

# Leidos Completes Delivery of Seahawk MDUSV to U.S. Navy



Leidos has completed delivery of a cutting-edge autonomous vessel, the Seahawk, an upgraded design from the earlier Sea Hunter vessel shown here getting underway following its christening ceremony in 2016. U.S. NAVY / John F. Williams RESTON, Va. – Leidos has completed delivery of a cutting-edge autonomous vessel to the U.S. Navy, known as Seahawk, the company said in an April 7 release. The Office of Naval Research awarded Leidos the cost-plus-fixed fee contract to build the vessel, with an approximate value of \$35.5 million, in December 2017. Work was principally performed on the Mississippi Gulf Coast.

“As technology continues to accelerate and adversaries become more sophisticated, our customers must constantly evolve,” said retired Rear Adm. Nevin Carr, Leidos vice president and Navy strategic account executive. “We are honored to provide

this latest technological advancement to America's sailors who fight to keep the seas open and free."

Seahawk is a long-range, high-availability autonomous surface vessel with a composite trimaran hull. This medium-displacement unmanned surface vehicle (MDUSV) will enhance capabilities for naval operations. Like Leidos' MDUSV Sea Hunter, Seahawk is substantially larger than other U.S. Navy USVs and has significantly increased capabilities compared to smaller USVs in terms of range, seakeeping and payload capacity. Seahawk is designed to operate with little human involvement, thus providing a forward-deployed and rapid-response asset in the global maritime surveillance network.

"We didn't just put an autonomous navigation system onto an existing ship," said Dan Brintzinghoffer, Leidos vice president for Maritime Solutions. "Every mechanical and electrical system on Seahawk has unique configurations designed to run for months at a time without maintenance or a crew."

The trimaran's displacement (fully loaded) is 145 long tons. This includes 14,000 gallons of fuel that can power the twin diesel engines for a substantial length of time. Seahawk's upgraded design follows an evaluation of over 300 lessons learned from Sea Hunter. These upgrades were based on joint evaluations by Leidos and the Navy and include upgraded electrical systems, a payload mounting system and test operator control station.

Seahawk will join Surface Development Squadron One in San Diego, California.

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# Keel Laid for Future USS Harvey C. Barnum Jr.



The future USS Harvey C. Barnum Jr. (DDG 124) namesake, Col. Harvey “Barney” Barnum, Jr. (USMC, Ret.) (center) and his wife and ship sponsor, Martha Hill (left) monitor as Bath Iron Works welder Marty Fish (right) inscribes Col. Barnum’s signature onto the keel plate at General Dynamics Bath Iron Works (BIW) shipyard, April 6. *BATH IRON WORKS*

BATH, Maine – The keel of the future USS Harvey C. Barnum Jr. (DDG 124) was ceremoniously laid at General Dynamics Bath Iron Works (BIW) shipyard, April 6, the Navy’s Team Ships Public Affairs said in an April 7 release.

The ship’s namesake, Col. Harvey “Barney” Barnum Jr. (USMC, Ret.) and his wife and ship sponsor, Martha Hill, attended the event. Acting Secretary of the Navy, Thomas W. Harker, Maine Sens. Susan Collins and Angus King Jr. and Rep. Chellie Pingree were also in attendance.

With the assistance of BIW welder Marty Fish, Barnum inscribed his signature onto the keel plate. As the sponsor, Martha Hill authenticated the keel by etching her initials into the keel plate, a tradition that symbolically recognizes the joining of modular components and the ceremonial beginning of the ship.

“Col. Barnum has spent his life in service to our country and it is an honor to lay the keel of his ship,” said Capt. Seth Miller, DDG 51 class program manager. “This ship and all who serve aboard it will be a reminder of the honor, courage, and commitment that Col. Barnum embodies.”

Barnum twice served in Vietnam and is a Medal of Honor recipient for heroic actions taken against communist forces at Ky Phu in Quang Tin Province in December 1965 after his company came under enemy fire and was separated from the rest of their battalion.

DDG 124 is a Flight IIA Arleigh Burke-class destroyer equipped with Aegis Baseline 9, which provides improved integrated air and missile defense capabilities, increased computing power, and radar upgrades that improve detection range and reaction time against modern air warfare and ballistic-missile defense threats.

BIW is also in production on the future Arleigh Burke-class destroyers Carl M. Levin (DDG 120), John Basilone (DDG 122), Patrick Gallagher (DDG 127), and Flight III ships, Louis H. Wilson Jr. (DDG 126), and William Charette (DDG 130), as well as the future Zumwalt-class destroyer, Lyndon B. Johnson (DDG 1002).

