

Lockheed Martin Partners with U.S. Indo-Pacific Command in Successful Multi-Domain Experiments



Aircraft from Carrier Air Wing (CVW) 9 fly over the Nimitz-class aircraft carrier Abraham Lincoln (CVN 72), front left, America-class amphibious assault ship USS Tripoli (LHA 7), front center, Nimitz-class aircraft carrier USS Ronald Reagan (CVN 76), front right, Ticonderoga-class guided-missile cruiser USS Mobile Bay (CG 53), middle left, Arleigh Burke-class guided-missile destroyer USS Benfold (DDG 65), middle center, Ticonderoga-class guided-missile cruiser USS Antietam (CG 54), middle right, Arleigh Burke-class guided-missile destroyer USS Spruance (DDG 111), back left, and Arleigh Burke-class guided-missile destroyer USS Fitzgerald (DDG 62), back right, as they sail in formation during Valiant Shield 2022. *U.S. NAVY / Mass Communication Specialist 3rd Class*

Thaddeus Berry

BETHESDA, Md. – Lockheed Martin paired its DIAMONDShield battle management system with four Virtualized Aegis Weapon System nodes deployed across hundreds of miles to successfully demonstrate multi-domain operations during a recent U.S. military exercise, the company said June 21.

The exercise, Valiant Shield 2022, is a biennial training activity involving thousands of U.S. military personnel and more than 200 ships, aircraft and ground vehicles with a focus on integrating forces in multiple domains, and is a cornerstone of the U.S. Indo-Pacific Command's integrated deterrence strategy to prevent conflict in the region.

During the 12-day event in Guam and other locations in the Pacific, Lockheed Martin partnered with the U.S. Indo-Pacific Command to experiment with using artificial intelligence to enable rapid decision-making – in seconds or minutes compared to hours – at strategic, operational and tactical levels of missions across air, land, sea and space.

“We recognize our customers’ need to rapidly integrate emerging technologies into mission-focused solutions,” said Joe Ferrara, Lockheed Martin’s advanced concepts director supporting the exercise. “Through experiments like Valiant Shield, we are learning collaboratively with our customers to advance Joint All Domain Operations, with the intent of delivering capability faster to the warfighter.”

