiting leaders toured the yard, engaging with Bollinger's workforce and leadership to discuss

current transformation initiatives. Bollinger highlighted the success of its innovative workforce development initiatives, such as its Shipbuilder Bootcamp, its significant 61% increase in the Mississippi workforce, as well as ongoing projects at Bollinger Mississippi Shipbuilding and beyond. The delegation's interactions with employees and management reinforced the importance of industry-government collaboration in meeting the evolving needs of the US Navy and its partners. Bollinger's unique experience as a leader in both commercial and government shipbuilding has made the company a leading advocate for procurement reforms that bring government acquisition closer to the streamlined commercial model, accelerating delivery and putting vessels in the water faster to meet the Administration's priorities.

"We're honored to welcome Secretary Phelan and his leadership team to Pascagoula," said Ben Bordelon, President and CEO of Bollinger Shipyards. "Secretary Phelan's visit emphasizes what we all recognize. The Navy under President Trump has set ambitious goals that demand speed, scale, and sustained execution in order to restore America's maritime dominance. The fastest path to results is to empower the industrial base to do what it does best. That means setting clear requirements, providing stable demand, and streamlining the processes that slow awards and production, so shipbuilders and our supplier partners can lead on delivery. When industry is trusted and empowered to execute, the Navy gets more capability, more predictably, and our warfighters and sailors get these critical assets sooner. We greatly appreciate the continued trust and partnership of the Trump Administration and Secretary Phelan as we work to grow and modernize the fleet in support the brave men and women of the US Navy."

Through these high-level discussions, Bollinger and its Navy partners reaffirmed their shared vision for modernizing and streamlining acquisition processes. These efforts aim to accelerate production timelines, improve cost-effectiveness,

and deliver enhanced naval capabilities more efficiently, strengthening America’s shipbuilding leadership.

U.S. Navy to Christen Future USNS Lansing

From the U.S. Department of War, Jan. 9, 2026

The U.S. Navy will christen the future USNS Lansing (EPF 16) during a ceremony at Austal USA in Mobile, Alabama, Jan. 10 at 10:30 a.m. (CDT).

The principal address will be delivered by The Honorable Hung Cao, Under Secretary of the Navy. Additional speakers will include Vice Adm. Seiko Okano, principal military deputy to the Assistant Secretary of the Navy for Research, Development, and Acquisition; Rear Adm. Benjamin Nicholson, commander, Military Sealift Command; Ms. Michelle Kruger, president of Austal USA; and Mr. Scott Bonk, director of Future Combatants and Mission Systems, General Dynamics Mission Systems.

“As we christen the future USNS Lansing, we celebrate another symbol of the unbreakable linkage that ties the workmanship of our shipyard workers to those of our American mariners who will man these ships. This also marks the pivotal transition from construction to the rigorous test and trials phase to ensure these platforms are ready to answer the call,” said Under Secretary of the Navy Hung Cao.

In a time-honored tradition, the ship’s sponsors, the Honorable Gretchen Whitmer, Governor of Michigan, and the Honorable Lisa McClain, U.S. Representative, Michigan’s 9th District, will christen the ship by breaking a bottle of sparkling wine across the bow.

“The future USNS Lansing is one step closer to joining the U.S. fleet and Military Sealift Command to answer the call to action, any ocean, any time,” said Cao.

The ship is named in honor of Michigan’s capital city Lansing. USNS Lansing is the first ship to be named after the city, a manufacturing hub that has produced supplies for our nation’s military since the Civil War.

The christening of the future USNS Lansing symbolizes the Navy’s 250-year commitment to innovation and maritime dominance. From seabed to space, the Navy delivers power for

peace – always ready to fight and win. This milestone marks the Navy's enduring legacy and commitment to shaping the future of maritime power.

EPF 16, as the final "Flight II" ship of the Spearhead class, will be able to deploy as an expeditionary fast transport, as a Role 2 medical-capable platform, or as a combination of both. The ship is currently designated to be crewed by 31 civilian mariners and is capable of embarking up to 155 embarked forces, or an Expeditionary Medical Unit as required.

