Navy’s NEPTUNE Program Energizes Innovation from Lab to Fleet

Bridging University Research and Naval Needs

From the Office of Naval Research, Sept. 24, 2025

The Office of Naval Research’s Naval Enterprise Partnership Teaming with Universities for National Excellence (NEPTUNE)

program is aligning academic innovation with naval energy needs. Launched as a pilot in 2015, NEPTUNE connects top universities with Navy and Marine Corps problem sponsors to tackle energy challenges ranging from power management to next generation fuels.

“The NEPTUNE program exemplifies the kind of innovative partnerships we need to accelerate defense technology development,” commented Dr. Scott Higgins, ONR program officer, and NEPTUNE lead.

By funding university research teams that include military or veteran students, and focusing on energy-related domains like energy storage, power generation and micro-grids. NEPTUNE rapidly transitions lab concepts toward operational naval solutions. The program has established strategic partnerships with institutions including Stanford, MIT, Purdue University, UC Davis, and others. The results of such partnerships align with the Secretary of the Navy’s priorities of people, capabilities, and processes.

NEPTUNE’s approach emphasizes moving research along the technology readiness scale by advancing basic science (TRL 2-4) to prototype demonstrations in real-world environments (TRL 7). This is done by fostering connections between the Department of the Navy, colleges and universities, and industry.

“These collaborations are proving instrumental in rapidly transitioning innovative technologies from laboratory concepts to operational naval assets” said Dr. Jeff Decker, managing director of Stanford’s Tech Transfer for Defense and a Hacking for Defense program director.

Programs like NEPTUNE are accelerating the time between the lab and real-world impact,” said Justin Fanelli, chief technology officer for the Department of the Navy. “By embedding operational needs directly into university projects,

we’re not just moving new technologies forward, we’re ensuring it’s deployable where it matters most – at sea and in the field.”

From Purdue Lab to Startup: EnergyMind Takes Flight

A prime example of NEPTUNE’s impact is the technology transition from Professor Vikas Tomar’s lab at Purdue University into a new startup called Primordis, Inc. Supported by NEPTUNE-funded research at Purdue, Dr. Tomar’s team developed a suite of artificial intelligence algorithms for energy management of autonomous systems, mobile robots, and data centers. His work has resulted in three related patents and now forms the core of Primordis’ EnergyMind platform. Founded in late 2024, Primordis.ai is bringing Purdue University technology to market, targeting applications in both defense and industry.

“This is about bridging the gap between what we demonstrate in the lab and what the warfighter needs on the field,” explains Dr. Tomar, a professor of aeronautics and astronautics and Primordis co-founder.

Primordis describes EnergyMind as a new form of Autonomous Energy Intelligence (AEI) – essentially, a real-time AI decision agent for operators and platforms. Unlike conventional monitoring systems that merely track usage or give static forecasts, EnergyMind proactively guides decision-making on energy use in dynamic environments. It integrates mission timeline goals, operational range priorities, and immediate power consumption into a single predictive gauge. Backed by machine learning, the system continuously learns from context and predicts energy bottlenecks before they occur, suggesting or automatically executing adjustments in real time.

At the individual asset level (say, an unmanned vehicle or a server), EnergyMind can reschedule tasks or rebalance loads to

extend runtime without sacrificing performance. At the fleet or enterprise level, it manages charging cycles, route planning, and load distribution across multiple assets to optimize overall energy availability and resilience. Crucially, the platform is hardware-agnostic as it is compatible with any battery chemistry and neutral to OEM, and works in standalone devices or networked across an entire operation. By blending predictive energy "survivability" analytics with the commander's intent, EnergyMind aims to extend operational reach, reduce downtime, cut sustainment costs, and enhance the endurance of systems ranging from autonomous drones to data centers.

Transitioning this technology out of academia was enabled by NEPTUNE's support, noted Dr. Tomar. "NEPTUNE allowed us to de-risk the early research and focus on a solution for real naval problems."

The NEPTUNE framework connected his team with Navy stakeholders who provided feedback during development, ensuring the resulting technology addresses operational pain points like limited battery life and unpredictable power demands in the field. With ONR's backing, what began as a basic research project on AI-driven battery health monitoring quickly evolved into a deployable capability. In November 2024, Dr. Tomar and colleagues launched Primordis to commercialize EnergyMind and related innovations. The startup is already securing pilot contracts, including with Navy and Marine Corps end-users to integrate EnergyMind into next-generation platforms. This trajectory from lab to spin-off exemplifies how NEPTUNE accelerates the naval "innovation pipeline," turning university research into products for Sailors and Marines.