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# NNSY Welcomes MTS Sam Rayburn for Inactivation



Norfolk Naval Shipyard welcomed the Moored Training Ship Sam Rayburn (MTS 635) in advance of its inactivation April 3. Along with MTS Daniel Webster (MTS-626), Rayburn is being replaced by the next-generation training vessels MTS La Jolla (MTS 701) and USS San Francisco (SSN 711). *Danny De Angelis*  
NORFOLK, Va. – Norfolk Naval Shipyard (NNSY) welcomed the Moored Training Ship Sam Rayburn (MTS 635) April 3 in advance of its inactivation.

Rayburn (formerly SSBN 635) served as a MTS at Nuclear Power Training Unit – Charleston for more than 30 years training Sailors in the operation, maintenance and supervision of nuclear propulsion systems. Along with MTS Daniel Webster (MTS 626), Rayburn is being replaced by the next-generation training vessels MTS La Jolla (MTS 701) and USS San Francisco (SSN 711).

Providing unique opportunity for the NNSY workforce, Rayburn marks the Navy's first inactivation of a MTS. Upon completion of this work, Rayburn will be towed to Puget Sound Naval Shipyard for recycling. NNSY will also perform Webster's inactivation.

"USS Sam Rayburn has proudly served the U.S. Submarine Force and Navy Nuclear Propulsion Program since 1964, and we now welcome it to America's Shipyard," said Shipyard Commander Capt. Dianna Wolfson. "Performing the first inactivation of a Moored Training Ship will develop another important facet in our service to the fleet, and we look forward to excelling in our mission as one team."

Throughout Rayburn's three-decade stint as a training vessel, NNSY has performed maintenance on it as needed, sometimes in Portsmouth when a dry docking was required, and other times onsite in Charleston, sending upwards of 200 employees to perform Pierside Extended Maintenance Availabilities and support depot level repairs during continuous maintenance availabilities.

Commending Norfolk Naval Shipyard's Charleston (NNSY-CHS) team for its record of planned maintenance and emergent repairs, Adm. James Caldwell, director, Naval Reactors, said, "NNSY-CHS's efforts directly contributed to the Naval Nuclear Propulsion Training Program's (NNPTP) ability to meet or exceed annual fleet requirements for qualified operators for the past several years, allowing the nuclear Navy to achieve 100 percent fleet manning for the first time in 10 years. This recognition speaks to the direct leadership, dedication and follow through of a passionate team striving for consistent impactful results."

During this time of modernization for the NNPTP, the NNSY-CHS team has been concurrently working retirements of Rayburn and Webster; delivering and supporting work of the new vessels; and modernizing the site to enhance future training needs.

“Preparing and towing the MTS 635 represents the next step in modernizing the nuclear training program here in Charleston,” said MTS Project Superintendent Chrystal Brady. “By retiring the MTS 635, NPTU Charleston can move forward with the final preparations to receive the MTS 711 later this year. The NNSY Charleston team continues to demonstrate dedication to the mission of the site. To care for and deliver this asset, many personal sacrifices have been made over the years to deliver on maintenance schedules and, most recently, to ensure an on-time tow. Our team takes great pride in the way we represent NNSY and the Navy every day.”

Exemplifying Wolfson’s “One Mission-One Team” mantra, sending Rayburn to Portsmouth required constant communication and coordination between NNSY and its Charleston team hundreds of miles away. “There were several key parts to this plan for Norfolk Naval Shipyard – the safe departure from Charleston, tow, and safe arrival at Norfolk Naval Shipyard,” said Pat Ensley, NNSY Submarine program manager. “This was a great team effort to accomplish this mission. The detailed preparations for departure took significant planning and execution to complete the preparations for tow.”

Following La Jolla, which completed its conversion at NNSY in November 2019, San Francisco is now in the final stages of becoming a Moored Training Ship for towing to Charleston. These conversions are the closest NNSY has come to new ship construction since the 1950s, requiring two complete hull cuts, separating each boat into three pieces, recycling the center section, and adding three new hull sections, adding 76 feet to the overall length on both vessels.

