Saildrone USVs to Collect Data on Gulf Stream

A Saildrone craft near Miramare Castle in Trieste, Italy, following a 2010-2020 Atlantic-to-Mediterranean mission. *NATIONAL INSTITUTE OF OCEANOGRAPHY AND APPLIED GEOPHYSICS*

ARLINGTON, Va. — Saildrone Inc., an operator of ocean-going unmanned surface vessels (USVs), has been selected by Google to collect oceanographic data on the Gulf Stream.

"Saildrone has been selected to receive a grant of over €$1 million ($1.2 million USD) from the Google.org Impact Challenge on Climate to collect data in the Gulf Stream that has the potential to transform weather forecasting and our ability to create more accurate global carbon budgets," Saildrone spokeswoman Susan Ryan said in a statement to *Seapower*.

"The Gulf Stream region has a significant impact on weather

and climate in Europe and around the globe but is undersampled due to the violent seas and harsh weather in the region," Ryan said. "These treacherous conditions make it too dangerous to send research ships and crew into the area for extended periods, especially in winter. It is shocking that 70% of the world is covered by oceans, yet only 2% of the ocean has been sampled for critical ocean data."

"Saildrone is a company building and operating unmanned surface vehicles that are powered primarily by solar energy, with wind being the primary propellent for the craft," said Ron Tremain, Saildrone's vice president for Maritime Domain Awareness during an earlier interview with *Seapower*.

The Gulf Stream expedition will be conducted by several of Saildrone Explorers, which are 23 feet long and typically proceed at four knots by sail.

The carbon-fiber sail on each is more like a wing than a sail, but it is a sail that can be controlled mechanically and with the wind. Depending on which direction we want it to sail, the operator can make adjustments to increase the speed, decrease the speed, change course direction as needed, Tremain said.

The Explorer, the smallest of Saildrone's USVs, are fitted with an advanced sensor suite of atmospheric and oceanographic sensors, combined with radar, the Automatic Information System, and a set of electro-optical cameras.

Saildrone will launch six Explorer USVs to spend up to a year continuously collecting critical data in the Gulf Stream while creating no environmental footprint, Ryan said. This mission will collect critical data at a resolution that has not been possible previously, yielding new insights into the transport of heat and carbon around our oceans.

Admiral: Artificial Intelligence Will Be A Wingman, Not a Lead

Sailors assigned to the "Wildcards" of Helicopter Sea Combat Squadron (HSC) 23 prepare an MQ-8B unmanned helicopter for routine flight operations on the flight deck of the Independence-variant littoral combat ship USS Gabrielle Giffords (LCS 10), July 7, 2020. *U.S. NAVY / Mass Communication Specialist 2nd Class Brenton Poyser*

ARLINGTON, Va. — The Navy is very much on board for integrating artificial intelligence (AI) and machine learning into its networks, but human decision makers must always be part of the decision process in warfighting, an admiral said.

"From a warfighting perspective, artificial intelligence

subsets would be enablers or augments to the human in the loop," said Rear Adm. Paul Spedero Jr., director, Fleet Integrated Readiness and Analysis, U.S. Fleet Forces Command, speaking April 8 during a Navy League webinar sponsored by Deloitte. "That has always been our approach. I don't see that changing. There are some things that can't be replaced; the experience of a seasoned warfighter in the field being able to assess things that a machine – no matter how much we teach it – may never be able to pick up on. There's always going to be a necessity for [experience-based decision making]. That necessity for war fighting will never go away – to have a human in the loop.

"AI will be our wingmen," he said. "It will not be the lead in a fight."

Spedero said in the world of data analysis, his current focus, there "certainly is a place for AI, particularly machine learning, as we try to get to that predictive and prescriptive level of data analytics. We're entering into mathematical equations and regressions that just can't be done manually and algorithms you want [machines] to learn with demonstrated performance and adjust the coefficients within that [so] you can tighten your tolerance and lower your upper and lower limits of variance get closer to each other."

The admiral, who is on the staff of Adm. Chris Grady, said his office is using data analytics "to identify barriers to force readiness," to make sure the Optimized Fleet Readiness Plan is working correctly, continually assessing it "to get it right." He is working to determine the metrics down to the unit level that will define what the readiness of the force is.