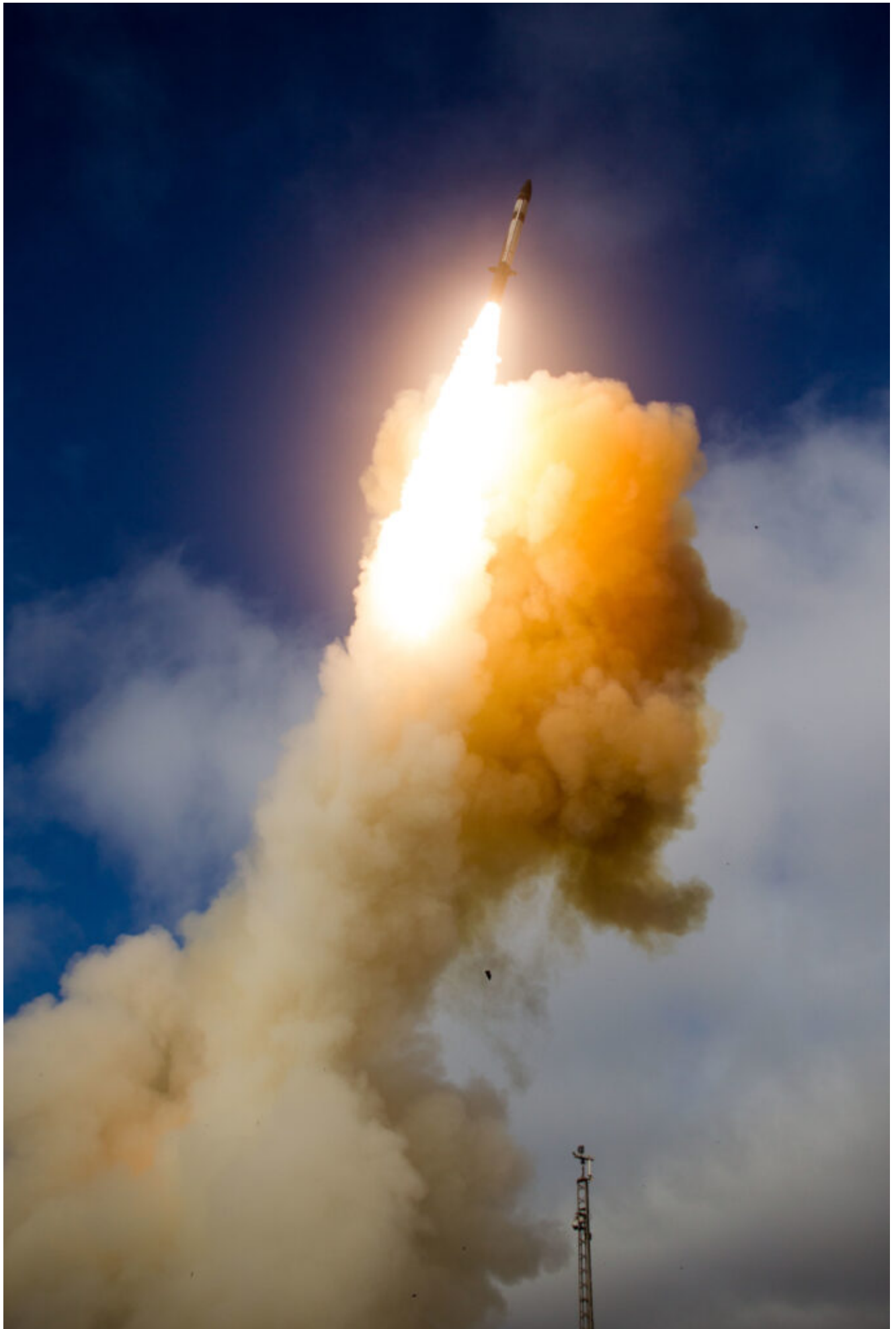
With 14 Lockheed Martin engineers in the field, the company introduced DIAMONDShield and VAWS into a series of offensive and defensive scenarios involving Lockheed Martin’s High Mobility Artillery Rocket System and PAC-3 Missile Segment Enhancement. DIAMONDShield’s artificial intelligence technology analyzed operational command and control data in real-time during dynamic fires, and provided commanders with decision aids to recommend assets to respond to incoming threats.

After commanders decided how to engage, the VAWS next-generation combat system routed precision targeting data and detailed orders to front-line assets like the PAC-3 MSE and HIMARS. Using machine-to-machine interfaces, VAWS transmitted the information digitally across existing military service data stovepipes, a concept known as coordinating “digital force orders.” In this case, the Marine end user was able to execute a commander’s intent without having to manually translate the order into Marine doctrine, regardless of whether the order came from an Air Force, Army, or Navy commander. This also saved users time because they no longer had to read coordinates over a radio, and it reduced room for error by eliminating the risk of misinterpreting spoken instructions.

The team will use the experience and feedback to optimize training and improve the systems for the next exercise.

This is the fifth military exercise in which the company has partnered with the U.S. Indo-Pacific Command. Beginning in 2019 with Talisman Sabre and as part of the command’s Pacific Deterrence Initiative, Lockheed Martin has participated in a series of exercises that have each demonstrated progressively expanded capabilities: Talisman Sabre 2021 and 2019, Northern Edge 2021 and Valiant Shield 2020.

Missile Defense Agency Awards Raytheon \$867 Million for SM-3 Block IIA Missiles



Japanese and U.S. forces announced the successful completion of a Standard Missile-3 (SM-3) Block IIA flight test from the Point Mugu Sea Range, San Nicolas Island, California, in 2018.

MISSILE DEFENSE AGENCY / Ralph Scott

TUCSON, Ariz. – Raytheon Missiles & Defense, a Raytheon Technologies business, has been awarded an \$867 million Missile Defense Agency contract to deliver SM-3 Block IIA missiles to the United States and partners, the company announced June 14.