*This article is by Michael Brayshaw, NNSY Lead Public Affairs Specialist*

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# Coast Guard, Navy Begin High Seas Oceania Maritime Security Initiative Patrol



Independence-variant littoral combat ship USS Tulsa (LCS 16), with an embarked Coast Guard law enforcement detachment from the Pacific Tactical Law Enforcement Team are conducting maritime law enforcement operations through the enforcement of international law and the Western and Central Pacific Fisheries Convention to protect United States and Pacific Island Nations' resource security and sovereignty. U.S. NAVY SAN DIEGO, Calif. – The U.S. Coast Guard and U.S. Navy began their joint mission in the Western and Central Pacific under the Oceania Maritime Security Initiative (OMSI) to reduce and eliminate illegal, unregulated, unreported (IUU) fishing, combat transnational crimes and enhance regional security, April 5, the U.S. 3rd Fleet said in an April 6 release.

Independence-variant littoral combat ship USS Tulsa (LCS 16), with an embarked Coast Guard law enforcement detachment from the Pacific Tactical Law Enforcement Team, are conducting maritime law enforcement operations through the enforcement of international law and the Western and Central Pacific Fisheries Convention to protect United States and Pacific Island Nations' resource security and sovereignty.

The Oceania Maritime Security Initiative (OMSI) program is a Secretary of Defense program that leverages Department of Defense assets transiting the region to improve maritime security and maritime domain awareness, ultimately supporting regional stability and partnerships in Oceania.

"USS Tulsa is proud to contribute to the OMSI mission" said Cmdr. William Dvorak, Tulsa's commanding officer. "Working with the embarked U.S. Coast Guard law enforcement detachment, our crew is looking forward to supporting maritime security in the Indo-Pacific."

The OMSI improves maritime security and maritime domain awareness by enabling U.S. Coast Guard law enforcement personnel to conduct maritime law enforcement operations from U.S. Navy assets in coordination with the Western and Central Pacific Fisheries Commission.

"Our team is ready and excited to execute the OMSI mission," said Cmdr. Robert Berry, commanding officer of the embarked law enforcement detachment. "Collaborating with our U.S. Navy counterparts enables us to monitor and deter IUU fishing in the Western and Central Pacific and provides a presence for maritime surveillance and security in the region."

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# USS John Finn Returns from First Deployment



Arleigh Burke-class guided-missile destroyer USS John Finn (DDG 113) returns to Naval Base San Diego. John Finn, a part of the Theodore Roosevelt Carrier Strike Group, returned to Naval Base San Diego April 2, after the ship's first deployment to U.S. 7th Fleet in support of maritime security operations to ensure a free and open Indo-Pacific. U.S. NAVY / Mass Communication Specialist 2nd Class Jessica Paulauskas  
SAN DIEGO – Arleigh Burke-class guided-missile destroyer USS John Finn (DDG 113) returned to San Diego April 2 after its first deployment, U.S. 3rd Fleet Public Affairs said in a release.

John Finn departed with the Theodore Roosevelt Carrier Strike Group (TRCSG) for a scheduled deployment to the Indo-Pacific region Dec. 23.

“John Finn provided presence and maintained the freedom of the

seas while deployed,” said Cmdr. Bralyn E. Cathey, commanding officer of John Finn. “My crew and ship were proud to show the flag abroad while executing myriad missions and exercises during our maiden deployment.”

The destroyer’s primary mission was conducting maritime security operations to ensure a free and open Indo-Pacific region. While operating in U.S. 7th Fleet, John Finn participated in freedom of navigation operations, conducted bilateral operations and coordinated maneuvering exercises with the Japan Maritime Self-Defense Force, executed multiple transits and operations within the Philippine archipelago, and sailed through the international waters of the Taiwan Strait.

“John Finn’s performance during her maiden deployment has been nothing short of phenomenal,” said Rear Adm. Doug Verissimo, commander, Carrier Strike Group Nine. “The captain and his crew should be incredibly proud of the job their team did, seamlessly integrating into the strike group and exceeding every expectation. I’m so proud to have them as a member of Team Fury.”

John Finn participated in dual carrier operations in February with TRCSG and Nimitz Carrier Strike Group that showcased the tactical capabilities of two carrier strike groups operating jointly.