Also speaking in the webinar was Dr. Patrick O'Connell, chief digital transformation officer for the Navy, who said as the Navy confronts the challenge of processing massive amounts of data to make decisions, transformation works best when it it is both pushed down from the top of the

organization and pushed up from the bottom. Institutional culture is one of the hardest things to change when trying to implement a revolutionary transformation, he said.

VTG Awarded Navy Contract to Modernize Combat Systems Across the Fleet

VTG has been awarded a $188 million Navy contract to help modernize combat systems across the fleet, including the Aegis Combat System, shown here in 2017 undergoing a test on the guided-missile cruiser USS Mobile Bay (CG 53). *U.S NAVY Mass Communication Specialist 1st Class Chad M. Butler*

CHANTILLY, Va. – VTG has been awarded the Technical Insertion 16 Sustainment, Installation, Procurement and Engineering

Services contract by the Naval Surface Warfare Center Port Hueneme Division, a field activity of the Naval Sea Systems Command (NAVSEA), the company said in an April 7 release. The indefinite delivery, indefinite quantity contract has a potential value of $188 million and a five-year period of performance.

“VTG has a proud legacy of closely collaborating with the Navy to engineer the next generation of sea power,” said John Hassoun, VTG president and chief executive officer. “The TI16 program enables VTG to build upon that legacy, expanding our technical expertise, strengthening our partnership with NSWC Port Hueneme and NAVSEA, and – most importantly – modernizing the fleet.”

The TI16 program is the U.S. Navy’s enterprise approach to modernizing combat systems across the surface fleet, most notably the Aegis Combat System, and includes all cruisers and destroyers, aircraft carriers, and amphibious ships. TI16 also enables the Navy to introduce the latest commercial off-the-shelf technologies and open architecture designs into its combat systems.

VTG will leverage its robust, full-lifecycle combat-systems engineering capabilities to fulfill TI16 program requirements. The company currently provides prime contract warfare, control, and C5I engineering services to the NAVSEA Naval Sea Systems Engineering Directorate and has over 50 years of experience installing and integrating advanced C5ISR systems aboard every existing U.S. Navy surface ship and submarine class.

Most recently, VTG completed the successful installation and integration of the ODIN directed-energy laser weapon system aboard two Arleigh Burke-class destroyers. The company will also leverage its growing digital and software engineering capabilities. Earlier this month, VTG announced that it had begun work on a prime contract to develop the future state of

the Navy Operational Architecture and to optimize fleet interoperability. The company also introduced the VTG Battle Lab, an industry-integrated model-based systems engineering environment for next-generation warfare systems.

CNO: Programs Must Advance the Navy's Core Missions

Chief of Naval Operations (CNO) Adm. Mike Gilday, center, renders a salute to Sailors as he embarks the Freedom-class littoral combat ship USS Billings (LCS 15) in Florida in March. *U.S. NAVY / Mass Communication Specialist 3rd Class Austin Collins*

ARLINGTON, Va. – The Navy's top officer emphasized the need to focus on the Navy's reasons for being to avoid tangents that ultimately detract from its role in the defense of the nation.

Chief of Naval Operations Adm. Michael Gilday, speaking in a webinar of the Center for a New American Security, a Washington think tank, said the Navy missions of sea control and power projection are so obvious as to be trite to emphasize, but needed constant attention to perform.

“There have been cases in the past of where you lose sight of those ends – what your main thing is – you can get off track and put precious resources against big programs that don’t advance the Navy or any service with respect of those ends,” Gilday said.

“The things that we’re going to spend money on are going to make us more lethal and more effective with respect to sea control and power projection, and that goes hand-in-glove with the Distributed Maritime Operations concept and how that fits into the broader Joint Warfighting Concept that the chairman of the Joint Chiefs is working with his staff that I expect the secretary of defense to ultimately endorse.”

Gilday emphasized that recent studies of the force structure said the nation needed a larger, more capable Navy.

“Over the past two decades, we have tended not to put strategic investments behind the fleet than we probably should have, so we put ourselves in a situation where we’re falling behind,” he said, noting that while the size of the fleet matters, it was “easy to get seduced by numbers. What we really need to be focused on is capabilities, particularly what capabilities the Navy can close for the joint force.”