HII Works to Boost Capacity as New Ship Designs Loom

An artist's conception of a new Navy battleship, as released by the U.S. Navy in December. *Image credit: U.S. Navy*

ARLINGTON, VA – Shipbuilder HII is concentrating on improving its shipbuilding capacity and efficiency to meet the demands of the military and the Trump Administration, efforts that now are expected to include building a new class of battleships.

Chris Kastner, president and CEO of HII, sat down with reporters in the company's Arlington, Virginia office ahead of next week's Surface Navy Association meeting and said the company is in tune with the administration and is focused on increasing its capacity and bolstering its workforce to speed ship production.

"It's a good and challenging time to be in shipbuilding," Kastner said.

Some of those challenges have arisen very recently. Just before Christmas, Trump announced a new class of battleship as part of the "Golden Fleet" concept to revitalize American shipbuilding, which would mark the first battleship construction since World War II.

This week, Trump said he wants defense spending to climb to $1.5 trillion, a 50% increase over the current budget, including spending from last year's budget reconciliation bill. He also said defense companies should focus on performance instead of conducting stock buybacks or paying large salaries to executives.

Kastner said while much is yet unknown about the battleship – "we learned of the battleship announcement when you did" – he expects more information in the next month or two and said it won't interfere with plans for a Navy package buy of two aircraft carriers as "it's clear the Navy wants both, they're both part of the Golden Fleet."

The Navy has so far projected the battleship will be up to 800 feet long, have a crew of up to 850 and consist of 20 to 25 ships, each equipped with vertical launch missile cells, two Mk45 five-inch guns, one 32-megajoule railguns, Spy-6 radars

and more.

Kastner said the speed of design and construction depends on whether it’s a clean-sheet system or one based on a parent ship, such as Arleigh Burke-class DDG-51 destroyers or the follow-on DDG(X) concept.

“If it’s fundamentally based on a derivative of a DDG expanded and they can use the DDG(X) concept studies as a baseline, you can accelerate things,” he said. “It’s all going to be based on the requirements, and how many of those requirements are consistent with a previous ship’s requirements, and whether you can use similar design parameters.”

Navy shipbuilding plans also include a yet-undefined new type of aircraft carrier as well as a new frigate based on HII’s Legend-class national security cutter, which Secretary of the Navy John Phelan described as “a proven, American-built ship that has been protecting U.S. interest at home and abroad … our goal is clear – launch the first hull in the water in 2028.”

Kastner said the carrier design is likely a “potential redesign of the Ford class” and said the goal date of 2028 for the new frigate is achievable because it’s based on the existing design. The Navy’s previous frigate program, based on an Italian ship design, was truncated to just two vessels after the program experienced schedule delays, cost overruns and design changes.

I have high confidence we can get that in the water in 2028,” he said. “When I say in the water, that means launched by 2028.” As for performing to meet White House and Department of Defense standards, Kastner said, “the theme is invest more, invest more for capacity and capability and technology, and if you do that and execute, you have opportunity for growth.”

HII Hosts Secretary of The Navy and Top Naval Leaders at Ingalls Shipbuilding

PASCAGOULA, Miss., Jan. 07, 2026 (GLOBE NEWSWIRE) — HII (NYSE: HII) hosted John Phelan, secretary of the Navy, along with Adm. Daryl Caudle, chief of naval operations, and Gen. Eric Smith, commandant of the Marine Corps, at its Ingalls Shipbuilding division Wednesday. The senior leaders toured the shipyard, gained insights into HII's workforce initiatives and discussed Ingalls' role in delivering the U.S. Navy's "Golden Fleet" of advanced surface combatants.

"Ingalls Shipbuilding represents the ingenuity and commitment required to meet the Navy's current and future needs. The shipbuilders I met today are on the front lines of American strength — men and women whose hard work protects our national security, underwrites our liberty, and sustains the

way of life we are sworn to defend. There is no maritime dominance without their skill, innovation, and relentless commitment to excellence," said John C. Phelan, 79th secretary of the Navy.

"We want to thank Secretary Phelan and Department of Navy leadership for visiting with our shipbuilders who are proud to support America's efforts to maintain maritime supremacy," said Chris Kastner, HII's president and CEO. "Across our shipyards we recognize the U.S. Navy's urgent need for ships. HII has worked diligently in partnership with our customer to expand our capacity to deliver on this increased and urgent demand, by investing in our yards, establishing partnerships, increasing our hiring retention, and increasing shipbuilder proficiency to support performance."

