AUVSI Launches Unmanned Maritime Systems Advocacy Committee

ARLINGTON, Va. – The Association for Unmanned Vehicle Systems International (AUVSI), the world's largest nonprofit organization dedicated to the advancement of unmanned systems and robotics, has formed an Unmanned Maritime Systems (UMS) Advocacy Committee to focus on the development of policy positions to support the advancement of the industry, the association announced in a July 9 release.

"Unmanned maritime systems allow military and commercial operators alike to go farther and deeper than ever before," said Brian Wynne, president and CEO of AUVSI. "The input provided by the UMS Advocacy Committee will help us speak with a unified voice and enable all our members to advocate for the growth of the industry."

The UMS Advocacy Committee will be chaired by Thomas Reynolds, vice president of Business Development for Hydroid Inc./Kongsberg Maritime. Reynolds, who currently leads all Kongsberg Maritime business with the U.S. government, previously served as a commissioned officer in the U.S. Navy, where he served as commander of the Explosive Ordinance Disposal Task Group, U.S. Fifth Fleet, among other roles.

Wayne Prender, vice president for Applied Technology and Advance Programs at Textron Systems, will be the committee's vice chair. In his role at Textron, Prender is responsible for engineering development programs, advancing areas such as the Common Unmanned Surface Vehicle and Cased-Telescoped Weapons and Ammunition, as well as emerging capabilities and development programs. He is a former commissioned officer in the U.S. Army, where he was deployed to Iraq and awarded the

Bronze Star.

The committee includes representatives from BAE Systems, L3 Technologies, Leidos, Lockheed Martin, Northrop Grumman and Seaborn Defense.

The UMS Advocacy Committee recently formalized a set of Policy Priorities to help guide the committee's legislative and regulatory actions. The priorities state that the UMS Advocacy Committee shall:

■ Establish the UMS Advocacy Committee as the preeminent industry voice influencing acquisition and regulatory policies and processes.

■ Facilitate the growth of UMS through active engagement with the government and commercial sectors.

■ Collaborate with ship owners, operators, shipyards, ports, federal maritime agencies, technology developers, classification societies and academia to further integrate advanced automation for maritime platforms into the domestic market.

■ Develop the future of the UMS workforce through technology-focused education.

Coast Guard Opens Forward Operating Location Kotzebue for Arctic Shield 2018

JUNEAU, Alaska – The Coast Guard opened forward operating location (FOL) Kotzebue, Alaska, in support of Arctic Shield

2018 operations throughout the Arctic region July 1, the Coast Guard 17th District said in a release.

As part of operation Arctic Shield 2018, Coast Guard Air Station Kodiak deployed two MH-60 Jayhawk helicopters and crews to Kotzebue to give the Coast Guard an opportunity to leverage existing infrastructure and strategically positions its crews to effectively respond to maritime emergencies in the Bering Strait and the Northern Slope.

In addition to FOL Kotzebue, the Coast Guard will have cutters Healy, Stratton and Douglas Munro engage in operations encompassing a variety of missions from Dutch Harbor through the Bering Strait and along the North Slope including the Northern Alaska Outer Continental Shelf.

Operation Arctic Guardian is also a part of Arctic Shield, and it is an exercise that will conduct outreach with community responders in the Arctic by teaching basic oil spill response tactics and sub-area planning. Several Coast Guard personnel and the Alaska Department of Environmental Conservation will conduct Operation Arctic Guardian in Bethel.

“The Forward Operating Location in Kotzebue helps mitigate several of the major challenges when operating in the Arctic including the environment, vast distances and limited infrastructure,” said Rear Adm. Matthew Bell, commander, Coast Guard 17th District. “Arctic Shield 2018 operations and activities will include performing multiple missions, leveraging partnerships and increasing maritime domain awareness to reduce risk and promote safe, secure and environmentally responsible maritime activity. “

Arctic Shield operations began in 2009 to support Coast Guard missions in response to increased maritime activity in the Arctic. Arctic Shield operations and activities include focusing on promoting national interests and sovereignty throughout the Arctic. Arctic Shield 2018 operations and

activities will include performing multiple missions, leveraging partnerships and increasing maritime domain awareness to reduce risk and promote safe, secure and environmentally responsible maritime activity.