The CNO said the Navy’s shipbuilding plan, which was based on the Naval Force Structure Study, “was really focused on operationally relevant metrics – things like lethality, survivability, operational reach – things that are going to allow the Navy to synergistically be much more effective within the joint force.”

The admiral also said factors that can’t be ignored include

“total ownership cost, maintenance cost, technical risk of new programs versus operational risk of in the transition of sun-downing legacy programs, industrial base capacity and what the art of the possible is or is not with respect to certain platforms.

“In the end, what we become more focused on with respect to the analysis that we’ve done is the composition of the fleet with respect to capabilities that then translates into platforms,” Gilday said.

The CNO said the force structure studies show more emphasis on undersea capabilities and smaller ships that are more distributed than on larger ships, and more emphasis on offensive hypersonics, directed energy weapons and logistics ships.

“That analysis is sound,” he said. “My take on discussions inside the Pentagon with OSD [the Office of the Secretary of Defense] as we close on the [fiscal 2022] budget, we are grounding decisions on that analysis that was done last year under [Defense] Secretary [Mark] Esper. “That analysis is not static. We have ongoing experiments, fleet battle problems, exercises, war games and analysis.”

Gilday said in a few weeks, the Navy will conduct an exercise off California that will “further inform our understanding of where we need to go with unmanned capabilities, and then the numbers.”

Chinese, Russian Naval Build-

ups Keep U.S Navy ‘Elbowing’ for Advantage, Navy’s Intel Director Says

U.S. Sailors prepare for flight operations on the flight deck of the aircraft carrier USS Theodore Roosevelt (CVN 71) April 6, 2021, in the South China Sea. The Theodore Roosevelt Carrier Strike Group is on a scheduled deployment to the U.S. 7th Fleet area of operations. As the U.S. Navy’s largest forward-deployed fleet, 7th Fleet routinely operates and interacts with 35 maritime nations while conducting missions to preserve and protect a free and open Indo-Pacific Region. *U.S. NAVY / Mass Communication Specialist 3rd Class Alexander B. Williams*

ARLINGTON, Va. — The naval build-ups and more frequent activity of the Chinese and Russian navies in recent years is keeping the U.S. Navy’s intelligence activities busily engaged in collection and analysis.

“Business is good; there’s lots of opportunity out there,” said Vice Adm. Jeffrey Trussler, deputy chief of naval operations for Information Warfare and director of Naval Intelligence, speaking April 6 at a Navy League Special Topic Breakfast sponsored by General Dynamics, commenting on the need for increased attention to the near-peer competitors.

“Day to day, talk about information overload!” Trussler said. “The daily questions that might come out of ‘What if?’ [are] non-stop. In this 21st century, information is available. We want to develop capabilities that best position us, best give us advantage in the competitive space. We want to develop capabilities that might cause adversaries pause and say, ‘Not today.’”

Trussler said the Navy’s job is to be ready.

“We don’t want a kinetic event,” he said. “We would love to prevent it, showing that strength, understanding what their vulnerabilities are, what their capabilities are, how we might counter [them], how we might demonstrate that we’re ready, we know where you are, and what you [doing]. That’s the cat and mouse that goes on right now.”

The admiral said the Navy needs to be ready from day one if deterrence fails.

“Day one doesn’t happen because of what we do day minus one,” he said. “That is what Navy intel, in alignment and in conjunction with the larger intelligence community, is looking for: those opportunities and vulnerabilities at day minus one, or day minus two … before weapons fly.

“In the 21st century, before weapons fly, there is a lot that is going to be happening in the domains that are hard to get your arms around of at sea,” he said. “That’s the elbowing that goes on right now for information advantage, a little different than what was going on in the Cold War, a little more human-oriented advantage for information that’s taking

place day after day in the cyber world."

Trussler said that the intelligence community is trying to stretch the timeline of warning as much as possible.

"We'd like it to be of days," he said. "If not, we'd like it to be in hours, but it may be only minutes or seconds, so that's why we've got to develop the systems and the processes that can take advantage of that at the speed that commanders need to make decisions and hold that advantage."