“The SM-3 Block IIA interceptor was developed in partnership with Japan, and it features a larger rocket motor and kinetic warhead that allow it to defend broader areas from long-range ballistic missile threats,” said Tay Fitzgerald, president of Strategic Missile Defense at Raytheon Missiles & Defense. “Our strong cooperation with Japanese industry was essential to the development of this next-generation solution that can defeat complex threats around the world from sea and land.”

The SM-3 interceptor is a defensive weapon the U.S. Navy uses to destroy short- to intermediate-range ballistic missiles. The interceptor uses sheer force, rather than an explosive warhead, to destroy targets in space. Its “kill vehicle” hits threats with the force of a 10-ton truck traveling 600 miles per hour. This technique, referred to as “hit-to-kill,” has been likened to intercepting a bullet with another bullet.

The SM-3 Block IIA interceptor’s kinetic warhead has been enhanced, improving the search, discrimination, acquisition and tracking functions, to address advanced and emerging threats. The missile intercepted an advanced ballistic-missile threat in its first live target test in early 2017.

The SM-3 interceptor is a critical piece of the Phased Adaptive Approach for missile defense in Europe. The interceptor is being carried by U.S. Navy ships deployed off Europe’s coast and is now operational at a land-based site in Romania, further enhancing Europe’s protection.

BAE Systems to Build Seekers for LRASMs



An LRASM in flight. *LOCKHEED MARTIN*

NASHUA, N.H. – BAE Systems has received a \$38 million contract from Lockheed Martin for additional guidance systems for Lockheed Martin's Long-Range Anti-Ship Missile (LRASM) program, the company said June 14.

BAE Systems' advanced radio-frequency sensor enables LRASM to strike specific, high-value maritime targets from long range in aggressive electromagnetic warfare environments.

"We're advancing the state of small electronic warfare systems through our efficient LRASM seeker design, which delivers discriminating capabilities at an affordable cost," said Larry Glennon, Small Form Factor product line director at BAE Systems. "Our seeker enables the U.S. Navy, U.S. Air Force,

and our allies to find the proverbial needle in the haystack with high-performance, multi-mission missiles.”

The LRASM provides warfighters with a capable precision strike weapon intended for use from airborne platforms including B-1B Lancer bombers, F/A-18E/F Super Hornet fighters, F-35 Lightning II fighters, P-8A Poseidon maritime patrol aircraft and surface vessels via the Mark 41 Vertical Launching System. The missile’s diversity of launch platforms, survivability, range and lethality provide critical capability and flexibility to warfighters.

Work on BAE Systems’ seeker takes place at the company’s advanced manufacturing facilities in Wayne, New Jersey, Greenlawn, New York and Nashua, New Hampshire.

HII Christens LPD Richard M. McCool Jr.



Ship sponsors Kate Oja and Shana McCool christen the ship named after their grandfather, Richard M. McCool Jr., on June 11. Looking on are Eric Raven, undersecretary of the Navy, Kari Wilkinson, president of Ingalls Shipbuilding, and Capt. Jeffrey Baker, prospective commanding officer of the ship. HII PASCAGOULA, Miss. – HII announced June 11 that its Ingalls Shipbuilding division christened the company's 13th amphibious transport dock, Richard M. McCool Jr. (LPD 29), constructed for the U.S. Navy.

"For nearly two decades, we have had the opportunity to build these amphibious ships, and we look forward to continuing this journey with such a valued partner," Ingalls Shipbuilding President Kari Wilkinson said. "Today we reflect on Richard M. McCool Jr.'s bravery and heroism in front of a ship that will carry another generation of brave Sailors and Marines into missions defending our freedom."

LPD 29 is named to honor U.S. Navy Capt. Richard M. McCool Jr., who was awarded the Medal of Honor for his heroic actions in rescuing survivors from a sinking destroyer and for saving

his own landing support ship during a World War II kamikaze attack. His rescue efforts took place exactly 77 years prior to the day Richard M. McCool Jr. (LPD 29) was christened.