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## **U.S. Coast Guard Ships Depart Puerto Rico on Mission to**

# Strengthen Trans-Atlantic Ties



Vice Adm. Steven Poulin, commander, U.S. Coast Guard Atlantic Area, and Command Master Chief Devin Spencer, visit the crew of the Sentinel-class fast response cutter USCGC Charles Moulthrope (WPC 1141) in Puerto Rico prior to beginning their transit across the North Atlantic to Europe, March 31, 2021. The Moulthrope and USCGC Robert Goldman (WPC 1142) crews will continue to their new homeport of Manama, Bahrain, with brief stops for logistics and relationship building. Planning for the escort and deployment began last year to ensure smooth delivery of the fast response cutters, replacing the Island-class ships currently in operation under the U.S. Navy's 5th Fleet command. *U.S. COAST GUARD/ Lt. Dana Wanjon*

ATLANTIC OCEAN – The Legend-class national security cutter USCGC Hamilton (WMSL 753) with the Sentinel-class fast response cutters USCGC Charles Moulthrope (WPC 1141) and USCGC

Robert Goldman (WPC 1142) departed Puerto Rico on April 1 to transit the North Atlantic to Europe, Coast Guard Atlantic Area announced April 2.

“U.S. Coast Guard cutters have a long history of protecting America’s interests at home and abroad. This historic deployment demonstrates how we can strengthen our national security by extending the Coast Guard’s global reach and firming our commitments to allies and partners in the region,” Capt. Timothy Cronin, commanding officer, USCGC Hamilton.

Hamilton is escorting the fast response cutters across the Atlantic before conducting a patrol in the U.S. Navy’s 6th Fleet area of responsibility to maintain maritime security alongside NATO allies and partners. The Moulthrope and Goldman crews will continue to their new homeport of Manama, Bahrain, with brief stops for logistics and relationship building. Planning for the escort and deployment began last year to ensure smooth delivery of the fast response cutters, replacing the Island-class ships currently in operation under the U.S. Navy’s 5th Fleet command.

“Our primary goal for the fast response cutters is to complete the 9,000-mile voyage to homeport safely and efficiently. In addition, we will capitalize on opportunities to strengthen international partnerships promoting security and prosperity throughout some of the world’s busiest maritime trade routes,” Lt. Cmdr. Steven Hulse, commanding officer, USCGC Charles Moulthrope.

“We expect to showcase the capabilities of the fast response cutter, and the U.S. Coast Guard to advance the shared maritime strategy for security with the U.S. Navy and naval partners in the region, while concurrently engaging with them on the more traditional U.S. Coast Guard missions of search and rescue, maritime law enforcement, and illegal fisheries enforcement,” said Lt. Cmdr. Samuel Blase, commanding officer, USCGC Robert Goldman.

The U.S. Navy and U.S. Coast Guard operate forward, from the littoral to the open ocean, ensuring stability and open sea lanes across all maritime domains. U.S. Coast Guard operations in U.S. 6th Fleet demonstrate the country's commitment, flexibility and capability to operate and address security concerns throughout Europe and Africa, the Coast Guard said.

"The U.S. Coast Guard is a member of the joint force, a key and always-ready instrument to further national security objectives globally," said Vice Adm. Steven Poulin, commander, U.S. Coast Guard Atlantic Area. "It's been almost two decades since we sent the Island-class patrol boats to Bahrain. As we seek to modernize our asset support to the U.S. Navy in the Arabian Gulf, this is an excellent opportunity to advance partnerships and learn from our allies in the region."

Hamilton is the fourth ship in its class. The Legend-class is the largest current cutter class of the U.S. Coast Guard. These vessels support various missions, including environmental protection, search and rescue, fisheries, port security, counterterrorism, law enforcement, drug interdiction, defense operations and other military operations.

Moulthrop and Goldman are the first two of six Sentinel-class ships headed to U.S. Patrol Forces Southwest Asia. Established in 2002 to support Operation Iraqi Freedom, PATFORSWA played a critical role in maritime security and maritime infrastructure protection operations. It is the U.S. Coast Guard's largest unit outside of the United States.

PATFORSWA is currently providing U.S. Navy's 5th Fleet and U.S. Central Command with combat-ready assets, using its unique access to foreign territorial seas and ports, formulating strong and independent relationships with partners throughout the Arabian Gulf, and leveraging the full-spectrum, flexible vessel boarding capabilities and maritime country

engagements on the shore.

U.S. 6th Fleet, headquartered in Naples, Italy, conducts the full spectrum of joint and naval operations, often in concert with allied and interagency partners, to advance U.S. national interests and security and stability in Europe and Africa.

Based in Portsmouth, Virginia, U.S. Coast Guard Atlantic Area oversees all Coast Guard operations east of the Rocky Mountains to the Arabian Gulf. Also, they allocate ships to deploy to the Caribbean and Eastern Pacific to combat transnational organized crime and illicit maritime activity.

