

NAVAIR Selects Mercury to Deliver Digital Head-Up Display for T-45 Goshawk Training Aircraft



[Release from Mercury Systems Inc.](#)

ANDOVER, Mass., July 12, 2023 (GLOBE NEWSWIRE) – Mercury Systems, Inc. (NASDAQ: MRCY, www.mrcy.com), a technology company that delivers processing power for the most demanding aerospace and defense missions, received a five-year contract worth as much as \$83 million from the U.S. Naval Air Systems Command to deliver high-definition, digital Head-Up Display (HUD) systems for the T-45 Goshawk training aircraft. This firm-fixed-price delivery order was issued under a previously awarded basic ordering agreement. The Navy is the first customer to adopt Mercury's [HUD1080](#) technology that enables aviators to see critical flight and weapons data in real-time without taking their eyes off the sky.

Under this program, Mercury expects to deliver nearly 300 HUD systems, with the first \$45 million production order awarded in conjunction with this contract. The T-45 Goshawk is a tandem-seat jet trainer used to train Navy and Marine Corps aviators to fly the U.S. military's most advanced fighter jets, including the F/A-18E/F Super Hornet, F-35 Lightning, and the EA-18G Growler, as well as tactical airborne early warning aircraft such as the E-2 Hawkeye. The new T-45 HUD with an integrated camera is based on Mercury's low-profile HUD design that minimizes pilot discomfort, enhances situational awareness, and maximizes an aviator's field-of-view. It is also DAL-A certifiable—the highest level of design assurance that can be applied to airborne systems—allowing it to be used for critical flight and mission tasks such as landing on aircraft carriers.

Why It Matters

Pilots must understand a wealth of rapidly changing data while flying, and a HUD allows them to maintain awareness of this information without having to take their eyes off the sky to look down at multiple instruments. Current training aircraft use older analog HUD systems that have a bulky design, are out of production, and cannot integrate with the modern enhanced vision systems used in today's fighter jets. The integration of Mercury's HUD into the T-45 solves the obsolescence problem for the aircraft and ensures pilots are trained in an operationally realistic environment, as the systems are compatible with upcoming T-45 avionics upgrades.

“The introduction of the HUD1080 expands Mercury's display technology portfolio and our ability to deliver mission-ready technology and solutions for all aspects of the avionics ecosystem,” said Mitch Stevison, Executive Vice President and President of Mercury's Mission Systems division. “We look forward to delivering our digital HUD for the T-45 Goshawk, ensuring today's student pilots have the technology to train for current and future missions.”

UNITAS LXIV to begin in Colombia



[Release from USNAVSOUTH/4th Fleet Public Affairs](#)

July 11, 2023

CARTAGENA, Colombia – U.S. Navy and Marine forces are set to arrive in Cartagena in support of UNITAS LXIV, the world's longest-running multinational maritime exercise in the world, scheduled to start July 11, 2023.

The Colombian navy will host this year's UNITAS, which will feature 26 warships/vessels, three submarines, 25 aircraft (fixed wing/helicopter), and approximately 7,000 people from

20 partner nations. Forces will conduct training operations off the coast of Cartagena, Colombia, and ashore in Covenas and Barranquilla, Colombia, through July 21. This year marks the 64th iteration of the exercise. Additionally, this year Colombia will celebrate the bicentennial of its navy, a historical milestone commemorating 200 years of the country's maritime forces.

"UNITAS is so much more than a two week exercise. All participating nations have given much time, energy and effort into the months of planning leading up to what will be one of the most complex UNITAS to date," said Rear Admiral Jim Aiken, commander U.S. Naval Forces Southern Command/U.S. 4th Fleet. "Utilizing air, surface, sub-surface, and unmanned assets, and land units, UNITAS will provide the multinational force a challenging environment in which to conduct training across the full spectrum of maritime operations. UNITAS strengthens maritime partnerships, enhances proficiency and improves interoperability of the participating forces, which is why so many partner nations are taking part this year."

As part of the U.S. Navy's future hybrid fleet, the Chief of Naval Operations has tasked U.S. 4th Fleet to scale unmanned platforms to the fleet level. An addition to this year's UNITAS will include the integrated operations of unmanned air, surface, and subsurface systems into the exercise. UNITAS' challenging training address key aspects of multinational and combined operations such as technology standardization and common operating procedures.

"This is our first opportunity to integrate unmanned systems into our operations at sea," said Rear Adm. Aiken. "UNITAS has often served as a test bed for technology, so it is appropriate that we begin our unmanned integration campaign to operationalize the hybrid fleet here in UNITAS."

In addition to the United States, UNITAS LXIV will bring

together 19 nations from all over the world to train forces in joint maritime operations that enhance tactical proficiency and increase interoperability. Participating nations include Belize, Brazil, Canada, Chile, Colombia, Dominican Republic, Ecuador, France, Germany, Honduras, Jamaica, Mexico, Panama, Peru, Paraguay, Spain, South Korea, United Kingdom, United States, and Uruguay.

Following the UNITAS LXIV Opening Ceremony on July 12, the in port phase of the exercise will feature subject matter expert exchanges, professional symposia, ship rider exchanges, and operations meetings. During this time, Marines and Sailors will conduct expeditionary training events in Covenas to include riverine operations and diving and salvage operations.

During the UNITAS LXIV Underway Phase, forces will participate in events testing all warfare operations, to include live-fire exercises such as a SINKEX and an amphibious ship-to-shore landing and force retraction.