Undersecretary of the Navy Erik Raven was the keynote speaker.

“Richard M. McCool Jr. truly embodied the spirit of service above self,” Raven said. “The Sailors and Marines who will sail on this future ship carry on that legacy following the example of spirit, patriotism and selflessness set by Richard M. McCool Jr.”

When speaking of America’s defense capabilities, Raven said, “We are able to deploy exquisite capabilities across the globe in great part due to our dedicated shipbuilders and our talented team. These talented Americans are essential to making sure that our naval forces have the ships that they need.”

Richard M. McCool Jr. is co-sponsored by Shana McCool and Kate Oja, granddaughters of the ship’s namesake. Together, the two sponsors officially christened Richard M. McCool Jr. by smashing a bottle of sparkling wine across the bow of the ship. McCool spoke on behalf of both sponsors at today’s ceremony.

When speaking about her grandfather’s heroic acts some 77 years ago, McCool said, “To the commanding officer and future crew of this ship, may she (the ship) keep you safe. And in the words of our grandfather, may you always remember to fight as a unit and not as individuals.”

London Tech Bridge Breaks Down Barriers with New Collaboration Space



WESTMINSTER, London – The United Kingdom-based Tech Bridge hosted a ribbon-cutting ceremony June 13 to celebrate the grand opening of its innovation hub, said Liz Mildenstein of NavalX.

The London Tech Bridge will leverage partnerships with the

U.S. Office of Naval Research Global and the Royal Navy Office of the Chief Technology Officer to foster connectivity, agility and innovation. The location will sponsor dialogue, joint investment and cooperative development between the two navies.

“The opening of the London Tech Bridge’s innovation hub represents a new way for great minds to come together in a unique atmosphere, share ideas and technologies, and foster more effective research collaboration,” said Chief of Naval Research Rear Adm. Lorin Selby. “This joint U.S.-U.K. partnership is critical to advance new ideas and keep our naval forces dominant.

“We’re looking for partners with strong curiosity, a passion for action and a commitment to scientific and technological excellence.”

Initially launched at the end of 2020 during a virtual ceremony, the London Tech Bridge has already made strides in moving the innovation needle.

For example, it played a critical role in the recent APEX underwater Challenge. The London Tech Bridge coordinated and arranged sponsorship for three research grants to teams from the University of Rhode Island in the United States, Robert Gordon University in Scotland and TNO (Netherlands Organisation for Applied Scientific Research) to execute the challenge. These teams helped unmanned underwater vessels sense objects with sonar or optical cameras and communicate what they “saw” to operators.

“The London Tech Bridge does exactly what it says on the tin,” said Rear Adm. James Parkin CBE, cutting the ribbon on behalf of the Royal Navy. “Being in London, right next to the strategic headquarters of our armed forces, and at the heart of this great global city, allows exposure not only to the latest thinking in defense innovation, but provides physical

access to those varied organizations and individuals conducting some of the most exciting technological research and development anywhere in the world.

“As such, it’s all about tech – sharing our understanding of exciting developments in autonomy, materials, platforms, sensors, processing and concepts, and unlocking the Royal Navy’s connections to those world leading academic, industrial and public sector organizations in the U.K., towards achieving our common goals.

“And perhaps most importantly, it’s a figurative Bridge, one that permits the Royal Navy to reach across the Atlantic into the U.S. Navy, and vice versa, enabling our great nations to join forces in collaborating ever closer, in order to identify the opportunities, and solve the problems, that either or both of us have identified.”

The London Tech Bridge’s new location will also conduct its initial “Tea and Tech” in June, kicking off a monthly session with industry in specified technology areas. Tea and Tech will allow companies to pitch their ideas and technology to the U.S. and U.K. navies.

The Tech Bridge Network

The Tech Bridge network, powered by NavalX, spans 18 national and international locations. The network is designed to bridge the gap between the Navy and emerging entities like startups, small businesses, academia, nonprofits and private capital that aren’t traditionally part of the Navy’s development and acquisition process.