AI Power Management for the Fleet

Primordis's technology is arriving at a pivotal moment, as the Navy and Department of Defense push to electrify platforms and

improve energy efficiency across the board. The EnergyMind platform provides a critical piece: AI-powered energy management that can dramatically extend the endurance and reliability of electrically propelled systems. Military and commercial stakeholders are taking note of its potential.

Jeff Wright is CEO of SplashOne Robotics, and the former CTO of Special Operations Command Pacific (SOCPAC), where he led the development of INDOPACOM's un-manned systems strategy. "We believe this integration [EnergyMind on drones] will create a decisive edge in contested environments where energy autonomy is just as critical as speed, agility, and firepower" he stated. "Single digits of improvement in system life can be decisive: 20% increases are quantum leaps and a 'no brainer' to include in our designs."

Kevin Murray, senior director of Strategic Growth at Anduril Industries shared, "As the former director of S&T and CTO for the U.S. Marine Corps, I see application of this technology across numerous DoD robotic and autonomous system programs at all levels, all the way down to soldier borne mission command and FPV drone operations. I'm unaware of anything similar that could be as impactful."

Front-line requirements are driving interest as well. A Program Executive Officer at NAVWAR, the Navy's warfare systems command, underscored the need for greater endurance in unmanned systems. "I need on-station time doubled or tripled for certain USVs. EnergyMind is the type of solution we are looking for," the PEO remarked. Even industry partners echo this enthusiasm – the CEO of one UAV manufacturer noted that a mere 2% range increase in their drones would be game-changing, so "a 20% increase using Primordis' technology will be phenomenal." Such testimonials highlight how advanced energy-management AI could fundamentally improve combat effectiveness: longer loiter times for uncrewed vessels, more patrol hours per battery, and reduced logistics for fuel or battery resupply.

Primordis is positioning EnergyMind to support a wide array of defense systems. In the near term, the company is working with original equipment manufacturers (OEMs) of battery-powered unmanned aerial, surface, and underwater vehicles to embed AI energy controllers in their platforms. The technology is equally relevant to operational energy at the enterprise level — for example, managing the micro-grids powering expeditionary bases, command-and-control hubs, or even directing energy usage for high-power systems like radar and directed-energy weapons. By extending battery life and optimizing power use, tools like EnergyMind can bolster concepts such as Expeditionary Advanced Base Operations (EABO) by reducing the logistics burden and increasing platform uptime. Navy and Marine Corps initiatives that depend on swarms of autonomous systems or long-endurance sensors could see immediate benefits. As one Air Force special operations architect observed, an AI energy management layer can dramatically extend the performance of emerging technologies like high-density batteries and wireless power beaming — multiplying the impact of those innovations in the field. In short, the EnergyMind solution born from NEPTUNE research is poised to give U.S. forces a tactical advantage: the ability to outlast and outmaneuver by intelligently managing every watt.

A Broader NEPTUNE Impact

The Purdue-Primordis story is just one illustration of NEPTUNE's broader impact on naval technology. Across the country, NEPTUNE-sponsored projects are yielding tangible results in surprisingly short timeframes. A standout example comes from the Massachusetts Institute of Technology, where Professor Steven Leeb's team, also part of NEPTUNE, developed a groundbreaking Combat Power Monitor (CPM) for shipboard use. Leveraging advances in energy sensing and analytics, Leeb's group created a system to continuously monitor a ship's electrical consumption and power quality, enabling real-time insights for condition-based maintenance and fuel

economization. With NEPTUNE backing, the MIT researchers moved this concept from the lab to a prototype installed on active Navy and Coast Guard vessels in only 24 months.

“With Professor Leeb’s work, the ability to monitor and manage energy usage on ships ensures that our vessels can operate longer, with greater endurance, and with reduced logistical footprints,” noted Fanelli. “Put simply, Leeb’s work improves naval readiness by keeping ships afloat and out of drydock, which is a focal point for the chief of Naval Operations.”

Such enhancements are crucial in scenarios where at-sea resupply is challenging or when minimizing energy signatures is vital for stealth[19]. The CPM’s rapid transition to ship trials, made possible by NEPTUNE’s university partnerships, underscores how this program speeds up innovation.