Ingalls Shipbuilding is actively supporting early engineering and design discussions for the Navy's next battleship, which is part of the broader "Golden Fleet" effort to modernize and leverage state-of-the-art capabilities. Concurrently, Ingalls Shipbuilding was selected to design and construct the Navy's future small surface combatant (SSC) platform, leveraging the proven design of the *Legend*-class national security cutter.

The decisive combat power our Navy needs doesn't start at sea — it starts right here, on the deck plates, with the welders, engineers, planners, and tradesmen who show up every day to build America's Navy," Caudle said. "What shipbuilders do matters and our Sailors depend on it. We're working with shipyard leaders and industry partners to bring the President's vision for our Golden Fleet to life and what it will take to make that vision real."

During the visit, Phelan, Caudle and Smith met with HII and Ingalls leadership to discuss current shipbuilding programs and observed the advanced manufacturing technologies that are being utilized in the shipyard to increase shipbuilding

throughput. The leaders also spent time aboard *America*-class amphibious assault ship *Bougainville* (LHA 8), currently under construction, and the recently delivered *Arleigh Burke*-class destroyer Ted Stevens (DDG 128).

The Navy and Marine Corps visit highlighted HII's commitment to aligning its engineering expertise, manufacturing capabilities, and workforce proficiency with the Navy's long-term operational needs.

"The work being done here is vital to our national interest," Smith said. "These workers should be proud to know they are directly contributing to America's Naval Expeditionary Force. These ships will project American power across the globe, with Marines aboard ready to respond to any crisis or conflict."

HII has invested more than $1 billion in infrastructure, facilities, and advanced toolsets at Ingalls Shipbuilding to prepare for the delivery of next-generation capabilities. These investments have enhanced every facet of production, ensuring the shipyard is ready to meet the demands of upcoming programs such as the battleship class and SSC, while continuing to deliver destroyers and amphibious assault ships.

The Enduring Power of Mark 160: Four Decades of Navy Combat Advantage

By Dorina Watermolen, NSWCDD Corporate Communications, Jan. 8, 2026

DAHLGREN, Va. – The Mark 160 gun computer system is built for quick adaptation and ongoing innovation. Owned and sustained by the government and built at Naval Surface Warfare Center Dahlgren Division, it is a 40-year product line that provides America's fleet with precision.

"Mark 160 is the fire control system for our Navy's main gun weapon systems: The Mark 34 (5-inch), Mark 48 (57mm) and Mark 38 (30mm)," said Rachel Van Buren, the program's deputy manager.

The fire control system is a key component of the Mark 34 gun weapon system used on Aegis-class destroyers and other warships, responsible for calculating ballistic solutions and firing commands based on sensor data and selected ammunition. It interfaces with shipboard sensors, receives target information and generates the precise gun train and elevation orders needed to accurately fire the gun.

Government owned from the start

Unlike many major combat systems developed by contractors, the Mark 160's software is wholly government owned.

"We control the design, upgrades and sustainment," said Van Buren. "There's no dependency on proprietary code or outside timelines."

When the fleet requires a capability or new threats emerge, NSWCDD can make informed decisions and deliver improvements quickly and efficiently.

This ownership also streamlines technical integration. While the hardware for guns and optical sensors comes from various vendors, the NSWCDD Mark 160 team develops the fire control system in-house, calculating complex solutions.

Mark 160 acts as the shipboard brain for gun weapon systems, translating sensor data into precise gunfire.

"It takes all the available sensor input – radar, optical tracking and more – and generates a fire control solution so that, when a threat comes in, our guns engage accurately," said Van Buren.

For each engagement, Mark 160 receives target tracks from combat systems like Aegis, then calibrates for variables such as ship movement, environmental conditions and the ballistic specifics of each type of gun and ammunition, including modern guided projectiles.

The system constantly evolves, incorporating new sensors and effectors, helping ships adapt to the fast-changing dynamics in hostile regions like the Red Sea, where the gun weapon systems have been effective against threats.