“Marines and Sailors from across the United States will travel to Colombia to not only train alongside our partner nations’ militaries, but to hone the skills required to operate as part of a larger maritime force focused on sea control and sea denial,” said Lt. Gen. David G. Bellon, commander, U.S. Marine Corps Forces, South, and U.S. Marine Corps Forces, Reserve. “We will be exercising command and control from a forward position as Marines set up and employ Expeditionary Advanced Base Operations to enhance naval capabilities as part of UNITAS.”

U.S. forces participating in UNITAS LXIV include USS New York (LPD 21), USS Cole (DDG 67), USS Little Rock (LCS 9), USS Pasadena (SSN 752), and USNS Burlington (T-EPF 10). Other U.S. participants include Patrol Squadron Five (VP 5), Mobile Diving and Salvage Unit (MDSU) 2, Explosive Ordnance Disposal

Mobile Unit (EOD) 612, Mine Countermeasures Group 3, (MCMGRU 3), Expeditionary Mine Countermeasures EOD Company 61 (EODMU 61), East-coast based Naval Special Warfare units, Helicopter Sea Combat Squadron 22 (HSC 22), Helicopter Maritime Strike Squadron 70 Detachment 2 (HSM 70 Det 2), Joint Communications Support Element (JCSE), Fleet Surgical Team (FST) Eight, and the Meteorological Environmental Team (MET). U.S. Marine forces include 3rd Battalion, 23rd Marine Regiment (3/23), 4th Amphibious Assault Battalion (4th AABn), 8th Combat Logistic Battalion (CLB 8), 4th Combat Engineer Battalion (4th CEB), Marine Medium Tiltrotor Squadron 774 (VMM 774), Marine Light Helicopter Attack Squadron 775 (HMLA 775), Marine Aerial Refueler Transport Squadron 234 (VMGR-234), Marine Aircraft Control Group – 48 (MACG-48), and Marine Fighter Attack Squadron 112 (VMFA-112). Finally, Commander, Destroyer Squadron 40, (COMDESRON 40), Commander, Amphibious Squadron Four (COMPHIBRON FOUR), U.S. Marine Corps Forces South (MARFORSOUTH), Special Operations Command South (SOCSOUTH), USNAVSOUTH/FOURTHFLT, and U.S. Southern Command (USSOUTHCOM) are participating in UNITAS LXIV.

UNITAS, which is Latin for unity, united, or oneness, was conceived in 1959 during a previous era of strategic competition when representatives at the first Inter-American Naval Conference in Panama agreed to conduct an annual maritime exercise with one another. Prior to UNITAS I in 1960, U.S. Chief of Naval Operations Adm. Arleigh Burke reviewed preparations for the multinational exercise. He commended planners for their progress, especially in building compatible communication systems among navies, and predicted that UNITAS would build strong relationships among Sailors of the Western Hemisphere.

U.S. Naval Forces Southern Command/U.S. 4th Fleet supports U.S. Southern Command's joint and combined military operations by employing maritime forces in cooperative maritime security operations to maintain access, enhance interoperability, and

build enduring partnerships in order to enhance regional security and promote peace, stability and prosperity in the Caribbean, Central and South American region.

U.S. Marine Corps Forces, South is the Marine Corps component to U.S. Southern Command, is responsible for planning exercises, operations, and overall Marine Corps support for the SOUTHCOM assigned area of responsibility.

Bataan ARG and 26th MEU(SOC) Marines, Sailors Set Sail for Deployment



[Release from Commander, U.S. 2nd Fleet](#)

NORFOLK, VA, UNITED STATES

07.10.2023

Courtesy Story

[Commander, U.S. 2nd Fleet](#)

ATLANTIC OCEAN – U.S. Marines and Sailors of the Bataan Amphibious Ready Group (BAT ARG) / 26th Marine Expeditionary Unit (MEU) (Special Operations Capable) (SOC) departed Norfolk, Virginia, and Camp Lejeune, North Carolina, July 10, after completing a comprehensive, nine-month training program.

The deployment is part of a regular rotation of forces that foster maritime security and increased theater cooperation by providing a forward naval expeditionary presence with vast, specialized crisis response capabilities to support the geographic combatant commander, numbered fleet commander, and joint special operations task force commander.

“We are ready to complete any mission before us, and we are looking forward to the opportunities we will have to work alongside our allies and partners in the months ahead,” said Capt. Martin Robertson, commander of Amphibious Squadron 8. “Our Sailors and Marines have trained hard and are ready. We are thankful for the support of our families and loved ones during this journey.”

The BAT ARG/26th MEU(SOC)’s pre-deployment training program culminated with its final certification exercise, Composite Training Unit Exercise (COMPTUEX), a series of exercises designed to fully integrate roughly 4,000 Marines and Sailors

into one cohesive contingency force while testing the units' abilities to carry out sustained operations from the sea. During COMPTUEX, the BAT ARG/26th MEU(SOC) operated under NATO command and control to replicate the realities of missions the Navy-Marine Corps team may encounter on deployment.

"Over the course of the last nine months, Marines and Sailors of the 26th MEU(SOC) successfully demonstrated the battle staff competencies coupled with all-domain operational capabilities and high proficiency across the MEU Marine Air-Ground Task Force (MAGTF) mission essential tasks and warfighting functions, to include MEU/SOF-integration, during an enhanced, rigorous pre-deployment training program within a scenario reflective of the EUCOM, AFRICOM, and CENTCOM regions," said Col. Dennis "Dolf" Sampson, commanding officer of the 26th MEU(SOC). "Throughout our work-ups, the Bataan Amphibious Ready Group and the 26th MEU(SOC) executed multiple advanced at-sea training exercises and fully integrated into a cohesive naval expeditionary force capable of supporting theater campaigning requirements while remaining postured, as the Nation's Immediate Response Force, to rapidly respond to any crisis."