As the NEPTUNE initiative continues, it represents a strategic investment in future naval capabilities. By funding promising ideas in academia and teaming scientists with warfighters early, ONR is compressing the timeline from discovery to deployment. Dr. Scott Higgins emphasizes that its mission is not just to invent new technologies but to ensure those innovations make a difference for sailors and marines. The program’s success stories — from smart battery AI at Primordis to MIT’s combat power sensors — are proving the model.

“We stand at an inflection point — an era marked by great power competition, proliferating threats, rapid technological convergence and an increasingly contested maritime domain. To prevail, we must build and sustain a Navy that is ready to fight and win — today, tomorrow and well into the future.” said Admiral Daryl L. Caudle, United States Navy, 34th chief of Naval Operations. “NEPTUNE’s university partnerships are answering that call, delivering energy-smart solutions to the Fleet and fueling a culture of innovation that will help the Navy sail stronger into the future.”

“The unique construct of the NEPTUNE program allows Navy and DoD stakeholders to share capability gaps and technology needs with academic researchers and engages veteran, active duty, reserve and ROTC students in mission-focused research,” noted Corey Love, senior science and technology manager for Power and Energy at the U.S. Naval Research Laboratory and former NEPTUNE program officer. “The positive impact on workforce development hits on two levels: first it provides opportunities to support advanced degrees in science and engineering for veterans, with many who will go on to military civilian or defense industry research positions; and second, it exposes our future military leaders with an appreciation of energy challenges and the importance of making energy-informed decisions on the battlefield. Combined with the focus on advancing technology to promote entrepreneurship to develop the industry required for the future Navy, the tenants of NEPTUNE address Navy priorities outlined by senior leadership.”

To learn more about the ONR NEPTUNE program, visit onr.navy.mil; for more information on the Technology Transfer for Defense program at Stanford University, visit techtransferfordefense.stanford.edu or on the Hacking for Defense Program, visit h4d.stanford.edu.

Boeing to Relocate F/A-18 Service Life Modification Work to Support St. Louis

Site Expansion

The program will be relocated starting in 2026 with all St. Louis based work ending in 2027

From Boeing

ST. LOUIS, Sept. 24, 2025 – As part of Boeing's [NYSE: BA] expansion and transition plans to support future programs, the company is relocating its F/A-18 Super Hornet Service Life Modification (SLM) work out of the St. Louis region and will sunset the St. Louis based work in 2027.

Boeing is considering multiple sites to transfer the work to with case studies starting at the San Antonio and Jacksonville sites. Boeing currently performs SLM work in San Antonio and in partnership with the U.S. Navy at Fleet Readiness Center (FRC) Southwest in San Diego, Calif. Additional F/A-18 modification work also occurs in Jacksonville, Fla.

An upgraded SLM F/A-18 Super Hornet departs St. Louis heading back to the U.S. Navy fleet. This fighter is equipped with Block III capabilities.
Photo Credit / Art Credit: Boeing

“Our expansion plans across the St. Louis site triggered the execution of a multi-year strategic plan, requiring the relocation of some work,” said Dan Gillian, vice president and general manager of Air Dominance and senior St. Louis site executive. “Given we are already successfully conducting SLM at other locations, this move is logical so we can continue to meet our customers commitments while ensuring we are well poised for future work.”

The St. Louis region is home to F-15EX, T-7A and MQ-25 production as well as JDAM and other munitions production lines. In March, the U.S. Air Force announced Boeing will design, build and deliver the F-47 6th generation fighter. Current St. Louis SLM team members will support these programs.

Super Hornet is the backbone of the Navy’s strike fighter inventory, and SLM is critical to supporting the U.S. Navy’s readiness needs. SLM adds Block III capabilities and 4,000 flight hours to existing Navy Super Hornets. Since the program began, Boeing and the Navy have increased inductions each year while improving the turnaround time of the fighters. This work is projected to continue through the mid-2030s. All Block II Super Hornets can be upgraded to the Block III capability suite through SLM.

“We have worked with the Navy for years to improve SLM while growing in San Antonio and FRC Southwest. Delivering multiple fighters and capabilities from multiple locations is what we do, and we will continue that work on the Super Hornets for the life of the fleet,” said Mark Sears, Boeing Fighters vice president.