Arctic Shield 2018 focuses on understanding and responding to the risks to the sea, risks to those on the sea, and risks from those who might use the sea to do us harm. Increasing maritime domain awareness, building and strengthening partnerships with both national and international Arctic stakeholders, and having an active presence in the region will enhance the safety, security and stewardship of the nation's Arctic waters.

Virginia-Class Submarine Indiana is Delivered to U.S. Navy

NEWPORT NEWS, Va. – Huntington Ingalls Industries' Newport News Shipbuilding division delivered the newest nuclear-powered fast-attack submarine to the U.S. Navy, the company said in a June 25 release.

The future USS Indiana (SSN 789) is the 16th Virginia-class submarine built as part of the teaming agreement with General Dynamics Electric Boat and the eighth delivered by Newport News.

"We are proud to deliver Indiana to the Navy," said Dave Bolcar, Newport News' vice president of submarine construction. "For the nearly 4,000 shipbuilders who participated in construction of the boat, there is nothing

more important than knowing that this vessel will support the Navy's missions."

Indiana, which began construction in September 2012, successfully completed sea trials earlier this month. The vessel will be commissioned later this year.

Virginia-class submarines are built for a broad spectrum of open-ocean and littoral missions to replace the Navy's Los Angeles-class submarines as they are retired. Virginia-class submarines incorporate dozens of new technologies and innovations that increase firepower, maneuverability and stealth and significantly enhance their warfighting capabilities. These submarines are capable of supporting multiple mission areas and can operate at submerged speeds of more than 25 knots for months at a time.

Navy Developing Ship Coatings to Reduce Fuel, Energy Costs

ARLINGTON, Va. – It can repel water, oil, alcohol and even peanut butter. And it might save the U.S. Navy millions of dollars in ship fuel costs, reduce the amount of energy that vessels consume and improve operational efficiency.

The Office of Naval Research (ONR) is sponsoring work by Dr. Anish Tuteja, an associate professor of materials science and engineering at the University of Michigan, to develop a new type of "omniphobic" coating. This chemical coating is clear, durable, can be applied to numerous surfaces and sheds just about any liquid.

Of particular interest to the Navy is how omniphobic coatings

can reduce friction drag – resistance created by the movement of a hull through water – on ships, submarines and unmanned underwater vessels.

Compare friction drag to jogging through a swimming pool. Because of the water's resistance, each stride is more difficult and requires more energy and effort.

"A significant percentage of a ship's fuel consumption [up to 80 percent at lower speeds and 40 to 50 percent at higher speeds] goes toward maintaining its speed and overcoming friction drag," said Dr. Ki-Han Kim, a program officer in ONR's Sea Warfare and Weapons Department. "If we could find a way to drastically reduce friction drag, vessels would consume less fuel or battery power, and enjoy a greater range of operations."

Tuteja's omniphobic coating could be a solution. Picture two ships sailing at the same speed – one dealing with friction drag and the other covered in a coating that causes water to bead up and slide off the hull easily. The coated vessel theoretically would guzzle less fuel because it doesn't have to fight as much water resistance while maintaining speed.

While repellent coatings aren't new, it's hard to create one that resists most liquids and is tough enough to stick to various surfaces for long periods of time. Take a Teflon-coated pan, for example. Water will bead up and roll off the pan, while cooking oil will spread everywhere.

"Researchers may take a very durable polymer matrix and a very repellent filler and mix them," said Tuteja. "But this doesn't necessarily yield a durable, repellent coating. Different polymers and fillers have different miscibilities [the ability of two substances to mix together]. Simply combining the most durable individual constituents doesn't yield the most durable composite coating."

To engineer their innovative coating, Tuteja and his research

team studied vast computer databases of known chemical substances. They then entered complex mathematical equations, based on each substance’s molecular properties, to predict how any two would behave when blended. After analyzing hundreds of combinations, researchers found the right mix.

The molecular marriage was a hit during laboratory tests. The rubber-like combo can be sprayed, brushed, dipped or spin-coated onto numerous surfaces, and it binds tightly. The coating also can withstand scratching, denting and other hazards of daily use. And the way the molecules separate makes the coating optically clear.