The Bataan ARG is comprised of the Wasp-class amphibious assault ship USS Bataan (LHD 50), the San Antonio-class amphibious transport dock USS Mesa Verde (LPD 19) and the Harpers Ferry-class dock landing ship USS Carter Hall (LSD 50). Embarked commands include commander, Amphibious Squadron (CPR) 8, Fleet Surgical Team 8, Tactical Air Control Squadron 21, Helicopter Sea Combat Squadron 26, Assault Craft Unit 4, Beach Master Unit 2, and the 26th MEU(SOC).

"I could not be any prouder of the Marines, Sailors, and families of the 26th MEU(SOC)," Sampson said. "They set the bar very high during our work-ups as the premiere Tri-GCC

Crisis Response Force, showcasing the flexibility and all-domain operational capabilities the ARG/MEU(SOC) provides to a Fleet or Joint Task Force Commander within the littorals and beyond.”

The 26th MEU(SOC) serves as one of the Nation’s premier crisis response forces capable of conducting amphibious operations, crisis response, and limited contingency operations, to include enabling the introduction of follow-on forces and designated special operations, in support of theater requirements of the Geographic Combatant Commander. Coupled with the BAT ARG, the 26th MEU(SOC) serves as a premier stand-in force with a full complement of all-domain capabilities to operate persistently within the littorals or weapons engagement zones of an adversary.

For more information, please contact Bataan ARG and 26th MEU(SOC) Public Affairs: Bataan Amphibious Ready Group Public Affairs, CPR8PA0@lhd5.navy.mil and 26th Marine Expeditionary Unit (Special Operations Capable) Communication Strategy & Operations, 26MEU_COMMSTRAT@bataan.usmc.mil.

Third Marine Aircraft Wing Squadron Prints Medical Device In-flight



[Release from the 3rd Marine Aircraft Wing](#)

07.07.2023

Story by 2nd Lt. Andrew Baez, 3rd Marine Aircraft Wing

MARINE CORPS BASE CAMP PENDLETON, Calif. – On June 21, 2023, Marine Medium Tiltrotor Squadron (VMM) 164, Marine Aircraft Group (MAG) 39, 3rd Marine Aircraft Wing (MAW), facilitated the in-flight three-dimensional (3D) printing of a medical cast aboard an MV-22B Osprey, in support of the Marine Corps' Integrated Training Exercise (ITX) 4-23. This milestone event took place as the U.S. Marine Corps looks to sharpen its expeditionary manufacturing capabilities. The Assistant Commandant of the Marine Corps, Gen. Eric M. Smith, emphasized the importance of these organic Marine Corps capabilities in recent testimony to the Senate Armed Services Committee.

“We have to do some very creative work to do additive manufacturing and 3D printing forward,” Smith said. “If confirmed, I’m committed to continuing that effort because I do see one day we will be printing forward in forward operating bases. We’ll be printing major end items, aircraft engines, propellers, we’ll be doing that forward as opposed to straining the lines that come from the United States through contested logistics areas.”

The successful cast print, in collaboration with the Marine Innovation Unit (MIU) and the Naval Postgraduate School (NPS), showcased one angle of Marine Corps aviation’s capacity to facilitate 3D printing in-flight, mirroring potential realistic, dynamic combat scenarios.

The event began with the concept of a Marine in the field with a broken wrist. The steps included scanning the Marine’s arm, optimizing the cast shape using generative design software, and printing the device while en route to a medical evacuation mission.

Lt. Col. Michael Radigan, an MIU liaison to the Naval Postgraduate School, operated the printer in-flight. He currently works with the Consortium for Additive Manufacturing Research and Education (CAMRE), which supported ITX with advanced manufacturing capabilities. The specific printer used is known as a TAMOS (Tactical Advanced Manufacturing Operational System), developed by Mr. Spencer Koroly from Naval Information Warfare Center-Pacific (NIWC-Pacific), San Diego, California.

“This event was significant because it demonstrated a mobility for 3D printing that we have not seen before,” Lt. Col. Radigan said. “Sometimes there is a perception that 3D printers can only operate in a clean room to get mission capable parts. I think we smashed that theory and showed that

not only can they operate on the go, but we can do it well during highly dynamic combat flight profiles.”

CAMRE recognizes that advanced manufacturing will play a significant role in a contested logistics environment. 3D printing complements the supply system and makes it more resilient during combat. Recently, Marines from I Marine Expeditionary Force learned how to build, operate and maintain the machines at NIWC-Pacific to prepare for their deployment in which they will be taking the AMOS printer with them. The printer also prints replacement parts for the machine in the event it needs maintenance, and this allows more independence for the expeditionary unit.

Col. Jeremie Hester, Commanding Officer of MAG-39, views the event a means to better support Marines operating on the ground.

“We are doing what Marine Aviation has always done – support our brothers and sisters on the ground,” Hester said. “Now we are figuring out how to do it better!”

Recognizing the importance of innovation and emerging technologies, VMM-164 was poised to play a critical part in this evolution by providing assault support during ITX 4-23. Third MAW has the capability to host multiple printers aboard aircraft and produce a substantial volume of needed parts en route to an objective. Due to the printers’ low power requirements, follow-on experimentation will explore powering dozens of printers via aircraft power for production at scale in contested environments.

“Third MAW has always kept an eye forward,” Radigan said. “Demonstrations like this reinforce their commitment to staying on the leading edge.”

Navy Accepts Delivery of USNS Harvey Milk (T-AO 206)



[Release from Naval Sea Systems Command](#)

July 11, 2023

By Team Ships Public Affairs

The Navy accepted delivery of fleet replenishment oiler, USNS Harvey Milk (T-AO 206), from shipbuilder General Dynamics National Steel and Shipbuilding Company (NASSCO) on July 11.