Although there is some commonality among them, the Tech Bridges offer unique services and focus areas within their ecosystems, based on the needs of the customers in their respective areas of responsibility. The London Tech Bridge uniquely builds upon the historic relationship between the U.S. and U.K., and seeks innovation and technology in several

key focus areas, including artificial intelligence, autonomous systems, directed energy, green energy, advanced manufacturing and maintenance and sustainment.

While the Tech Bridge has defined these focus areas to guide its work, it remains open to innovative ideas and game-changing technologies; it remains agile and anticipates its focus areas evolving over time. Its U.K. co-director, Royal Navy Commander Laurence Mallinson, emphasized the need for flexibility in the Tech Bridge.

“Having started virtually a year ago, it is great to finally have a place to hold those vital face-to-face meetings and collaboration events. We are right in the heart of one of the world’s most advanced tech centers and so able to bring cutting-edge tech solutions to our navies’ problems,” he said. “We will focus on challenging industry with solving some of the most pressing problems that our navies are trying to resolve, and bring to the attention of our sailors and marines some of the greatest new technologies in the U.K.”

The addition of a physical innovation hub to the London Tech Bridge framework removes the typical meeting barriers of attending events on a military base and allows for the free flow of thoughts and innovation with limited bureaucracy.

HII Successfully Demonstrates Coordinated Manned and Unmanned Operations



HII's prototype Pharos platform being towed behind a vehicle in the Pascagoula River while recovering HII's LDUUV during a June 8 demonstration. *HII*

PASCAGOULA, Miss. – HII demonstrated capabilities enabling amphibious warships to launch, operate with and recover large-diameter unmanned underwater vehicles, the company said June 13.

"HII is committed to advancing the future of distributed maritime operations and demonstrating our capability to support unmanned vehicles on amphibious ships," said Kari Wilkinson, president of Ingalls Shipbuilding, which hosted and partnered in the demonstration between HII's Ingalls Shipbuilding and Mission Technologies, with all of the participating vehicles being built by HII. "I am very proud of our team's initiative to strengthen the flexibility of the ships we build by anticipating the challenges and opportunities that exist for our customers."

HII-built San Antonio-class amphibious warships have unique well decks that can be flooded to launch and recover various maritime platforms. The U.S. Navy has previously demonstrated the ability to recover spacecraft from the amphibious warship well deck.

HII's Advanced Technology Group, comprised of employees from across the company, performed the launch and recovery demonstration with a prototype platform called Pharos and HII's LDUUV Proteus. The demonstration took place in the Pascagoula River.

The demonstration involved having the LDUUV approach and be captured by the Pharos cradle, while Pharos was being towed behind a small craft that simulated an amphibious ship at low speed. Pharos was put in a tow position, then using a remote control, it was ballasted down in the trailing position allowing the LDUUV to navigate into Pharos. Once the unmanned vehicle was captured, Pharos was de-ballasted back up into a recovery and transport position. The demonstration also included ballasting down to launch the LDUUV after the capture.

Pharos is outfitted with heavy duty wheels to allow its transport maneuverability within the well deck of an amphibious ship for stowage on the vehicle decks. Pharos can be rolled off the back of an amphibious ship while using the ship's existing winch capabilities to extend and retract the platform from the well deck. The Pharos design is scalable and reconfigurable to fit various unmanned underwater or unmanned surface vehicles.

The Pharos design was conducted by HII, and three main partners supported the development. The University of New Orleans, in conjunction with the Navy, performed the initial model testing, and the prototype device was fabricated by Metal Shark in Louisiana.

HII is currently exploring modifications for other UUVs and participating in live demonstrations with the fleet within the next year. HII will use results from the Pharos demonstration to further mature concepts and continue to develop innovative national security solutions.

Navy, Marine Corps Dismissals for Refusing COVID-19 Vaccinations Now Total More Than 3,000



Hospital Corpsman 3rd Class Darion Wilson, left, administers a COVID-19 test in the vehicle stowage area aboard amphibious assault carrier USS Tripoli (LHA 7), May 19. Tripoli is

underway conducting routine operations in U.S. 7th Fleet. *U.S. NAVY / Mass Communication Specialist 3rd Class Maci Sternod*
ARLINGTON, Va. – More than 2,000 U.S. Marines and 1,000 Sailors have been separated from the sea services for refusing vaccination against the COVID-19 coronavirus since the Defense Department ordered mandatory vaccinations late last year.