"Our recent work with hypervelocity projectile integration really shows the team's capability. It took less than six months to move from requirements to ship integration –

something that’s possible because the government owns the code and oversees priorities.”

Fast, fleet-focused evolution

The team embraces Agile software development, keeping the Mark 160 relevant.

Waterfall and Agile are two distinct software development methodologies. Waterfall follows a structured, step-by-step process in which each phase – such as planning, design and testing – is completed before moving to the next. Agile, on the other hand, is iterative and flexible. It allows for continuous testing, regular customer feedback and easy adjustments to evolving needs.

“We switched from the Waterfall system to Agile about four years ago,” said Van Buren. “Now, instead of waiting five years for new capabilities, we are doing incremental releases. We push out updates every quarter, test them with real hardware in our labs and, if they are successful, deliver them rapidly to the fleet.”

This iterative approach empowers the Mark 160 team to innovate quickly based on fleet feedback.

“If something’s not working, we adjust,” said Van Buren. “We’re constantly improving both our product and the way we work.”

One of the latest advances focuses on making the operator’s job easier amid the chaos of combat. Previously, each gun impact was shown individually on displays, which could overwhelm the operator with data.

Because shipboard radars are highly sensitive, the detonation or impact of a 5-inch projectile near a target generates radar clutter. Splash-avoidance processing is designed to minimize clutter’s effect on the target’s tracking, resulting in

more accurate 5-inch gunfire.

Supporting the fleet and partners worldwide

The Mark 160 isn't limited to U.S. Navy ships.

"We're on guided-missile destroyers and cruisers and even Coast Guard platforms, with a substantial number of foreign military sales," said the deputy program manager.

Allies like Australia, South Korea and Japan leverage the Mark 160 for their gun weapon systems and more countries are expressing interest each year.

Through ongoing integration with new weapon systems and munitions, such as guided projectiles, Mark 160 provides the combat edge necessary for modern naval warfare.

"It's our flexibility – being the avenue for new capabilities to reach the fleet, whether it's kinetic or even AI-powered optical tracking – that keeps the Navy at the forefront," said Van Buren. "The fact that we, as the government, own and control the evolution is fundamental to maintaining our strategic advantage."

With its legacy of adaptability, fleet-focused improvement and global reach, the Mark 160 is poised to anchor naval gunfire solutions for decades more – ensuring that the U.S. and its partners remain ready, adaptable and lethal where and when it matters most.

Naval Research Lab Sharpens

Navy’s Sights with a Domain-Centric Path for Smarter Sensing

The U.S. Naval Research Laboratory (NRL) launched a groundbreaking remote sensing experiment, Coastal Hyperspectral Reflectance Object Material Analysis (CHROMA), Sept. 4-19, 2025, designed to accelerate the application of artificial intelligence (AI) in hyperspectral imaging and strengthen environmental intelligence and resource management capabilities across the Department of War and the wider scientific community. CHROMA participants are seen in a thermal infrared image during the second week of the Rochester Institute of Technology’s (RIT) Open Community eXperiment (ROCX). (Photo by Nathan Stein of Matter Intelligence)

From Nicholas E. M. Pasquini, U.S. Naval Research Laboratory Corporate Communications

Jan. 7, 2026

The U.S. Naval Research Laboratory (NRL) launched a remote sensing experiment to sharpen artificial intelligence (AI) applications in hyperspectral imaging across the Department of

the Navy and broader scientific community.

The U.S. Naval Research Laboratory (NRL) launched a remote sensing experiment to sharpen artificial intelligence (AI) applications in hyperspectral imaging across the Department of the Navy and broader scientific community.

Hyperspectral imaging, often described as capturing “the color of color,” provides a unique spectral fingerprint for each pixel. Combined with AI, these fingerprints support powerful tools for detecting subtle material differences and observing environmental change.

In coastal and aquatic environments, such AI tools could help identify hazardous materials, monitor infrastructure degradation, and assess natural resources with unprecedented accuracy.

The initiative, known as the Coastal Hyperspectral Reflectance Object Material Analysis (CHROMA) experiment, ran Sept. 4–19 as part of the Rochester Institute of Technology’s (RIT) Open Community eXperiment (ROCX).