Besides reducing friction drag, Tuteja envisions other Navy uses for the omniphobic coating – including protecting high-value equipment like sensors, radars and antennas from weather.

In addition to omniphobic coatings to lessen friction drag, ONR is sponsoring other types of coating research to prevent corrosion on both ships and aircraft and fight biofouling (the buildup of barnacles on hulls). Similar coatings can also prevent ice from forming on ships operating in cold regions, or make ice removal much easier than conventional methods like scraping.

Tuteja’s team is conducting further tests on the omniphobic coating, but they plan to have it ready for small-scale military and civilian use within the next couple of years.

Coast Guard Cutter Campbell

Returns with $209 Million Cocaine Seizure

BOSTON – The Coast Guard Cutter Campbell returned to its homeport in Kittery, Maine, June 15 after an 80-day counternarcotic patrol in the Caribbean Sea and Eastern Pacific Ocean, the Coast Guard 1st District said in a release.

Campbell's crew disrupted six narcotic smuggling ventures, seized about 12,000 pounds of cocaine worth $209 million and detained 24 suspected smugglers.

Equipped with an MH-65 Dolphin helicopter crew deployed from the Helicopter Interdiction Tactical Squadron unit based in Jacksonville, Florida, Campbell patrolled known narcotic transit zones in the Eastern Pacific Ocean off the coast of Central and South America in support of Joint Interagency Task Force-South, which facilitates international and interagency interdiction to enable the disruption and dismantlement of illicit and converging threat networks in support of national and hemispheric security.

Campbell's crew also rescued three sea turtles found entangled in loose fishing gear.

"During this challenging deployment, the crew excelled in all assigned missions and should be exceptionally proud of their accomplishments," said Cmdr. Mark McDonnell, Campbell's commanding officer. "Our efforts to integrate with partner agencies and nations are key to the safe and successful execution of these complex interdiction operations as we work together to remove cocaine bound for the United States and help dismantle criminal networks."

Campbell is a 29-year-old Famous-class medium-endurance cutter, with a crew complement of 100.

Wave Gliders Selected to Study Arctic and Southern Oceans

SUNNYVALE, Calif. – Oceanographers from Scripps Institution of Oceanography (Scripps) and the Applied Physics Laboratory of the University of Washington (APL-UW) have selected Wave Glider long-duration ocean robots as their sensor platform to conduct advanced scientific research in the most inhospitable and remote regions of the Arctic and Southern oceans, according to a June 5 release from Liquid Robotics, a Boeing company.

Using Liquid Robotics Wave Gliders, proven in extreme ocean conditions (sea state 6-plus), scientists will obtain real time data and rare insights into the dynamic conditions that drive the world's weather and climate. This data is critical for scientists to understand and improve global ocean weather modeling and climate prediction.

The oceanographers leading these important missions are:
■ Dr. Eric Terrill and Dr. Sophia Merrifield, Coastal Observing Research and Development Center, Scripps.
■ Dr. Ken Melville and his team at the Air-Sea Interaction Laboratory, Scripps.
■ Dr. Jim Thomson and his team in the Stratified Ocean Dynamics of the Arctic program at the APL-UW.

Each team will integrate sophisticated oceanographic and atmospheric sensors onto the Wave Gliders to measure extreme wave states, winds, temperature and salinity in the upper layers of the ocean. Historically, these regions have been

undersampled due to the dangers and risks of operating in these turbulent oceans. With the help of unmanned systems, the oceanographers will be able to observe the real time weather and climate conditions safely from shore.

“The reliability of the platform, modular payloads, and proven navigation capabilities led to our decision to select the Wave Glider for our upcoming science program,” said Terrill, director of the Coastal Observing R&D Center at Scripps. “Tackling at-sea science questions has plenty of challenges and we needed a platform we could trust and adapt. The modularity allows us to deploy our own sensors and adapt autonomy algorithms so that the vehicle will optimally sample the ocean.”

Working together with Liquid Robotics, these oceanographers have successfully conducted long-duration scientific missions in the Arctic, Pacific, Southern and the North Atlantic oceans. Exploring the vast, remote regions of our ocean, especially in the Arctic and Antarctica, is incredibly challenging. Deploying Wave Gliders in the most energetic sea conditions on Earth will help scientists gain a better understanding and modeling of our changing planet.