Fleet Forces Re-Designation to Atlantic Fleet On Hold, CNO Says

Chief of Naval Operations Adm. Mike Gilday, right, during a February visit to San Diego. Gilday says the plan to bring back the name U.S. Atlantic Fleet is on hold pending the ongoing Global Force Posture Review. *U.S. NAVY / Theresa McKenrick*

ARLINGTON, Va. – The Navy's plan to bring back the name "U.S. Atlantic Fleet" is on hold, the Navy's top officer said.

"Right now, implementation is on hold, based on the findings of the ongoing Global [Force] Posture Review," said Chief of Naval Operations (CNO) Adm. Michael Gilday, speaking April 5 to the Defense Writer's Group, answering a question about the planned re-designation of U.S. Fleet Forces Command to U.S. Atlantic Fleet.

The Global Force Posture Review was announced by Feb. 4 by Defense Secretary Lloyd Austin.

"At the direction of the president, the [Defense] Department will therefore conduct a global force posture review of U.S. military footprint, resources, strategy and missions," Austin said. "It will inform my advice to the commander-in-chief about how we best allocate military forces in pursuit of national interests. The review will be led by the acting under secretary of defense for policy, in close consultation with the chairman of the Joint Chiefs of Staff."

Gilday said on Jan. 11 in a webinar of the Surface Navy Association convention that then-President Donald Trump signed off on the proposal of then-Navy Secretary Kenneth Braithwaite to re-designate U.S. Fleet Forces Command as the U.S. Atlantic Fleet. No timetable for the change was announced, but Fleet Forces Commander Adm. Chris Grady then was engaged in the planning for the CNO's review.

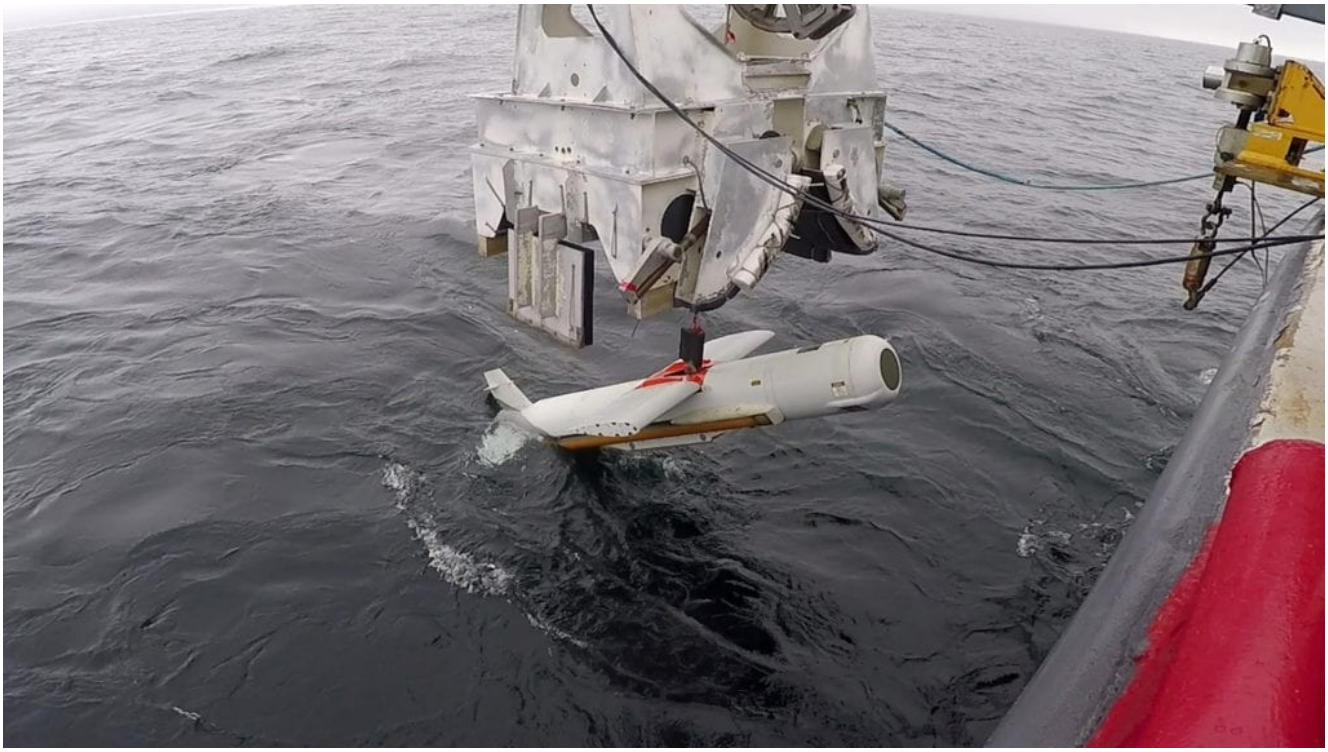
The move to the return of the Atlantic Fleet moniker was deliberate. Braithwaite announced the re-designation plan Dec. 2 during testimony before the Senate Armed Services Committee's Readiness and Management Support sub-committee,