“NRL was a key partner in the success of ROCX,” said RIT Research Professor John Kerekes, Ph.D. “The variety of material deployments on water and land enriched the overall value of the experiment and the professionalism of their staff was a great example for participating students and collaborators.”

Led by Kerekes, the multi-agency effort brought together federal, academic, and industry partners to collect detailed imaging data and match it with real-world measurements taken on the ground.

“The Navy has always depended on its ability to sense, interpret, and respond to the environment,” said NRL’s Information Operations Branch Head Gautam Trivedi, Ph.D. “With CHROMA, we’re building the foundation for the next generation

of environmental intelligence, where AI and advanced sensing work hand-in-hand."

The laboratory is leveraging multi-scale data collected from airborne platforms, unmanned aerial vehicles, and satellites over engineered and natural targets at the Tait Preserve in Penfield, New York – an environment chosen for its coastal and aquatic-adjacent features.

"This experiment moves hyperspectral technology out of the lab and into a realistic operational setting," said NRL Information Technology Division Superintendent Joey Mathews. "It represents a critical step in elevating the Technology Readiness Level of AI-enhanced sensing applications, moving us toward demonstrations that directly support naval missions."

A Multi-Platform, Domain-Centric Approach The NRL team synchronized flights and different types of sensors to capture observations at nearly the same time. This approach ensures data from satellites, airplanes, drones, and ground sensors can be accurately compared, offering researchers a richer dataset to build better AI. CHROMA's design centers on generating detailed, multi-modal datasets of known material spectral responses. Researchers collected measurements from custom-fabricated metal panels with painted coatings, as well as from natural rock and mineral samples. These targets serve as known reference points – like the bullseye on a target – for improving AI algorithms that solve a longstanding remote sensing challenge called hyperspectral unmixing. Hyperspectral unmixing is the process of separating mixed spectral signatures within a single pixel. When unresolved, mixed pixels can obscure object detection and reduce identification accuracy – especially in complex, cluttered coastal environments. "We are enhancing the efficacy of AI-driven approaches in resolving sub-pixel material compositions," said NRL CHROMA Project Lead Katarina Doctor, Ph.D. "By methodically changing the targets and viewing them with different sensors, we can learn how an object's signature

changes based on its material, the weather, and the type of sensor used to view it.” Doctor emphasized the data’s direct application to naval missions, stating it will significantly improve our ability to detect and identify objects in crowded littoral zones. She

noted that this improved hyperspectral detection is key to assessing threats, monitoring critical infrastructure, and ensuring the U.S. Navy can maintain a clear operational advantage in any coastal environment.

Elevating Naval Survivability The NRL Signature Technology Office contributed coated panels for the experiment, supporting research on how artificial surfaces appear in natural maritime settings. “This project, enhanced by Doctor’s work with advanced AI, uses the collected data to develop more effective camouflage coatings that will make naval platforms harder to detect by advanced surveillance systems,” said Scott Ramsey, Head of the NRL Signature Technology Office. “This research is key to improving naval asset survivability by making them harder to spot against natural backgrounds.” The resulting AI systems will be better able to distinguish between natural environments, like ocean surface, and coated, fabricated objects, like a ship’s hull. The approach provides reference points for evaluating how AI-based unmixing performs across varying environmental and spectral conditions.

Data for the Global Research Community

Doctor said ROCX will produce comprehensive hyperspectral datasets, encompassing engineered surfaces, geological samples, and a range of environmental conditions. The dataset will be shared openly with the remote sensing community, supporting defense and civilian research in coastal resource management, environmental intelligence, and infrastructure monitoring. ROCX’s multi-platform framework ensures experiment data is broadly applicable and scientifically rigorous. The combined dataset also enables researchers to study how an

object’s spectral signature is affected by its material properties, the atmosphere, and other environmental factors. “The integration of diverse data types is what makes CHROMA unique,” Mathews said. “It’s not just about building better algorithms – it’s about understanding how they perform in the complexity of the real world.”

AI’s Domain-Centric Future

CHROMA also reflects a shift in AI development from traditional, model-centric approaches toward what researchers call Domain-Centric AI. This approach embeds expert scientific knowledge into the AI development process from the start, ensuring the final system understands the real-world context of its mission, which makes the AI more reliable.