The delivery of T-AO 206 follows the successful completion of acceptance trials with the Navy's Board of Inspection and

Survey to test the readiness and capability of the ship and to validate requirements.

“We are excited to deliver the 2nd of class T-AO, USNS Harvey Milk, and expand the Navy’s capacity and capability to provide a fuel pipeline at sea,” said John Lighthammer, program manager, Auxiliary and Special Mission Shipbuilding Program Office. “The fleet and her Sailors will benefit from enhanced at-sea operations.”

T-AO 206, the second ship of the 20-ship class, will be operated by Military Sealift Command. The ship provides diesel fuel, lubricating oil and jet fuel; small quantities of fresh and frozen provisions and dry stores; and potable water to Navy ships at sea. T-AOs add underway replenishment capacity to the Navy’s Combat Logistics Force and will become the cornerstone of the fuel delivery system.

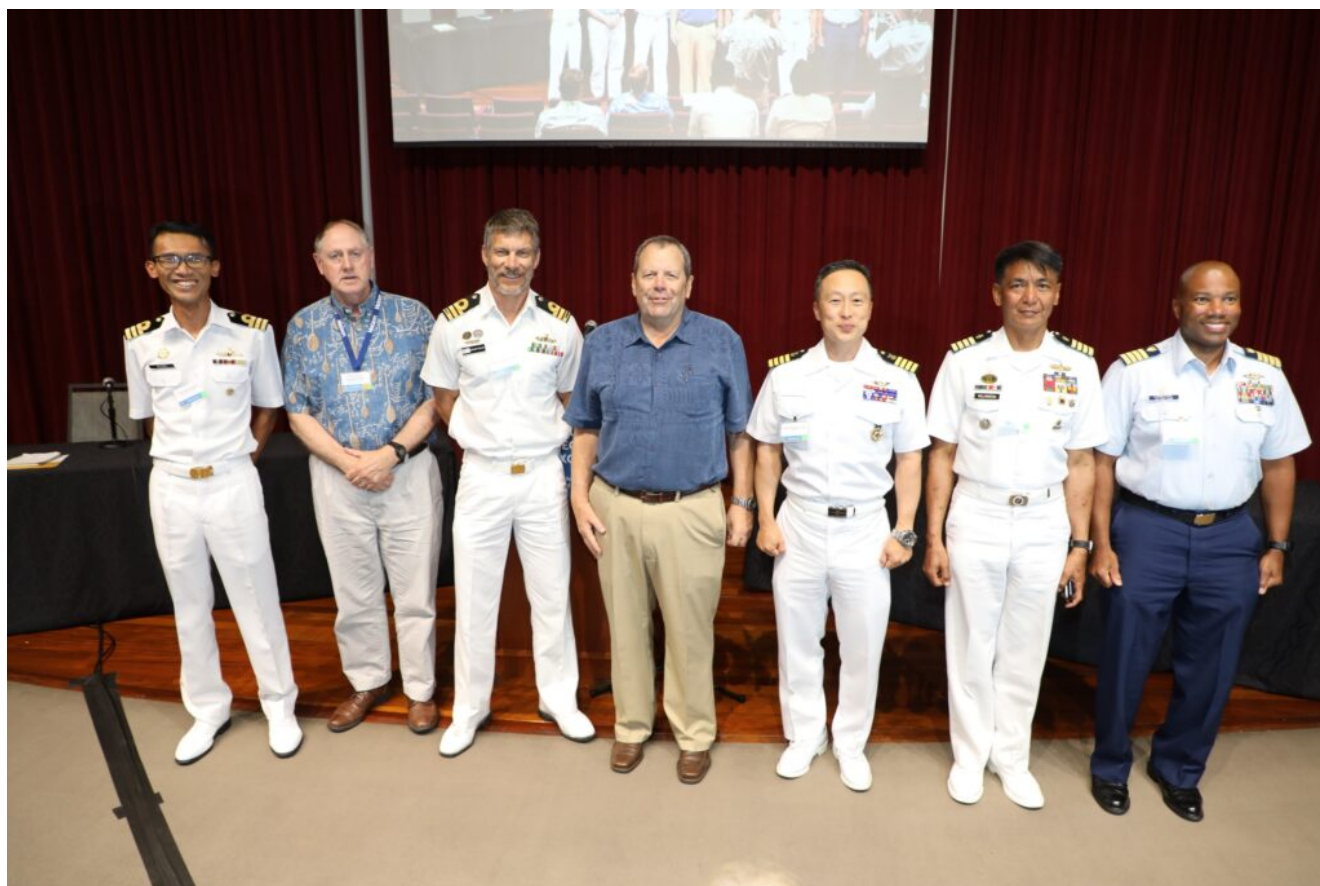
Shipbuilder General Dynamics NASSCO is currently constructing USNS Earl Warren (T-AO 207) and the future USNS Robert F. Kennedy (T-AO 208), USNS Lucy Stone (T-AO 209) and USNS Sojourner Truth (T-AO 210). Future USNS Thurgood Marshall (T-AO 211) and USNS Ruth Bader Ginsburg (T-AO 212), and yet to be named T-AO 213 are under contract.

As one of the Defense Department’s largest acquisition organizations, PEO Ships is responsible for executing the development and procurement of all destroyers, amphibious ships, special mission and support ships, boats and craft.