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## **Coast Guard Cutter Walnut Arrives at New Homeport in Pensacola**



The Coast Guard Cutter Walnut returns to its new homeport in Pensacola, Florida, March 31, 2021. The Walnut crew performed a major maintenance availability project to enable the 225-foot cutter to reach the end of its 30-year planned life service and was previously homeported in Honolulu. *U.S. COAST GUARD*

PENSACOLA, Fla. – The crew of Coast Guard Cutter Walnut arrived at the cutter’s new homeport, the Coast Guard 8th District said in a March 31 release.

The Walnut crew performed a major maintenance availability project to enable the 225-foot cutter to reach the end of its 30-year planned life service.

“The Walnut crew looks forward to our arrival in Pensacola, Florida, and values our role in supporting Coast Guard District Eight’s continued efforts to maintain a safe and effective maritime transportation system,” said Lt. Cmdr. Christopher Bonner, commanding officer of Coast Guard Cutter

Walnut. “As evidenced by the historic hurricane season of 2020, the Coast Guard and its buoy tender fleet played and will continue to play a critical role in responding to devastating natural disasters and reconstituting waterways in and around this nation’s most critical maritime ports.”

The dockside period included loading and inventorying thousands of pounds of critical shipboard materials and equipment, conducting mission critical training to prepare for possible shipboard casualties while underway, and conducting extensive maintenance and repair on most of the shipboard machinery, electronics and auxiliary systems.

The cutter Walnut is a 225-Foot seagoing buoy tender, which was previously homeported in Honolulu and will now be homeported in Pensacola, Florida. The cutter’s primary missions are aids to navigation, search and rescue, maritime law enforcement, maritime environmental protection and national defense missions.

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## **USS Tripoli Marks Significant Steps Toward Fleet Tasking with Fitting Out Availability, Sea Trials**



Sailors participate in a flight deck firefighting drill aboard the amphibious assault ship USS Tripoli (LHA 7), March 11, 2021. Tripoli is an America-class amphibious assault ship homeported in San Diego. *U.S. NAVY / Mass Communication Specialist 2nd Class Joshua Hinson*

SAN DIEGO – USS Tripoli (LHA 7), the second amphibious assault ship in the America class, is highlighting its capabilities with the completion of its Fitting Out Availability (FOA) on March 26 and upcoming sea trials, Team Ships and USS Tripoli Public Affairs said in a March 31 release.

The FOA entails changes that resulted from lessons learned and feedback from USS America's (LHA 6) availability and work postponed due to COVID-19 protocols. Work completed during this time directly supports the vessel's F-35B Joint Strike Fighter (JSF) capability, including onboard space reconfiguration and preparing for advanced logistical systems installment.

When the ship is underway for sea trials, the crew will begin validating performance, operating many of the ship's onboard

systems, including navigation, damage control, mechanical and electrical systems, combat systems, communications and propulsion applications to ensure mission readiness.

“This amphibious assault ship is ready to provide critical capabilities in supporting overall mission readiness to the Sailors and Marines of the Pacific Fleet,” said Capt. Cedric McNeal, program manager, Amphibious Warfare Programs. “With its enhanced JSF capability, this ship meets the operational needs of today, while providing capacity for the future fight.”

Tripoli incorporates key components to provide the fleet with a more aviation-centric platform. The ship’s design features an enlarged hangar deck, aviation maintenance facilities realignment and expansion, a significant increase in available stowage for parts and support equipment, and increased aviation fuel capacity.

The ship will enter its Post Delivery Test and Trials phase, followed by Final Contract Trials with the Board of Inspection and Survey and the Post Shakedown Availability before eventual national tasking.

“The combined post-delivery and Tripoli team completed six months of depot-level work on time, a significant accomplishment in this COVID environment,” said Capt. Joel Lang, Tripoli’s commanding officer. “The crew is ready to take the ship to sea to complete bow-to-stern testing to prove the combat effectiveness of assault carrier 7.”

The future USS Bougainville (LHA 8) is currently in production at Huntington Ingalls Industries and LHA 9 contract award is on track for 2021.

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# Ike Supports Operation Inherent Resolve from Eastern Mediterranean



An F/A-18E Super Hornet, attached to the “Rampagers” of Strike Fighter Squadron (VFA) 83, launches from the flight deck in preparation for operation inherent resolve aboard the Nimitz-class aircraft carrier USS Dwight D. Eisenhower (CVN 69), in the Mediterranean Sea, March 31, 2021. *U.S. NAVY / Mass Communication Specialist 2nd Class Sophie A. Pinkham*

NAPLES – Dwight D. Eisenhower Carrier Strike Group began flight operations in support of Operation Inherent Resolve (OIR) from the Eastern Mediterranean Sea, March 31, 2021.