In its weekly COVID-19 Update on June 8, the U.S. Navy reported 1,099 separations for COVID-19 vaccine refusal. They included 980 active component Sailors, 98 Reservists, and 22 entry-level separations of new recruits during their initial training periods.

The Marine Corps, which shifted from a weekly to a monthly COVID update in mid-April, announced June 2 that 2,715 Marines have been separated from the Corps for vaccine refusal. There was no breakdown showing how many of those dismissed were active duty, reservists or recruits.

The fiscal 2022 National Defense Authorization Act enacted in December 2021 requires discharges of military personnel for vaccine refusal must be either honorable or general under honorable conditions.

According to the weekly Defense Department COVID update, 6,417 Marines and 6,806 Sailors are at least partially vaccinated and 194,639 Marines and 383,564 Sailors are fully vaccinated as of June 8. Both the Navy and Marine Corps, as well as the Pentagon, consider COVID-19 a readiness issue requiring full vaccination for all military personnel.

The Navy said 3,906 active duty Sailors and 3,279 personnel in the Ready Reserve remain unvaccinated as of June 1. The Marine Corps report doesn't give specific figures, only stating fully and partially vaccinated percentages that indicate just 2% of the active force and 7% of reservists remain unvaccinated.

The Navy has granted 227 medical exemptions for COVID vaccination to active duty Sailors, all but 14 of them

temporary. Only one of the 79 medical exemptions granted reservists was permanent. The Marine Corps said 742 requests for medical or administrative exemption from vaccination have been approved. As of June 1, the Marine Corps has received 3,719 requests for vaccination exemption on religious grounds. Only seven have been approved.

The Navy has gotten religious accommodation requests from 3,351 active duty Sailors and 864 in the Ready Reserve. Only 13 of the reservists' requests have been conditionally approved and just one active duty Sailor's was approved.

The Navy has been unable to discharge vaccine refusers since a federal judge in Texas granted a preliminary injunction in March barring the Navy from acting against the thousands of Sailors seeking exemption from vaccination on religious grounds. The U.S. Supreme Court later ruled the Navy could consider a Sailor's vaccination status in making deployment and other operational decisions while a lawsuit on the Pentagon's mandatory vaccination policy moves through the courts.

**Raytheon Technologies
Establishes Global
Headquarters Office in
Northern Virginia**



Raytheon Technologies' building in Arlington, Virginia.
RAYTHEON TECHNOLOGIES

ARLINGTON, Va. – Raytheon Technologies announced today June 7 it will establish its global headquarters in Arlington, Virginia, just outside of Washington, D.C., a move similar to the one recently announced by Boeing.

The location increases agility in supporting U.S. government and commercial aerospace customers and serves to reinforce partnerships that will progress innovative technologies to advance the industry, Raytheon said in a press release, adding that Washington, D.C., serves as a convenient travel hub for the company's global customers and employees.

The new global headquarters office will be in Arlington's Rosslyn neighborhood alongside the Raytheon Intelligence & Space business. Each of the company's four business units currently have operations in Virginia, the company said, and it will maintain its U.S. presence, which includes 600 facilities across 44 states and territories.

Raytheon Technologies said it has not accepted or sought any financial incentives from any state or municipality to support the establishment of the global headquarters office in Virginia.

Mayflower Autonomous Ship Reaches Canada After Suffering Mechanical Issues



The Mayflower Autonomous Ship arrives in Halifax, Nova Scotia, for equipment troubleshooting before continuing its journey.
IBM

HALIFAX, NOVA SCOTIA – After a 40-day voyage, and after more than year of delay due to a mechanical problem, the Mayflower autonomous ship arrived in North America, at Halifax, Nova Scotia on June 5, announced program partners IBM and ProMare.