Raytheon, Avio USA Expand Collaboration to Accelerate Mk 104 Rocket Motor Production

Release From RTX

ARLINGTON, Va. (September 24, 2025) – Raytheon, an RTX (NYSE: RTX) business, and Avio USA have executed a purchase order for funding of up to $26 million for continued engineering work on the Mk 104 dual-thrust rocket motor to support Raytheon’s Standard Missile franchise.

The purchase order comes 13 months after the businesses signed a contract for preliminary engineering work on the Mk 104 rocket motor. This project secures funding through the Critical Design Review phase, procurement of long lead material for qualification, and will enable increased and accelerated capacity for solid rocket motor production.

“This purchase order represents an important step in expanding our supply chain to ensure the resilience and availability of the Mk 104 rocket motor,” said Barbara Borgonovi, president of Naval Power at Raytheon. “By strategically implementing second

sourcing for critical materials, we are not only enhancing our ability to meet customer demand but also strengthening our production capacity for the Standard Missile franchise."

Prior to this purchase order, the companies successfully completed both a System Requirements Review and Preliminary Design Review, establishing a solid foundation for the next phases of development and production.

"We are proud to continue our work on Mk 104, which is so critical to the United States and our allies," said VADM (Ret.) James Syring, CEO, Avio USA. "We look forward to advancing the motor through full qualification and into production in the future."

"Avio is happy to support Avio USA on the Mk 104 activities, providing its longstanding expertise on SRM engineering, material characterization, laboratory and fire testing, sourcing and motor integration with the aim to ultimately support Raytheon's accelerated ability to deliver to their end customers," said Giulio Ranzo, CEO of Avio SpA.

Blue Water Autonomy Taps Conrad Shipyard to Build Autonomous Surface Vessels

From Blue Water Autonomy, Sept. 24, 2025

Post-Series A milestone marks shift from R&D to real-world scale and signals new life for American shipyards

BOSTON, Sept. 24, 2025 /PRNewswire/ — **Blue Water Autonomy**, the Boston-based technology and shipbuilding company designing

and building highly producible unmanned ships for the U.S. Navy, today announced it has entered into a production agreement with **Conrad Shipyard**, a premier Gulf Coast shipbuilder headquartered in Louisiana. The partnership marks a major step forward in Blue Water's plan to deploy autonomous surface vessels at fleet scale.

The news comes just weeks after Blue Water announced its Series A, bringing the company to $61 million raised to date, and reflects the company's continued momentum in building operationally ready, scalable unmanned ships that meet near-term defense priorities.

"We're designing for deployment, not just demonstration," said Rylan Hamilton, co-founder and CEO of Blue Water Autonomy. "Conrad is a world-class shipbuilder with proven capability, and this partnership puts us in a position to deliver ships quickly, while demonstrating the expertise and scale of existing U.S. shipbuilding capacity."

Under the agreement, Conrad will assemble Blue Water's first class of autonomous ships. Conrad plans to use multiple facilities to take advantage of its advanced shipbuilding approach, including highly automated panel line and welding techniques, allowing for parallel builds and scalable throughput.

"Blue Water Autonomy's design reflects the kind of forward-looking innovation that U.S. shipbuilders are ready to deliver," said Cecil Hernandez, President and CEO of Conrad Shipyard. "We're proud to support this program and help bring autonomous naval capabilities to life with the speed, precision, and craftsmanship we've been trusted to deliver for over 75 years across commercial and military shipbuilding."

Blue Water's partnership with Conrad comes on the heels of consecutive senior shipbuilding hires to build internal capability. Earlier this year, the company hired Tim

Glinatsis, a 25-year veteran of General Dynamics NASSCO and Bath Iron Works, followed by multiple hires from the DARPA NOMARS autonomous ship program, including marine engineering lead Ryan Maatta.

U.S. Industrial Base: Ready to Build

This milestone also reflects the company's broader strategy to activate underutilized U.S. shipyard capacity, particularly small and mid-tier yards that can adapt quickly to new platforms.

"We've designed our vessels to be modular, producible, and buildable across the country," said Hamilton. "What we're proving with Conrad is just the start. We want to show that the U.S. has the infrastructure to support autonomy at scale, and the talent to build it."