Aircraft from Carrier Air Wing (CVW) 3 supported Combined Joint Task Force OIR, demonstrating U.S. commitment to security in the region, U.S. 6th Fleet Public Affairs said in a March 31 release.

“Our Strike Group is ready and capable of providing direct, long-range combat operational air support from the Eastern Mediterranean Sea,” said Rear Adm. Scott F. Robertson, commander, Carrier Strike Group Two. “CSG-2’s presence in U.S. 6th Fleet shows the flexibility of our naval forces to conduct operations whenever and wherever necessary. We can provide a wide range of options to our nation and allies in deterring adversarial aggression and disruption of maritime security and regional stability.”

IKE’s operation in the Mediterranean Sea demonstrates the capability of the U.S. Navy to support OIR from multiple theaters, highlighting the mobility, flexibility, and power projection capability of the U.S. Navy’s carrier strike groups.

Operating from the Eastern Mediterranean enables IKE to seamlessly support three combatant commanders, ensuring immediate responses in a rapidly evolving security environment. IKE CSG brings multi-mission capable platforms to the U.S. 6th Fleet area of operations with strike, ballistic missile defense, and intelligence, surveillance, and reconnaissance capabilities.

Deploying ships and aircraft of the strike group, commanded by Robertson, include flagship USS Dwight D. Eisenhower (CVN 69); the Ticonderoga-class guided-missile cruiser USS Monterey (CG 61); Destroyer Squadron 22 ships include Arleigh Burke-class guided-missile destroyers USS Mitscher (DDG 57), USS Laboon (DDG 58), USS Mahan (DDG 72), and USS Thomas Hudner (DDG 116).

Squadrons of Carrier Air Wing (CVW) 3, embarked on Eisenhower include the “Fighting Swordsmen” of Strike Fighter Squadron (VFA) 32, “Gunslingers” of Strike Fighter Squadron (VFA) 105, “Wildcats” of Strike Fighter Squadron (VFA) 131, “Rampagers” of Strike Fighter Squadron (VFA) 83; “Dusty Dogs” of Helicopter Sea Combat Squadron (HSC) 7, “Swamp Foxes” of

Helicopter Maritime Strike Squadron (HSM) 74, "Screwtops" of Airborne Command and Control Squadron (VAW) 123, "Zappers" of Electronic Attack Squadron (VAQ) 130 and a detachment from Fleet Logistics Support Squadron (VRC) 40 "Rawhides."

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## Flight Control Technology Set to Dive Underwater for Submarine Mobility



An artist's rendering of future Successor-class submarine, the first of which will be named Dreadnought. Successor-class is the United Kingdom's future ballistic missile submarine, to replace the Vanguard class. *U.K. ROYAL NAVY*

ROCHESTER, U.K. – BAE Systems is taking decades of flight

controls expertise underwater on-board the United Kingdom's next-generation submarine, Dreadnought. This innovative approach involves adapting controls that are usually used in fly-by-wire aircraft and applying them in a marine environment, the company said in a March 29 release.

The complete Active Vehicle Control Management (AVCM) system will oversee all major aspects of the submarines' maneuvering capability to the highest levels of safety and reliability, similar to existing systems on modern air transport platforms.

"With over 50 years of avionics experience, we already have a great understanding of how to develop complex, control systems for hi-tech platforms," said Jon Tucker, director for Maritime Controls at BAE Systems Controls and Avionics. "However, taking our technology underwater brings exciting new challenges and we are proud to support the Dreadnought program and play an important part in our national security effort."

Similar to how fly-by-wire works for aircraft – whereby electronic systems are used to control the movement of aircraft – the company's engineers are developing electronics that control the heading, pitch, depth and buoyancy of the Dreadnought class among other critical elements with added safety benefits.

Work has already begun, supporting more than 130 highly skilled jobs in Rochester, U.K, with the number expected to grow. The program is one of the largest developmental projects taking place at the Rochester site and the company says it has made significant investments at the site to create new labs and workspaces to support the program.

The innovation has been developed by engineers in the BAE Systems' Electronic Systems business working closely with colleagues across the company's Maritime and Air sectors to develop a world-class system as part of BAE System's Active

Vehicle Control One-Team. Its engineers will continue to develop the technologies with a view to expanding its applications to both other underwater and surface vessels.