noting the changing world requires the Navy to evolve to meet the threat.

“Our existing structure operates on the premise that we still live in a post-9/11 state, where NATO’s flanks are secure, the Russian fleet is tied to the pier and terrorism is our biggest problem,” Braithwaite said. “That is not the world of today. As the world changes, we must be bold, evolved and change with it. Instead of perpetuating a structure designed to support Joint Forces Command, we are aligning to today’s threat.

“To meet the maritime challenges of the Atlantic theater, we will rename Fleet Forces Command as the U.S. Atlantic Fleet and will refocus our naval forces in this important region on their original mission, to controlling the maritime approaches to the United States and those of our allies. The Atlantic Fleet will confront the re-assertive Russian navy, which has been deploying closer and closer to our East Coast with a tailored maritime presence, capability and lethality,” Braithwaite said.

Navy Awards Raytheon Contract for AQS-20C Mine-Hunting Sonars



The AN/AQS-20C Towed Mine-hunting Sonar is streamed into Gulf of Mexico waters of the Naval Surface Warfare Center Panama City Division (NSWC PCD) Gulf test range. Developmental Testing was completed on Feb. 12, 2019. The testing marks completion of incorporating the 'Charlie' variant sonar sensor modernization. *U.S. NAVY / Eddie Green*

ARLINGTON, Va. – The U.S. Navy has awarded Raytheon Technologies a contract to upgrade some AQS-20A towed sonars to the AQS-20C configuration.

The Naval Sea Systems Command awarded Raytheon a $66.5 million firm fixed-price contract for engineering, design, development, production, integration and testing to physically upgrade 10 legacy AQS-20A mine hunting sonars to the AN/AQS-20C configuration.

The AQS-20 is a variable-depth, underwater mine-detection sonar designed to give a strike group an organic capability to detect, classify and localize bottom, close-tethered and volume mines. The AQS-20A also is fitted with an electro-optical sensor to identify underwater objects.

The sonar is deployed while the helicopter is in a hover and then towed undersea to scan the water in front and to the

sides of the aircraft, as well as the sea bottom for anti-shipping mines. The sonar and EO sensor provide high-resolution images of mines and mine-like objects as well as high-precision location information. The AQS-20A is a component of the Remote Multi-Mission Vehicle and the Airborne Mine-Neutralization System in the mine warfare mission package of the LCS. It entered LRIP in 2005; 25 units were delivered.

The AQS-20C features four imaging sonars – including a synthetic aperture sonar that provides the highest possible resolution for acoustic identification – and an imaging laser system that hunt for mines in the entire water column over a large area in a single pass. The system detects, classifies, localizes and identifies mines on the seabed, near-bottom moored mines, volume mines and near-surface mines. Classification is accomplished within the body of the system using advanced algorithms and signal processing. With the Barracuda mine neutralizer, an AQS-20C can complete the search to engage in a single pass.

The AQS-20C is being integrated on the MCM Unmanned Surface Vehicle for mine hunting from an LCS. Delivery of 10 units began in summer 2018. Developmental test began in late 2018. IOC was achieved in late 2018. Developmental test with the LCS was completed in 2019. Raytheon Co. had delivered 10 AQS-20Cs to the Navy by January 2020.