Indo-Pacific

Maritime

Security Exchange will examine emerging capabilities and capacity



Highlight of the 2022 IMSE was the panel of commanding officers sharing their experiences in the just-completed RIMPAC 2022 exercise. Focused on interoperability and information sharing, the panel included ship commanding officers from Royal Malaysian Navy, Royal Australian Navy; Republic of Korea Navy; Philippine Navy; and US Coast Guard. (Navy League Honolulu Chapter photo)

[Attend this event online](#)

The Honolulu Council of the Navy League is once again hosting the Indo-Pacific Maritime Security Exchange (IMSE), a conference that brings voices from the Indo-Pacific together to discuss maritime security issues in the region. The event will take place August 3rd and 4th as an online symposium.

“Our agenda is designed to stimulate a conversation,” said Larry Osborn, a retired Navy captain and president of the Navy League’s Pacific Region.

In a basic sense, [IMSE looks at maritime security](#) in its four key elements: freedom of navigation, unrestricted flow of commerce, the protection of ocean resources, and the exclusive rights of sovereign nations in their Exclusive Economic Zones (EEZs); an overarching theme is building partnerships for security, stability, and prosperity. IMSE will feature senior maritime leaders and subject matter experts from the region as speakers and panelists examining a broad range of topics to include the strengthening of multi-national maritime military capability, capacity building efforts that include security assistance and cooperation, law-enforcement on the high seas, and diplomatic efforts.

According to the IMSE website, nearly all of the thirty-six countries that comprise the Indo-Pacific region are maritime nations. The region contains nine of the ten busiest seaports in the world and more than half of global maritime trade transits the region. The national sovereignty and economic well-being of nations in the region are dependent on the maintenance of the [rule of law and international norms](#) on the high seas as described in the United Nations Convention on the Law of the Sea. Today this rule of law is being challenged by expansionist territorial claims in the South China Sea, harassment of foreign vessels in international waters, and IUU fishing. Countering these threats to maritime security in the region requires the collaborative efforts of like-minded nations in the military, diplomatic, law-enforcement, and commercial arenas.

Osborn said the IMSE team strives to have half of the speakers be representatives from the various countries in the region. “Specifically, we want to give a voice to all the nations large and small to include Pacific Islanders, as well as some of the more some of the larger nations, like Japan, or the

Republic of Korea. Collectively, our peace, security and prosperity are dependent on the seas.”

The 2023 conference content will be divided into three segments. “The first segment is going to look at illegal, unreported, and unregulated (IUU) fishing and its nexus with transnational crime. The second segment will examine the various treaties, alliances and affiliations in the region and how they interplay. In our third segment, we will focus on emerging maritime capabilities, starting with the People’s Liberation Army Navy (PLAN) and the Chinese Maritime Militia. We’ll also look at some of the navies in the region to include Japan, Republic of Korea, Australia, and others. And I think each of them has a story to tell about their navies and their emerging capabilities and capacity,” said Osborn.

As examples, Osborn points to India’s indigenous aircraft carrier; acquisition of MH 60 Romeo helicopters and P-8I Poseidon maritime patrol aircraft, which will give them enhanced anti-submarine warfare capability, as well as a future buy of “Multi-Role Carrier-Borne Fighters.”

“India occupies a very strategic position on the sea lanes between Asia and the Middle East and Europe. And they are expanding their ability to keep those sea lanes open and secure,” he said. “Japan has announced that they’re going to develop counter strike capability and they’re also enhancing their destroyer fleet with anti-ballistic missile capabilities. The Republic of Korea is building large amphibious ships to respond anywhere in the region to a crisis or humanitarian disaster. Taiwan has an indigenous frigate construction program underway to replace their mostly-hand-me-down surface combatants and is building eight submarines of its own design. There are other examples, too, in the region.”

Another facet of emerging capabilities is in the arena of maritime domain awareness. “We’ll be looking at the

technologies involved in delivering maritime domain awareness, from aggregators and processors to collectors and sensors,” Osborn said.

In the final series of panels, senior maritime leaders will examine the increased transparency of the oceans and how to make sense of it or act upon it.

The attendees will learn about “fusion centers” such as the Information Fusion Centre (IFC) is a regional Maritime Security (MARSEC) center hosted by Singapore, and the Information Fusion Centre – Indian Ocean region, hosted by India. “We’ll discuss the foundation of the technologies that make these fusion centers work, and how operators and data are brought together.”

“Today’s operators are faced with huge amounts of data, but with the right analytical tools, including artificial intelligence, they can detect anomalies and draw an operator’s attention to where it needs to be, and determine the best course of action,” said Osborn.

According to Osborn, the content will appeal to a broad audience. “Anybody interested in maritime security or sustainable fishing, will find the conference content very compelling.”

He said the on-line format makes it easy to attend, “No matter where you are in the world, you can log-in and see the most recent content or see other material that has already been posted.”

The cost to register is just \$15.00, but Navy League members can register for free.

The major sponsor for this year’s IMSE is the U.S. Agency for International Development (USAID), which has a large interest in protecting sustainable fishing for coastal nations.

For more information: <https://www.imsehawaii.org/>

To register: <https://www.imsehawaii.org/registration.html>



181115-N-NU281-1050 HONOLULU (Nov. 15, 2018) Retired U.S. Navy Capt. Larry Osborn, Navy League President, Honolulu Council, delivers remarks at the 58th Annual Sea Services Awards ceremony. The event honors top performers in the U.S. Navy, Marine Corps and Coast Guard. (U.S. Navy photo by Mass Communication Specialist 2nd Class Justin R. Pacheco)

USNS BURLINGTON Hosts Launch Of Unmanned Surface Vehicle



[Release from U.S. 4th Fleet](#)

By USNAVSOUTH/4TH FLEET PUBLIC AFFAIRS

CARRIBEAN SEA – U.S. Navy Sailors partnered with Military Sealift Command civilian mariners and civilian contractors in a collaborative effort to successfully launch a Wave Glider unmanned surface vehicle (USV) from expeditionary fast transport ship USNS Burlington (T-EPF 10), June 30, 2023.