“In 2016, we successfully completed a three-month, 2,000-kilometer mission in the Southern Ocean where the Wave Glider performed through 6-meter-high waves, extreme winds and swam through the world’s largest ocean current, the Antarctic Circumpolar Current,” said Thomson, senior principal oceanographer at the APL-UW. “The data collected provided unprecedented temporal and spatial coverage and I have great confidence our upcoming Arctic mission in the Beaufort Sea, part of the Stratified Ocean Dynamics of the Arctic, will again provide valuable insights.”

Marine Corps to Award Orders for Cold Weather Boots and Socks

MARINE CORPS BASE QUANTICO, Va. – Marines will stay warm during ambient cold weather operations with new boots and socks. Marine Corps Systems Command (MCSC) intends to award sole source purchase orders for two types of Intense Cold Weather Boots (ICWBs) and Intense Cold Weather Socks (ICWSs) to improve Marines' performance in cold weather environments. A total of 2,000 boots and 50,000 pairs of socks will be delivered from four vendors by Sept. 28.

"Based on market research, industry days and events such as Modern Day Marine, we narrowed our decision for the orders down to two companies for cold weather boots and two for socks," said Todd Towles, program analyst for the Clothing and Equipment Team at MCSC.

There are currently no Marine Corps issue boots designed for use in the -20 to 20 degrees Fahrenheit range. The Temperate Weather Marine Corps Combat Boot was designed for a temperature range between 20 to 60 degrees Fahrenheit, and the Extreme Cold Weather Vapor Barrier Boot was designed for a range between -65 to -20 degrees Fahrenheit.

This effort to acquire the cold weather boots and socks will help MCSC evaluate commercial, off-the-shelf solutions and offer the potential to reduce or eliminate the current environmental protection gap, said Towles. The socks will have much higher wool content than the polypropylene wool socks Marines currently use. Additionally, the Clothing and

Equipment Team is hopeful the new gear will offer increased water repellency, comfort and insulation in extreme cold weather environments.

MCSC's Program Manager Infantry Combat Equipment will conduct a field user evaluation December through March. The team will gather input from Marines as they wear the ICWB and ICWS prototypes at the Mountain Warfare Training Center, Fort McCoy and Norway.

Feedback regarding fit, form and function will be collected along with how well both prototypes of the ICWB and ICWS perform in sub-zero temperatures.

"The Army is conducting evaluations with similar boots and socks, so there is potential to have some consistency with our results and products," said Lt. Col. Chris Madeline, program manager for ICE. "Marines will keep the prototype boots through the duration of testing. Once data is collected, it will inform future acquisition decisions and allow the Corps to purchase boots and socks that bridge the gap between the existing cold weather boots."

The Clothing and Equipment Team falls under Program Manager Infantry Combat Equipment at MCSC.

New 'Rebreather' Helps Navy Divers Beneath the Waves

ARLINGTON, Va. — The U.S. Navy diver hoisted a 60-pound life-support regulator onto his back, then donned a 30-pound metal helmet. Fellow divers connected his diving suit to an "umbilical" hose pumping in breathing gas and establishing

communications with the surface. After receiving approval to hit the water, the diver descended into a large test pool at Naval Surface Warfare Center Panama City (NSWC), Florida – home to the Navy Experimental Diving Unit.

The diver's mission: demonstrate the effectiveness of the MK29 Mixed Gas Rebreather – a new prototype system that's the first of its kind within the Navy diving community, developed by NSWC Panama City.

The technology is sponsored by the Office of Naval Research Global (ONR Global) TechSolutions program. TechSolutions is ONR Global's rapid-response science and technology program that develops prototype technologies to address problems voiced by Sailors and Marines, usually within 12 months.

"This rebreather system is an awesome opportunity to enhance the capabilities of Navy divers and accelerate their deployments," said ONR Command Master Chief Matt Matteson, who heads up TechSolutions.

Navy diving missions include underwater rescues, explosive ordnance disposal, ship hull maintenance, recovery of sunken equipment, and salvage of vessels and aircraft.

Beneath the waves, Navy divers breathe a careful mixture of oxygen and nitrogen. Below 150 feet, however, nitrogen becomes toxic – leading to nitrogen narcosis, a drowsy state that can dull mental sharpness severely and jeopardize safe return to the surface.

