

Dunford Encouraged by Afghan Security Forces in Latest Afghanistan Strategy

ARLINGTON, Va. – The nation's top military officer argued that the U.S. military role in Afghanistan was necessary to protect the U.S. homeland from violent extremists and that the strategy was working in the sense that Afghan security forces were carrying the fight, not Americans.

Joint Chiefs of Staff Chairman Marine Gen. Joseph Dunford said if he thought it was in America's interest to withdraw U.S. forces, he would have recommended that, but did not because he believed it was essential to homeland security.

As far as justifying the continued presence to U.S. forces making multiple deployments after 17 years of conflict in Afghanistan, Dunford said, "I'm not promising anything other than this is not what we did 2015," before the new strategy was adopted. The 15,000 U.S. and coalition forces in Afghanistan are not leading the fight. "We are providing support to Afghan security forces," he said.

Addressing an Oct. 26 conference held by military reporters and editors at the Navy League headquarters, Dunford said the drive to end the war in Afghanistan had three tracks – military and political pressure on the Taliban to convince them they could not win and religious and social pressure from Afghans.

"We need to continue doing what we've been doing to support the Afghan security forces. ... But it would be a mistake to focus on the military aspect," he said.

On another current issue, Dunford said no mobilization orders have been given to send active-duty forces to the Mexican

border in anticipation of the convoy of Central American asylum seekers moving north through Mexico and he only knew of the plan for 800 such troops from the news media.

Asked whether he was concerned about the continued cancelation of U.S. exercises with South Korean forces, Dunford hedged a bit, saying they had to balance the security risks of not holding the regular joint exercises against supporting the diplomatic efforts to denuclearize North Korea. The military's focus was on supporting Secretary of State Michael Pompeo's negotiations, he said.

On broader issues, Dunford said the Defense Department could not assume it would continue to receive higher funding, as it did the last two years, and had to focus the expected limited resources on developing the forces it would need to confront the return of great power competition and to modernize the force to reverse the erosion in the U.S. strategic advantage against Russia and China.

He said decisions on how to prioritize spending would be shaped by a planned series of exercises and wargames.

Dunford said the recent increases in defense funding have enabled the military to fix the readiness problems "that can be fixed by money" but noted the need to substantially increase the size of its cybersecurity components. To get the skilled people needed, he said the services would have to change some personnel policies, such as allowing easier moves between active and reserve components and allowing people who wanted to specialize in cyber to remain in those jobs without the usual rotations into other jobs now considered necessary for career development.

Terma, Chemring Team Up for Step Change in Antiship Missile Defense

PARIS – Terma A/S, as a market leader in ship defensive systems, and Chemring Countermeasures, as a world leader in 130 mm naval countermeasures, have teamed up to develop a complete soft-kill solution for surface unit defense, the companies said in an Oct. 24 release.

By integrating Terma's C-Guard defensive aid suite and Chemring's Centurion fully trainable 130 mm launcher, both capable of deploying a range of off-board expendable decoys, a scalable system has been developed to offer a step change in the antiship missile defense (ASMD) capability. This scalable system offers the maritime commander greater operational awareness and survivability in the contemporary battle space.

"The combined system solution offered by Terma and Chemring enhances soft-kill capabilities through refined and dynamic threat evaluation followed by accurate payload placement to maximize the decoy effect, providing the maritime commander with a balanced response by deploying the right decoy in the right position at the right time," said Mogens Nørregaard Cramer, Terma director for naval sales.

Terma has more than 25 years of experience protecting naval platforms from above and below water threats and offers the C-Guard system for effective protection against coordinated multithreat/multidirectional attacks by missiles and torpedoes.

C-Guard relies on combat proven 130 mm decoy rounds. Rapid response and constant threat evaluation are key in building a multilayered, 360-degree defense to defeat multiple coordinated attacks. C-Guard is integrated with major combat

management systems, and more than 200 C-Guard systems are currently in operation worldwide.

“Extending C-Guard with the Chemring Centurion fully trainable 130 mm launcher provides both existing and new C-Guard customers with an upgrade path to the benefits offered by a trainable launcher capability,” said Andy Hogben, business director, Chemring Countermeasures.

This capability is realized to the full in larger platforms where the 130mm round in combination with the trainable launcher provides fast and accurate deployment of countermeasure rounds matched to offer platform protection against the anti-ship missile threat.

C-Guard may be deployed on naval platforms using any combination of the existing fixed launchers and/or the Centurion launcher. The trainable capability optimizes missile countermeasure performance in the anti-air warfare domain, whilst also offering a hard point for launching a range of off-board expendables to provide capability in antisurface warfare, antisubmarine warfare, antiair warfare and C4ISR disciplines.

The combination of fixed and trainable launchers offers increased capability and flexibility to the maritime commander enabling prioritization of decoy load out to maximize platform protection.