The launch took place during the Burlington's transit to Cartagena, Colombia ahead of the start of UNITAS LXIV. Colombia is this year's host for UNITAS, longest-running annual multinational maritime exercise in the world, scheduled to start on July 11, 2023.

“UNITAS is so unique and full of opportunities for innovation, providing an ideal location to experiment with service concepts and conduct combined training while close to home and

in a permissive environment,” said Burlington’s Military Detachment officer in charge, Cmdr. Michael Fleck.

Wave Glider is one of the unmanned systems in operation during the exercise as a part of the U.S. Naval Forces Southern Command/U.S. 4th Fleet (USNAVSOUTH/FOURTHFLT) Unmanned Integration Campaign. The campaign’s goal is to deploy and integrate unmanned systems and artificial intelligence tools into operations, which will bolster the Navy’s Marine Domain Awareness (MDA), counter-narcotics (CN) efforts and information sharing with partner nations.

“UNITAS is an outstanding avenue to introduce emerging naval concepts for multinational exercises and operations in the region,” said Burlington’s Military Detachment senior enlisted leader, Senior Chief Information Systems Technician Anthony Davis.

The Wave Glider USV runs on wave power, meaning the vertical wave motion is converted into forward thrusts. During UNITAS LXIV, the Wave Glider USV will provide Maritime Domain Awareness (MDA) in the exercise operations area during the underway portions of UNITAS.

The overall objective of the USNAVSOUTH/FOURTHFLT Unmanned Integration Campaign is to ultimately scale unmanned platforms to the fleet level while developing tactics, techniques, and procedures resulting in the U.S. Navy’s Hybrid Fleet of the 2030s.

UNITAS, Latin for Unity, is the longest-running multinational maritime exercise in the world. A U.S.-sponsored joint exercise, UNITAS was conceived in 1959, with the first UNITAS (UNITAS I) taking place in 1960. UNITAS has occurred every year since then.

U.S. Naval Forces Southern Command/U.S. 4th Fleet supports U.S. Southern Command’s joint and combined military operations

by employing maritime forces in cooperative maritime security operations to maintain access, enhance interoperability, and build enduring partnerships in order to enhance regional security and promote peace, stability and prosperity in the Caribbean, Central and South American region.

Clean Technology Lasers: The Maritime Industry's New Tool to Remove Corrosion and Scale



Shipbuilding professionals understand the value of pretreating metal surfaces of parts to remove corrosion.

Release from Laser Photonics

Laser systems quickly remove corrosion and scale from metal surfaces with less preparation and mess than traditional techniques

In the maritime industry, corrosion, and scale (where rust penetrates a metal surface) can quickly become an issue in an outdoor, salt sea spray laden environment. When sea spray evaporates, it leaves salt behind, leading to saltwater staining and accelerated corrosion.

So, most shipbuilders as well as those responsible for maintenance and repair understand the value of treating metal surfaces to remove corrosion, scale, and saltwater staining, which is vital to maintain essential interior and exterior components such as engines, generators, fuel pumps, winches, anchoring chains, latches, door hinges and locks. This is necessary to preserve not only function but also prevent further corrosion and deterioration including possible premature failure.

Unfortunately, traditional techniques used for this purpose such as sandblasting and chemical stripping are messy and require expensive consumables as well as substantial time for preparation and cleanup. Additionally, sandblasting and chemical stripping may not be feasible to clean, maintain, or recondition many of the ship's interior and exterior spaces. These methods are also drawing scrutiny from regulators like the EPA and OSHA since they can pose risks to applicators and the environment.

Although manual methods of cleaning and removal are available, such as chipping and using wire brushes and grinders, these are very labor intensive and time consuming.

Today, a more effective alternative is utilizing industrial-grade, precision laser-based systems that can remove corrosion and scale with a high-energy laser beam that leaves the substrate unaffected. The technology can also be used for

selective cleaning and even de-painting on access points and service latches when required. Preparation and cleanup time are minimal, and the low-maintenance equipment can last decades.

According to Vincent Galiardi, owner of Galiardi Laser Clean, a surface cleaning operator based in St. Charles County, Missouri, many people are surprised to learn that clean technology lasers are the most cost-effective, efficient, and safest method of metal surface preparation.

“Many people are unfamiliar with the use of lasers to pretreat metal surfaces,” says Galiardi. “When I do a demonstration, at first the people in attendance are skeptical. But after I use the laser to treat a small area, everyone starts talking and getting excited. By the end, when I let them try the equipment, everyone is having a good time and saying how great the laser works.”

Given its effectiveness treating metal surfaces, industrial laser systems are increasingly being used at shipyards, shipbuilding berths, and even aboard ships. Technicians can use mobile handheld units, or if needed the systems can be integrated into automated inline processing lines. With significant advantages in safety and efficiency, laser cleaning is poised to disrupt the surface treatment market across more sectors.

Resolving Conventional Cleaning Limitations

To treat metal surfaces, sandblasting or chemical stripping are traditionally used as industrial cleaning processes.

Sand Blasting

Abrasive sandblasting involves forcefully projecting a stream of abrasive particles onto a surface, usually with compressed air or steam. The silica sand used in abrasive blasting typically fractures into fine particles and becomes airborne,

which can cause serious or fatal respiratory disease.

When workers inhale crystalline silica, the lung tissue reacts by developing fibrotic nodules and scarring around the trapped silica particles, causing a fibrotic lung condition called silicosis. Estimates indicate that more than 1 million U.S. workers are at risk of developing silicosis and that more than 100,000 of these workers are employed as sandblasters.