Blue Water is focused on working with U.S. shipyards that are fully operational today, shipyards like Conrad, that are proven in both commercial and military shipbuilding and can deliver with speed, scale, and precision. Unlike manned warships, which often require years-long timelines and specialized build environments, Blue Water's platform is intended to be produced, updated, and maintained with speed and flexibility in mind.

U.S., ROK Navies Conduct CONSOL During Freedom Edge 25

AT SEA (Sept. 18, 2025) – Republic of Korea's Cheonji-class fast combat support ship ROKS Daecheong (AOE-58) connects its fuel line to Military Sealift Command's commercial charter oiler MT Allied Pacific during a consolidated cargo replenishment (CONSOL) at sea, Sept. 18, in support of Freedom Edge 2025. CONSOL capability is when a specially outfitted MSC-controlled tanker conducts underway refueling operations, transferring fuel and/or cargo to combat logistics-force ships at sea. (Courtesy photo)

by Grady T. Fontana, Sept. 24, 2025

AT SEA – Military Sealift Command's (MSC) commercial charter oiler motor tanker (MT) Allied Pacific conducted a consolidated cargo replenishment (CONSOL) at sea with Republic of Korea's (ROK) Cheonji-class fast combat support ship ROKS Daecheong (AOE-58), Sept. 18, in support of Freedom Edge 25.

Freedom Edge highlights trilateral defense cooperation between the United States, Japan, and the Republic of Korea, demonstrating their ability to achieve peace through strength on the Korean Peninsula and across the Indo-Pacific.

"Every CONSOL with allies and partners demonstrate not just

technical proficiency, but the trust and interoperability at the heart of our alliance," said U.S. Navy Capt. David L. Reyes, commodore, MSC Far East. "It's important that we continue to build on these efforts—each evolution strengthens our ability to operate together and ensures the fleet remains lethal, resilient and ready in the Indo-Pacific."

A CONSOL allows a specially outfitted MSC-controlled tanker to conduct underway refueling and cargo transfer operations with combat logistics force (CLF) ships at sea. This capability reduces the need for CLF ships to return to shore for resupply, cutting costs and maximizing time on station to support the fleet.

According to contracted mariner Capt. Edward Markuske, master of MT Allied Pacific, his crew appreciated the opportunity to work with ROK allies.

"They were very professional and committed to completing the mission while alongside our vessel," said Markuske. "I hope we get more opportunities to work together with our allies in the Far East, because these joint exercises are integral to our ability to work together going forward. Our ship's crew appreciates the sense of purpose that comes from being on mission and a job well done."

This evolution builds on a previous CONSOL between Allied Pacific and Daecheong in June 2025, expanding the ROK Navy's capacity to sustain fleet operations at sea with fuel, cargo, and stores.

"Collaborating with our international partners to conduct CONSOL exercises enhances the training of our commercial chartered vessels," said Peter P. Bok, marine transportation specialist, MSC Far East. "The professional development provided to civilian mariners ensures they are prepared to address any potential challenge and maintain peak operational

readiness, thereby supporting our Navy’s effectiveness during times of conflict, and help ensure their lethality.”

MSC Far East supports the U.S. 7th Fleet and ensures approximately 50 ships in the Indo-Pacific Region are manned, trained, and equipped to deliver essential supplies, fuel, cargo, and equipment to warfighters, both at sea and on shore. U.S. 7th Fleet is the U.S. Navy’s largest forward-deployed numbered fleet and routinely interacts and operates with allies and partners in preserving a free and open Indo-Pacific region.

USS John L. Canley Arrives in Palau During Pacific Partnership 2025

KOROR, Palau (Sept. 22, 2025) The Lewis B. Puller-class expeditionary sea base USS John L. Canley (ESB 6), arrives in Koror, Palau in support of Pacific Partnership 2025, Sept. 22, 2025. Now, in its 21st iteration, the Pacific Partnership series is the largest annual multinational humanitarian assistance and disaster management preparedness mission conducted in the Indo-Pacific. Pacific Partnership works collaboratively with host and partner nations to enhance regional interoperability and disaster response capabilities, increased security and stability in the region, and foster new and enduring friendships in the Indo-Pacific. (U.S. Navy photo by Mass Communication Specialist 2nd Class Jordan Jennings)
KOROR, Palau – The Lewis B. Puller-class expeditionary sea base USS John L. Canley (ESB 6) arrived in Koror, Palau Sept. 22, 2025.