Navy Orders Unmanned Influence Sweep System from

Textron

A developmental, early variant of the Common Unmanned Surface Vehicle (CUSV) autonomously conducts maneuvers on the Elizabeth River during its demonstration during Citadel Shield-Solid Curtain 2020 at Naval Station Norfolk. A development of the vehicle, the Mine Countermeasures USV, is part of the Unmanned Influence Sweep System. *U.S. NAVY / Mass Communication Specialist 2nd Class Grant G. Grady*

ARLINGTON, Va. – The Navy has ordered another Unmanned Influence Sweep System (UISS) unmanned surface vehicle (USV) from Textron, the Defense Department announced.

The Naval Sea Systems Command awarded Textron Systems a $12.9 million contract for one low-rate initial production (LRIP) UISS, the Navy's first USV program of record. The UISS was approved for LRIP in February 2020, after which the Navy placed an order for three systems. This latest award brings the LRIP lot to four systems.

The UISS is a stand-off, semi-autonomous system designed with

the capability to counter acoustic and/or magnetic mines. It includes a magnetic cable that tows a modified Mk104 sound source towed by a Mine Countermeasures USV (MCM USV). The Mk104 uses cavitation to create sound while the cable establishes a magnetic field to detonate mines. Developmental test and operational assessment was completed in November 2019. The UISS is to be deployed in the mine countermeasures package for LCSs and also on vessels of opportunity.

The MCM USV is a development of Textron's Common USV (CUSV), a multi-mission vehicle capable of carrying multiple payloads including side-scan sonar, mine neutralization, non-lethal weapons, and intelligence, surveillance and reconnaissance sensors.

Navy Orders 11 P-8A Aircraft for $1.6 Billion

The U.S. Navy has awarded a $1.6 billion contract to Boeing for 11 P-8A Poseidon maritime patrol reconnaissance aircraft. *U.S. NAVY*

ARLINGTON, Va. – The U.S. Navy has awarded a $1.6 billion production contract to Boeing for 11 P-8A Poseidon maritime patrol reconnaissance aircraft, nine for the U.S. Navy and two for the Royal Australian Air Force (RAAF).

The Naval Air Systems Command contract modification was announced March 31 by the Defense Department.

The contract brings the total number of U.S. Navy P-8A aircraft under contract to 128 and the RAAF total to 14. Australia has been a cooperative partner in the P-8A joint program since 2009.

Other nations have ordered Poseidons through Foreign Military Sales. The United Kingdom is procuring nine; Norway, five; New Zealand, four; and South Korea, six.

Through direct commercial sales, India has received or has ordered a total of 12 P-8I versions, which it calls Neptunes.

“The P-8A continues to be an invaluable asset and these additional aircraft will help deliver expanded maritime patrol and reconnaissance capabilities to the fleet,” said Capt. Eric Gardner, program manager for the U.S. Navy’s Maritime Patrol and Reconnaissance Program Office, quoted in a March 31 Boeing release.

“We continue to hear feedback from deployed Navy squadrons who tell us the P-8A is exceeding expectations,” Stu Voboril, vice president and program manager for Boeing’s P-8A program, said in the release. “Our focus is on delivering the world’s best maritime patrol aircraft. That only happens when teams truly collaborate, listen and focus on customer priorities.”

Navy Orders One E-2D Aircraft Inside Major Support Contract

An E-2D Advanced Hawkeye assigned to Air Test and Evaluation Squadron (VX) 20 lands aboard USS Gerald R. Ford's (CVN 78) flight deck. *U.S. NAVY / Mass Communication Specialist 2nd Class Sean Elliott*

ARLINGTON, Va. – The U.S. Navy has awarded Northrop Grumman a contract modification to support the service's fleet of E-2D Advanced Hawkeye battle management aircraft and to build one additional E-2D.

Northrop Grumman Systems Corp. Aerospace Systems, Melbourne, Florida, was awarded a $195 million contract modification from the Naval Air Systems Command to exercise options "to provide support services to include non-recurring engineering, software support activity and product support in support of E-2D Advanced Hawkeye Lot 9 full-rate production aircraft, according to a March 31 Defense Department contract announcement. In addition, the action includes the procurement of one additional E-2D.

The Navy's program of record plans to procure a total of 86

E-2Ds. The Japanese Air Self-Defense Force is purchasing 13 E-2Ds.

The Navy is more than halfway through transition of its nine fleet airborne command and control (VAW) squadrons from the E-2C Hawkeye to the E-2D.