The solution is to replace nitrogen with helium. However, helium is expensive and hard to obtain because of recent worldwide shortages. And the Navy needs a lot of it for missions and training exercises, requiring canisters of the gas to be transported on accompanying ships or planes.

The MK29 rebreather solves these problems. Used oxygen-helium is filtered through a carbon dioxide scrubber – which removes

carbon dioxide and recycles the breathable gasses back to the diver.

The result? Very little venting (giveaway bubbles) – or wasted helium.

“The MK29 decreases helium requirements by approximately 80 percent,” said Dr. John Camperman, a senior scientist overseeing the development of the MK29 at NSWC Panama City. “Divers can perform more dives with the same amount of gas or bring less helium.”

Test results suggest this system will be a major asset to Navy divers-who cannot only perform more dives, but also stay underwater longer if surface supply gas is interrupted.

The MK29 even reduces breathing noise and fogging of helmet viewports. It’s also the first piece of Navy diving equipment to feature 3D-printed titanium tubing that connects hoses from the helmet’s breathing manifold to the regulator backpack. That titanium reduces the risk of breathing hoses being sliced by sharp or jagged underwater objects.

The idea for the MK29 came from a NSWC Panama City master diver, who contacted TechSolutions seeking a way to reduce helium consumption while using newly available rebreather technology. Recognizing the expertise of Camperman and his team, TechSolutions asked them to develop the MK29.

Camperman’s research team will conduct further MK29 tests this year-and hope to see the rebreather issued throughout the fleet by next year.

HII Completes Initial Sea Trials of Virginia-Class Submarine Indiana

NEWPORT NEWS, Va. – Huntington Ingalls Industries' Newport News Shipbuilding division has successfully completed the initial sea trials on the newest Virginia-class submarine, Indiana (SSN 789), the company announced in a May 25 release.

The initial round of sea trials, known as alpha trials, provides an opportunity to test all systems and components. It includes submerging for the first time and high-speed maneuvers while on the surface and submerged.

"Sea trials is a significant milestone and the first major test of [a] submarine's capabilities at sea," said Dave Bolcar, Newport News' vice president of submarine construction. "We are pleased with how Indiana performed and look forward to continuing our testing program before we deliver the boat to the U.S. Navy later this year."

Construction of Indiana began in 2012. The boat – the 16th Virginia-class submarine built as part of the teaming partnership with General Dynamics Electric Boat – was christened in April 2017. Indiana Video

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Lockheed Martin Tests Long-Range Anti-Ship Missiles for

Super Hornet Requirement

ORLANDO, Fla. – Lockheed Martin announced on Wednesday it has successfully fired two production representative Long-Range Anti-Ship Missiles (LRASMs) from a U.S. Air Force B-1B.

In the event over the Sea Range at Point Mugu, California, a U.S. Air Force B-1B from Dyess Air Force Base, Texas, released the pair of LRASMs. The missiles navigated through all planned waypoints, transitioned to mid-course guidance and flew toward the moving maritime target using inputs from the onboard sensors. The missiles then positively identified the intended target and impacted succesfully.

“The success of this second dual-LRASM test event speaks volumes,” said David Helsel, LRASM director at Lockheed Martin Missiles and Fire Control. “As LRASM moves toward early operational fielding for the U.S. Air Force and U.S. Navy, the weapon system continues to demonstrate critical capabilities that our warfighter needs.”

LRASM is designed to detect and destroy specific targets within groups of ships by employing advanced technologies that reduce dependence on intelligence, surveillance and reconnaissance platforms; network links; and GPS navigation in contested environments. Lockheed Martin says the LRASM will play “a significant role” in ensuring military access to operate in open ocean, due to its enhanced ability to discriminate and conduct tactical engagements from extended ranges.

LRASM is a precision-guided, anti-ship standoff missile based on the Joint Air-to-Surface Standoff Missile – Extended Range. The air-launched variant provides an early operational capability for the U.S. Navy’s offensive anti-surface warfare Increment I requirement to be integrated onboard the U.S. Air Force’s B-1B in 2018 and on the U.S. Navy’s F/A-18E/F Super

Hornet in 2019.