“It’s wonderful for our mission to return to Palau, where we look forward to working alongside our multinational allies, partners, and friends as we prepare in calm for possible future time of crisis,” said Capt. Mark B. Stefanik, mission commander for Pacific Partnership. “It’s exciting to be here, as our nations share a rich history of collaboration and

cultural ties. We look forward to strengthening that mutual cooperation and friendship in the days and years ahead."

Pacific Partnership mission includes stops in the Federated States of Micronesia, Papua New Guinea, Chuuk, Pohnpei, Palau, Samoa, Fiji, Vanuatu and the Philippines.
"I'm excited to collaborate with the pharmacy staff in Palau, who are asking excellent clinical questions and showing strong engagement," said Lt. Kamara Gray, pharmacist with the Pacific Partnership medical team. "One area I am particularly looking forward to is antimicrobial stewardship, training on how to use antibiotics appropriately, including knowing the right time to transition from oral to intravenous treatments. I'm also eager to learn about the antibiotics that are no longer effective here due to resistance."

Pacific Partnership fosters multilateral cooperation and emphasizes a multinational and whole-of-government approach by planning and executing operations with partner nation militaries, host nation civilian agencies, international organizations, non-governmental organizations, the U.S. State Department, U.S. interagency, and other U.S military service branches. This subsequently provides a strong foundation of trust and enhances our collective ability to respond in times of crisis.

In the aftermath of the December 2004 tsunami that devastated parts of South and Southeast Asia, the United States mobilized numerous military assests and personnel to support the relief effort. Recognizing the opportunity to build on the goodwill and lessons learned from Pacific Partnership began as a military-led humanitarian response to one of the world's most catastrophic natural disasters. Building on the success and goodwill and lessons learned from that initial mission, the U.S. Navy planned and executed the inaugural Pacific Partnership mission in 2006; its primary aim was to proactively prepare for a more effective response to natural

disasters while strengthening relationships and security ties between nations.

Pacific Partnership, now in its 21st iteration, is the largest multinational humanitarian and civic assistance mission conducted in the Indo-Pacific. Each year, the mission team works alongside partners and allies to strengthen relationships, bolster host nation capacity to provide essential humanitarian services, and support efforts to reduce the risk of, prepare for, and respond to disasters. The PP25 team is led by U.S. Navy Capt. Mark B. Stefanik, commander of Destroyer Squadron (DESRON) 31, serving as the mission commander.

Navy Demonstrates AI Autonomy on BQM-177A Target

The Navy’s Strike Planning and Execution (PMA-281) and Aerial

Targets (PMA-208) programs demonstrate artificial intelligence-based autonomy on BQM-177A aerial target during a test event Aug. 5 at Point Mugu Sea Test Range, Calif. (Photo courtesy of Shield AI)
From Naval Air Systems Command, Sep. 22, 2025

NAS PATUXENT RIVER, Md. – The Navy's Strike Planning and Execution (PMA-281) and Aerial Targets (PMA-208) programs recently partnered with Shield AI to demonstrate artificial intelligence-based autonomy on the BQM-177A aerial target.

During the Aug. 5 event at Point Mugu Sea Test Range in California, Shield AI successfully flew two BQM-177As – one demonstrating Advanced Vehicle Control Laws (AVCL), a core capability for integrating autonomy, and the other incorporating additional autonomous behaviors.

AVCL is a foundational software layer that enables aircraft to fly complex, dynamic maneuvers by translating high-level mission commands into real-time flight control inputs. For the BQM-177A, AVCL allows for more threat-representative flight profiles and the kind of maneuvering seen in adversary tactics.

"The team has successfully demonstrated Advanced Vehicle Control Laws (AVCL) while adding some autonomy elements on our BQM-177A aerial target. When fully integrated, this capability will enhance the BQM-177A's ability to execute more threat-representative maneuvers and simulate realistic interactions with fleet assets, providing more effective test and training scenarios for the Warfighter," said Greg Crewse, PMA-208 program manager.

The BQM-177A replicates modern subsonic anti-ship cruise missile threats and supports a range of missions with its internal and external payload options. It plays a key role in both developmental and operational testing for fleet training.

Kratos, the BQM-177A's manufacturer, integrated AVCL into the air vehicle as part of a broader development effort. Once fully implemented, AVCL will enable the BQM-177A to perform more advanced maneuvers and closer engagements, allowing the target to more accurately simulate interactions with manned ships.