The ship has been dogged by mechanical problems even as its artificial intelligence guidance system was able to guide it across the ocean.

The catamaran traveled from Plymouth, United Kingdom, to Halifax, and later is expected to make appearances in the Washington, D.C. area. According to IBM, it's the first nautical vessel to complete an unmanned, crewless voyage across the Atlantic.

Mayflower was intended to reach Plymouth, Massachusetts. Over the May 28-29 weekend, the Mayflower developed an issue with the charging circuit for the generator starter batteries, according to IBM.

On May 30, the team had to switch to the back-up navigation PC. ProMare decided to divert to Halifax, Nova Scotia, as the closest viable port, to investigate and fix these issues.

The ship was designed and built by marine research nonprofit ProMare, with IBM acting as lead technology and science partner.

Artificial intelligence and edge computing technologies underpin the ship's AI Captain, which uses six cameras, more than 30 sensors and 15 edge computing devices to help make decisions.

"This makes it possible for the AI Captain to adhere to maritime law while making crucial split-second decisions, like rerouting itself around hazards or marine animals, all without human interaction or intervention," IBM said in a blog post.

NATO Concludes Vigilance Activity Neptune Shield 22



An F/A-18E Super Hornet, attached to the “Fighting Checkmates” of Strike Fighter Squadron (VFA) 211, refuels a Spanish air force AV-8B II+ Harrier in support of Neptune Shield 22, May 21. *U.S. NAVY / Strike Fighter Squadron 11*

OEIRAS, Portugal – Naval Striking and Support Forces NATO (STRIKFORNATO) and U.S. 6th Fleet concluded the NATO-led Vigilance Activity Neptune Shield 2022 from STRIKFORNATO’s Joint Operations Centre in Oeiras, Portugal, May 31, STRIKFORNATO said June 3.

The two-week vigilance activity demonstrated NATO’s ability to integrate the command and control of multiple carrier strike groups, an amphibious ready group and a Marine expeditionary unit, involving the participation of 25 NATO allied and partner nations.

Neptune Shield kicked off May 17 from the Baltic, Adriatic, Ionian and Mediterranean Seas, and involved missions at sea, in the air and on the ground across Europe, supporting both Allied Joint Force Command Naples and Joint Force Command Brunssum.

“Credible force projection to defend the alliance has to be integrated across multiple domains; sea, air, land as well as space and cyberspace. NESH22 further integrated those domains, and was an essential step in the progression of the Neptune series to demonstrate NATO’s ability to defend against any threat from any direction,” said Adm. Robert P. Burke, commander, JFC Naples.

While STRIKFORNATO executed command and control of the USS Harry S. Truman CSG, the ITS CAVOUR CSG and the Combined Task Force 61/2, which included the USS Kearsarge ARG and the 22nd MEU, Supreme Headquarters Allied Powers Europe coordinated the activity, integrating NATO Allied Maritime Command and NATO Allied Air Command.

“Demonstrating and enhancing NATO’s high-end maritime warfare capabilities shows the world the true strength and teamwork of our alliance,” said Vice Adm. Gene Black, commander, STRIKFORNATO and 6th Fleet. “NATO’s capacity to conduct integrated operations in the maritime domain ensures stability and peace throughout Europe, and validates more than seven decades of alliance interoperability.”

STRIKFORNATO led and coordinated maritime and expeditionary forces composed of four carrier strike groups from three different nations, more than 30 ships and 160 aircraft, including forces from the Harry S. Truman CSG, the Kearsarge ARG-MEU, the Italian Navy CAVOUR CSG, the Spanish Navy Juan Carlos I CSG and the Standing NATO Maritime Group 1 and 2. More than 200 aircraft sorties and 80 vigilance activities were executed by more than 11,000 personnel from 25 NATO and partner countries.

Nations participating in Neptune Shield 2022 included Albania, Belgium, Bulgaria, Canada, Czech Republic, Croatia, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Italy, Latvia, Lithuania, the Netherlands, Poland, Portugal, Romania, Slovenia, Spain, Turkey, the U.K. and the U.S.