“This paradigm addresses the ‘why’ behind the data. Real-world applicability and trustworthiness depend heavily on understanding the problem’s context and leveraging specialized human expertise,” Doctor said. “The ROCX experiment is a prime example of Domain-Centric AI. We are not just gathering raw information – we are creating a dataset informed by deep understanding of the target materials, their environment, and the sensors collecting them – which makes the resulting AI models more effective.”

About the U.S. Naval Research Laboratory

NRL is a scientific and engineering command dedicated to research that drives innovative advances for the U.S. Navy and Marine Corps from the seafloor to space and in the information domain. NRL, located in Washington, D.C. with major field sites in Stennis Space Center, Mississippi; Key West, Florida; Monterey, California, and employs approximately 3,000 civilian scientists, engineers and support personnel. NRL offers several mechanisms for collaborating with the broader scientific community, within and outside of the Federal government. These include Cooperative Research and Development

Agreements (CRADAs), LP-CRADAs, Educational Partnership Agreements, agreements under the authority of 10 USC 4892, licensing agreements, FAR contracts, and other applicable agreements. For more information, contact NRL Corporate Communications at NRLPAO@us.navy.mil.

USS Fitzgerald Returns to San Diego Following Seven-Month Underway

The Arleigh Burke-class guided-missile destroyer USS Fitzgerald (DDG 62) returns to its homeport of Naval Base San Diego following operations in the U.S. 3rd, 5th and 7th Fleets, Jan. 6, 2025 (U.S. Navy photo by MC2 Lordin Kelly)
From U.S. 3rd Fleet Public Affairs, Jan. 6 2026

Arleigh Burke-class guided-missile destroyer USS Fitzgerald (DDG 62) returned to its homeport of Naval Base San Diego following a seven-month underway to the U.S. 3rd, 5th, and 7th Fleet areas of operation, Jan. 6, 2026.

While underway, Fitzgerald conducted a wide range of operations, including routine presence patrols and maritime security operations.

The ship participated in several multinational exercises, enhancing interoperability and strengthening partnerships with key allies, including the Japan Maritime Self-Defense Force and the Republic of Korea Navy.

Fitzgerald executed six transits of the Strait of Hormuz, ensuring freedom of navigation in the Arabian Gulf, and participated in major multinational exercises including MALABAR 2025 and SWARMEX 2025, enhancing interoperability and strengthened partnerships with the navies of Australia, Bangladesh, Germany, India, Japan, Pakistan, the Philippines, and the United Arab Emirates, all contributing to a free and open Indo-Pacific.

As a lethal, agile force, the Sailors aboard Fitzgerald exemplified the warrior ethos and readiness required to defend the United States and its interests at a moment’s notice.

“I am truly proud of the hard work and dedication this crew has displayed daily throughout this seven month deployment,” said Cmdr. Paul F. Richardson III, commanding officer of Fitzgerald. “Their resilience and professionalism enabled us to successfully execute every mission we were tasked with in multiple areas of operation. We are all excited to be home and reunited with our families and loved ones, whose unwavering support made this possible.”

The professionalism and resilience displayed by the crew throughout their deployment directly honored the legacy of their ship’s namesake.

Fitzgerald is named in honor of Lt. William Charles Fitzgerald, a U.S. Navy officer who was posthumously awarded the Navy Cross for his extraordinary heroism in the Vietnam War. The ship’s motto, “Protect Your People,” is a direct tribute to his sacrifice, when he was mortally wounded while providing covering fire for his evacuating men during an attack by Viet Cong forces.

As a multi-mission surface combatant, Fitzgerald is capable of conducting Anti-Air Warfare (AAW), Anti-Submarine Warfare (ASW), and Anti-Surface Warfare (ASuW) operations.

As an integral part of the U.S. Pacific Fleet, U.S. 3rd Fleet leads naval forces in the Indo-Pacific and provides the realistic, relevant training necessary to execute the U.S. Navy’s role across the full spectrum of military operations. U.S. 3rd Fleet works together with allies and partners to advance freedom of navigation and overflight, the rule of law and other principles that underpin security for the Indo-Pacific region.