"This is a significant step in demonstrating how the Navy can plan and execute missions with a combination of manned and unmanned aircraft. The use of a combination of virtual and low-cost live air vehicles allows us to evaluate the effectiveness of multi-platform missions at a fraction of the cost of a full-scale live exercise," said Capt. Toby Keith, PMA-281 program manager. "Integrating autonomy into existing systems allows us to fly and evolve how we plan and execute autonomous platform missions before the air vehicles are even built."

The Navy and Shield AI plan to conduct a second technology demonstration later this year, featuring up to two BQM-177As flying simultaneously. The event will test multi-platform coordination, mission planning, and human-machine interface integration to assess how operators interact with and direct multiple autonomous systems in real time.

The Navy awarded a contract to Shield AI in August 2024 to integrate its Hivemind AI pilot software and deliver a robust prototype test bed using the BQM-177A to demonstrate autonomous operations during flight. Hivemind allows aircraft to operate independently using real-time sensor data and onboard processing to make decisions, plan routes and execute maneuvers without remote input. The software is designed as an open, modular platform that can be used across a range of DoD systems.

Eastern Shipbuilding Group Inc. to Support Unit Production of U.S. Navy Destroyers

A grand block for DDG 135 arrives by barge for final integration at HII's Ingalls Shipbuilding division in August 2025 after being constructed, inspected and accepted at Eastern Shipbuilding Group's Nelson Facility.
From Eastern Shipbuilding Group Inc.

PANAMA CITY, Fla. – Eastern Shipbuilding Group, Inc. (ESG) is pleased to announce an agreement with HII's Ingalls Shipbuilding Division to support the limited production of outfitted structural units for the U.S. Navy's Flight III Arleigh Burke-class (DDG 51) guided missile destroyers.

Building on the success of a recent pilot program in which ESG constructed a limited number of DDG units at its Nelson Street Facility in Panama City, Florida, the two companies have entered into an agreement that supports the expansion of the domestic industrial base and advances the U.S. Navy's surface combatant fleet.

"With nearly fifty years of experience delivering some of the most reliable and highest-performing steel and aluminum vessels, we're proud to partner with HII to support production of the U.S. Navy's destroyer fleet," said Joey D'Isernia, CEO of Eastern Shipbuilding Group, Inc. "This collaboration strengthens our national shipbuilding capability—expanding industrial capacity and enhancing our nation's competitive advantage."

The collaboration allows ESG to leverage the company's expertise, resources, and capabilities, ensuring that the U.S. Navy receives the necessary vessels to maintain its global readiness and superiority. With the growing demand for advanced naval vessels, this alliance provides a much-needed boost to America's shipbuilding capacity.

ESG is making investments to support these goals and is scheduled to complete a significant infrastructure improvement project at its Nelson Street government shipbuilding facility this summer. The expansion will significantly increase ESG's capability to construct and deliver multiple ships per year.

About Eastern Shipbuilding Group, Inc. (ESG)

Eastern Shipbuilding Group, Inc. is an American owned and operated shipbuilder with three shipyards on the Florida Gulf Coast. They build world class vessels for national defense and commercial clients, including the U.S. Coast Guard's Heritage Class Offshore Patrol Cutters and the U.S. Army Corps' new Medium Class Hopper Dredge. ESG is the largest private sector employer in Northwest Florida and is a 2017 recipient of the

U.S. Department of Homeland Security Small Business of the Year award. With a portfolio of over 350 vessels and Defense Contract Management Agency (DCMA) and Defense Contract Audit Agency (DCAA) certified systems, ESG is known as one of the most diverse vessel construction companies in the country. www.easternshipbuilding.com

---

Navy Determines Planned Ship Inactivations for Fiscal 2026

Henry J. Kaiser-class underway replenishment oiler USNS Pecos (T-AO-197) sails during the at-sea phase of Exercise Rim of the Pacific (RIMPAC) 2024. (U.S. Navy photo by MC2 Terrin Hartman)

By Richard R. Burgess, Senior Editor

ARLINGTON, Va. — The U.S. Navy plans to inactivate or transfer eight ships during fiscal 2026, including two warships and six auxiliary ships, the service said in a Sept. 12 internal message to the force.