In addition, particles are generated during abrasive blasting that further contribute to respiratory problems and other harmful health effects.

“When sand or any other media is used to knock off particles from a substrate, there is always a byproduct that has the potential to become airborne and inhaled,” says Galiardi.

“Industry has needed a cleaner, safer surface pre-treatment solution for a very long time,” adds Galiardi. “Sandblasting is inherently unsafe for operators. The silica glass used in sandblasting is toxic. An operator must wear a full HEPA suit when sandblasting to avoid breathing in particulates.”

Sandblasting also is time-consuming to clean up since the sand essentially scatters everywhere, even though it is usually considered a “fast” cleaning method.

Chemical Stripping

With chemical stripping, harsh, even toxic chemicals are used to strip metal-based objects of rust, paint, and contaminants to bare metal. However, for operators, exposure to corrosive acids and noxious chemical fumes is inherently dangerous. The process can also be time-consuming to prepare the proper chemical bath, achieve the required level of cleaning, and dispose of the waste. In addition, disposing of toxic chemicals is costly and closely regulated by agencies like OSHA and the EPA.

Safe, Effective Laser Cleaning

Laser-based systems have significant advantages over these traditional methods, including ease of use in which an operator simply points and clicks a high-energy laser beam at the surface. The substrate is not affected by the laser, and the systems do not create any mess or byproducts. The approach is eco-friendly, energy-efficient, and completes the job in half the time of traditional methods when preparation and cleanup are considered.

“In our experience, laser cleaning is as fast at removing rust or old coatings as other methods, but without the same amount of cleanup,” said Galiardi. “When we treat a surface with lasers, any fumes or dislodged particulate is extracted into a HEPA filter and the job is done. There is no media [sand, chemicals] to replenish or clean up.”

Galiardi Laser Clean uses laser systems made by Orlando, Florida-based Laser Photonics, a leading provider of patented industrial grade CleanTech[®] laser systems for cleaning and surface conditioning. The American-made systems function either as mobile standalone units or can be integrated into production lines.

The laser systems are available in portable and stationary models ranging from 50 to 3,000-watts (a 4,000-watt version is in development) with chamber sizes from 3' x 3' in size to 6' x 12'. The systems can also be installed in manufacturing lines in cabinets or operated by a robotic arm.

In the shipbuilding industry, operators are utilizing the industrial grade laser systems to maintain a wide range of vital interior and exterior equipment. Operators are using CleanTech systems to smooth surfaces and remove rust and scale from engines, generators, fuel pumps, water separators, winches, anchoring chains, gear shifting and throttle components without disassembly. This improves safety,

function, lifespan, and reduces the risk of premature failure, which could be very dangerous during an emergency such as a storm on the high seas.

The laser systems similarly maintain door hinges and locks as well as remove saltwater stains from metal surfaces. In addition, the technology is used for selective de-painting and cleaning of access points, service latches, and other maritime applications.

With clean laser technology, there is now an environmentally friendly alternative to abrasive blasting and chemical stripping for surface pretreatment. The approach is safer for operators and highly adaptable to a wide range of maritime applications.

“As people become more aware of laser-based systems and compare them to traditional methods, they need to factor in prep and cleanup time, which can significantly impact project cost. When the improved operator safety, equipment longevity, and lower maintenance of laser systems are also considered, the clean laser technology has a much higher ROI,” says Galiardi.

The longevity of low-maintenance laser systems further adds to their value, increasing ROI, and making replacement unnecessary for decades.

“CleanTech laser systems can last for 50,000 to 100,000 hours. That’s many decades working eight-hour days. After purchase, there’s virtually no maintenance necessary,” concludes Galiardi.

USMC Preparing for Full Rate Production of MADIS RWS



MADIS RWS production ongoing in Kongsberg's world-class facility in Pennsylvania

Release from Kongsberg Defense US

JOHNSTOWN, Penn. – July 10, 2023 – A critical system in the Marine Corps Ground-Based Air Defense (GBAD) portfolio, the Marine Air Defense Integrated System (MADIS) Remote Weapon Station has reached a pivotal milestone transitioning into full rate production. The remote weapon station is manufactured and managed by Kongsberg in Johnstown, Penn. and is a key component to the larger and holistic system which provides protection from drones and increased lethality

against evolving threats.

“The Marine Corps is leaning forward with orders for long-lead items to prioritize the timely production of these systems in support of Force Design 2030,” said William Dixon, MADIS Project Manager, KONGSBERG Protech Systems USA. “As we enter full-rate production for these remote weapon stations, we’re also discussing additional technology we can incorporate into the system to improve and expand their capabilities for the Marines.”

“Kongsberg’s Johnstown facility consistently yields remote weapon station manufacturing excellence, having produced more than 20,000 systems over the last 15 years,” said Eskild Aas, Director US PROTECTOR Programs, Kongsberg. “Delivering the LRIP systems and moving into full-rate production of the MADIS RWS exemplifies our rigorous processes, and is an important milestone for the program office and our team.”

The KONGSBERG RS6 RWS for MADIS RWS includes the XM914E1 30mmx113mm percussion-primed cannon with a co-axial M240C (7.62mm) machine gun, an integration kit for the STINGER Air-To-Air Launcher (ATAL) and provisions for future C-UAS defeat systems. MADIS is part of the U.S. Marine Corps’ plan to upgrade their two active Low Altitude Air Defense (LAAD) battalions. The first 30mm remote weapon system to be qualified on the Joint Light Tactical Vehicle platform (JLTV), MADIS RWS mounts on JLTVs and fights as a complimentary pair, designated as Mk1 and Mk2. The MADIS Mk1 features STINGER missiles, and neutralizes fixed and rotary-wing aircraft. Mk2 fulfills the Counter-Unmanned Aircraft System (C-UAS) mission requirement, while also providing radar and command-and-control for the pair.

The U.S. Marine Corps awarded Kongsberg the five-year, indefinite delivery / indefinite quantity other transaction authority (OTA) production contract in Sept. 2021. It has a ceiling of \$94 million and includes a series of Low-Rate

Initial Production (LRIP) systems, full-rate production units, spares and training. This production contract award followed a Sept. 2020 OTA contract award from the USMC to KONGSBERG for test articles and activities, which included Design Verification Testing (DVT), after a competitive process.

The KONGSBERG RS6 RWS for MADIS leverages technology and competence drawn from multiple counter-unmanned aircraft systems (C-UAS) and air defense programs. The system leverages commonality with the family of PROTECTOR RWS delivered and fielded with the U.S. Army and Marine Corps.

Draper Equips Small UAVs for Tomorrow's Battlefield



Draper developed new capabilities for small uncrewed aerial vehicles to improve situational awareness and threat detection for soldiers.

Credit: Draper

[Release from Draper](#)

CAMBRIDGE, Mass., July 10, 2023

In field tests, Draper demonstrates advances to its mobile military platform that include an autonomy framework, a sensor-driven mapping algorithm and sensors to detect the presence of chemical, biological, radiation and nuclear (CBRN) elements.

Battlefields entered a new era with the introduction of small unmanned aerial vehicles, or sUAVs. Commonly called drones, sUAVs enable soldiers to gain an aerial view of the

battlefield and improve their situational awareness of the battlespace.

Designed for low-altitude intelligence, surveillance and reconnaissance missions that depend on rapid deployment and agile maneuverability, sUAVs are being pushed to add more technology while also being asked to fly farther, smarter and better.

It's a situation that's challenging the developer community, according to Won Kim, a program manager at [Draper](#). His team is unveiling a new set of capabilities for sUAVs that represents an advance in the platform from remotely operated vehicles to those capable of fully autonomous operations.

One new capability is to equip sUAVs so that they can fly ahead of a military unit to scout a location and sense the presence of chemical, biological, radiological and nuclear (CBRN) elements. Hazard detection using an sUAV can reduce the kinds of risks soldiers might encounter by scouting a location using handheld or vehicle-mounted sensors.

"Customers are asking, can an sUAV sniff out these CBRN hazards in place of humans? How smart does an sUAV need to be to search, map and locate these CBRN hazard without a remote operator? When an sUAV encounters a building or obstacle, can it fly in and around it safely? These are just some of the questions our team is exploring," Kim said.

Kim's team set to work on these challenges in a program funded by the Joint Program Executive Office for Chemical, Biological, Radiological and Nuclear Defense ([JPEO-CBRND](#)) called CSIRP, which stands for CBRN Sensor Integration on Robotics Platform. The team investigated the customer needs through field observations, noting requirements such as sensor efficiency and resolution, flight speed, height, duration, autonomous operation, sensor-driven mapping, networked command and enhanced situational awareness through shared interactive

digital maps.

Soldiers operating in urban environments, for instance, need an sUAV that can navigate in and around buildings and obstacles, such as trees or vehicles even when GPS signals are degraded or completely unavailable. Soldiers also need sUAVs to remotely search, detect, map and locate dangerous CBRN hazards. Soldiers dispersed across an area also want a way to share information that is secure, networked and mapped to the environment.

The new capabilities Draper developed for [CSIRP](#) take advantage of multiple environmental inputs, along with a sensor fusion algorithm that can synthesize data from instruments including GPS, LiDAR, inertial measurement units, magnetometers and cameras. All that fused information is designed to achieve robust and autonomous operation through the use of new algorithms developed for CSIRP that make the sUAV capable of obstacle detection and avoidance.

Under CSIRP, Draper integrated the sUAV with a mobile computing app, running on a handheld device, called the Tactical Assault Kit (TAK), which gives soldiers a map-based common operating picture on a shared network and provides enhanced situational awareness for command and control. Draper has developed software for every version TAK and the CBRN sensor plugin since it was first developed by the Department of Defense.

In a series of field tests, Draper engineers set the sUAV on a path of several miles, over and around obstacles, navigating autonomously until it detected a simulated CBRN hazard and conducted a sweep of a field one square kilometer in size to map elements of interest. The information was gathered onboard the UAV and shared with the TAK operator and users in the network, including headquarters.

“Mobile military technologies, like sUAVs, can be force

multipliers and force protectors at the same time,” Kim said. “Anytime you can deploy technology like an sUAV to detect suspected CBRN hazards remotely and operate independently without exposing a soldier unnecessarily to harm is an advance in warfighter systems, and that’s important to us at Draper.”

“Draper designed the autonomy framework and sensor-driven mapping algorithm to be an extensible, modular and resilient mobility platform that is vehicle and processing system agnostic,” said Julius Rose, associate director for Sensors and Delivery at Draper. “As new capabilities and vehicles are developed, autonomous systems should be readily adaptable to support numerous mission types across domains, be that air, ground or sea. Development needs to be efficient, reusable and agile to keep up with the pace of the needs of soldiers and personnel in the field.”

Draper’s work on the CSIRP program builds on its legacy in autonomous systems, algorithms and positioning, navigation and timing. Advances made through the program will be applied to other air systems, as well as ground, marine and underwater systems. In addition to working with autonomous systems, Draper has assisted U.S. government agencies with projects including cybersecurity, technology protection and miniature cryptography for high stress environments.