The navy plans to inactivate two Los Angeles-class attack submarines, USS Newport News (SSN 750) on Jan. 31, 2026, and USS Alexandria (SSN 757) on Aug. 4, 2026. The two submarines will be scrapped in Puget Sound Naval Shipyard, Washington.

Two Henry J. Kaiser-class fleet replenishment oilers will be withdrawn from service with Military Sealift Command by July 31, 2026. USNS John Ericsson (T-AO 194) will be retired but retained as a logistics support asset as a parts source for remaining ships of its class. USS Pecos (T-AO 197 will be transferred to the Maritime Administration (MARAD).

Three Watson-class large, medium-speed roll-on/roll off ships will be transferred from the Military Sealift Command's Prepositioning Force: USNS Pomeroy (T-AKR 316) by Apr. 1, 2026; USNS Watkins (T-AKR 315) by July 1, 2026; and USNS Red Cloud (T-AKR-313) by Sept. 30, 2026.

Also being transferred to MARAD on July 1, 2026, is the USNS VADM K.R. Wheeler (T-AG 5001), a ship which uses an offshore petroleum distribution system to pump fuel ashore from a distance of eight miles to U.S. forces ashore.

ABS, Eureka Naval Craft,

AIRCAT Vessels Team to Advance High-Speed Autonomous Vessels

From Eureka Naval Craft, Sept. 18, 2025

Eureka Naval Craft, AIRCAT Vessels S.A.S., and the American Bureau of Shipping (ABS) today announced a landmark agreement to accelerate safe development of high-speed Unmanned and Autonomous Surface Vessels (USVs/ASVs) for both naval defense and offshore energy operations.

The collaboration is designed to set new international standards, which will support safety, reliability, and operational excellence for high-speed autonomous vessels deployed in high-risk civilian and military environments.

The Memorandum of Understanding leverages Eureka's advanced naval vessel innovation, AIRCAT's commercial offshore pedigree, and ABS' world-class classification expertise to bridge defense and energy industry needs.

"Whether serving a naval mission or supporting offshore energy, high-speed unmanned craft face the same unforgiving risks. By combining our strengths under ABS's safety

leadership, we are building platforms that can be trusted across both worlds," said Bo Jardine, CEO of Eureka Boats.

"ABS is excited to work with Eureka and AIRCAT, leveraging our expertise with the world's most advanced autonomous and remote-control technology to drive innovation while maintaining an unwavering commitment to safety. ", said Miguel Hernandez, Senior Vice President, Global Offshore of ABS.

The teaming agreement will pursue initiatives aimed at achieving measurable, cross-sector impact:

- Modular Payload Integration – Develop and validate adaptable payload systems, such as Intelligence, Surveillance, Reconnaissance masts, mission modules, and spill response units for quick secure installation or swapping, ensuring critical ship functions like propulsion, communications, and navigation remain secure.

- Unified Safety Frameworks – Combine offshore energy's rigorous operational standards with defense-grade redundancy to ensure autonomy systems can withstand harsh sea states, contested environments, and mission-critical demands.

- Trials and Demonstrations – Conduct defense and offshore trials to validate safety cases, including high-speed sea trials and failure testing. Use cases include naval patrol and interdiction, offshore resupply, offshore surveillance, and emergency logistics.

- International Standards Alignment – Set a global benchmark for autonomous operations by ensuring compliance with

- ABS Rules and Guides
- IMO’s Maritime Autonomous Surface Ships guidance
- International Electrotechnical Commission’s functional safety standards
- Oil Companies International Marine Forum’s vessel assurance practices.
- Safety and Cyber Assurance – Establish strict interlocks, redundancy, fail-safe protocols, and cyber protections to ensure secure and resilient autonomy.

Jerome Arnold, Managing Director of AIRCAT Vessels, said: “This is more than technology development – it’s about harmonizing expectations across industries. Offshore energy demands the same level of resilience as the defense community, and, together, we are ensuring both can benefit from innovations in safety and autonomy.”

Bo Jardine stressed: “By merging defense innovation with offshore practices, we will ensure that naval forces receive safe, resilient, autonomy-ready platforms, that energy operators benefit from defense-grade reliability in critical offshore missions, and that global regulators gain confidence that autonomous vessels can operate as safely, or even more safely, than manned ones.

“This exciting collaboration revolutionizes the design, validation, and deployment of high-speed autonomous vessels, enhancing safety and operational trust at sea.”