French Navy's Surface Fleet

Now Equipped with RIFAN 2 Secure Intranet System

PARIS – More than 60 vessels in the French Navy are now equipped with the Réseau Intranet de la Force Aéronavale étape 2 (RIFAN 2) system, ranging from aircraft carriers and front-line frigates to support ships, patrol craft based overseas, and submarines, Airbus Defense and Space Inc said in an Oct. 24 release. Thanks to the system, all ships at sea can now establish secure broadband links with each other and with the onshore command center.

The RIFAN 2 program contract, worth around \$182 million, was awarded to an industrial group headed by Airbus as the prime contractor and comprising the Naval Group and Rohde & Schwarz as co-contractors. The purpose of the program is to equip the French Navy's surface ships and submarines with a truly secure intranet system.

It is designed to transmit data with various classification levels, ranging from "unprotected" to "secret" and "NATO secret." This network transmits data produced by the various applications, both to coordinate operations and for daily and logistical management of life on board, as well as to exchange data between information systems of theatre chiefs of staff on board a vessel for the duration of an operation.

Whether it's a ship sailing alone, a carrier group, or an amphibious group on operations, the various vessels are equipped to meet their respective connectivity requirements. The system is capable of combining several communication streams in order to optimize the use of the transmission capacity available at sea, which is, by nature, limited. It therefore utilizes satellite connections as well as radio communication resources. Existing radio systems have been refurbished, and a new UHF network has been deployed, which

now allows all-IP (Internet Protocol) voice and data exchanges between ships, with a range of several tens of kilometers.

RIFAN 2 also provides overall network management and cyber security incident monitoring capability. This monitoring can take place both from an onshore management and control center, or locally on board the ships, thus providing the crews with a degree of independence, so that they can make the best use of the network according to the operational situation.

The network will become increasingly dense with installation planned for the Barracuda submarines under construction, for medium-size frigates, which are to be the French Navy's future front-line vessels, as well as for the future replenishment tankers.

The RIFAN 2 system is regularly adapted and upgraded, whether in terms of its central architecture or the integration of new means of satellite broadband communications. Similarly, the cyber security incident monitoring and detection system will also be upgraded.

Department of the Navy Releases Business Operations Plan to Further Reforms

WASHINGTON – The Department of the Navy released its business operations plan Oct. 24, establishing the framework for the department's continuing business reform agenda, the Office of the Navy Chief of Information said in a release.

“The Department of the Navy Business Operations Plan for

Fiscal Years 2019–2021” represents a strategic shift for the department, from oversight to leadership in ensuring that the department’s business operations effectively and efficiently achieve its mission to man, train, and equip Navy and Marine Corps forces for global operations.

Through greater accountability, more agile processes and improved management of business operations, the plan will enable greater efficiencies that allow the department to reallocate resources from business operations to readiness and recapitalize our naval forces for the future.

“As we look forward to the future, we must continue this momentum by leveraging every resource, expert, leading practice, and efficiency we can find – from all sources, private and public – to think anew about our business operating model,” Navy Secretary Richard V. Spencer said in the plan’s opening message. “The National Defense Strategy and National Defense Business Operations Plan drive our agenda, and this Business Operations Plan will guide our department by providing a vision for the future, and charting a clear course for how to get there.”

The plan aligns to the three lines of effort expressed in the National Defense Strategy – rebuild military readiness while building a more lethal joint force,” “strengthen alliances and attract new partners, and reform the department’s business practices for greater performance and affordability” – as well as to the nine objectives defined in the National Defense Business Operations Plan:

- Restore military readiness to build a more lethal force.
- Lay the foundation for future readiness through recapitalization, innovation, and modernization.
- Enhance information technology and cybersecurity capabilities.
- Ensure the best intelligence, counterintelligence, and security support to Department of Defense (DoD) operations.

- Implement initiatives to recruit and retain the best total force to bolster capabilities and readiness.
- Reform the security cooperation enterprise.
- Improve and strengthen business operations through a move to DoD-enterprise or shared services; reduce administrative and regulatory burden.
- Optimize organizational structures.
- Undergo an audit, and improve the quality of budgetary and financial information that is most valuable in managing the DoD.

Undersecretary of the Navy Thomas B. Modly will lead the implementation of the business operations plan in his role as the chief management officer for the Department of the Navy.

“America’s security relies on the success of our U.S. Navy and Marine Corps team. Our Sailors and Marines represent the greatest expeditionary force the world has ever seen, operating forward every day to shape and defend our national interests,” Modly said in a message in the business operations plan. “Yet, as the National Defense Strategy reminds us, the U.S. military has no preordained right to success or victory. We must now move with a sense of urgency to improve how we manage the department in order to continually reinvest into the improved readiness and modernization of our force. While doing so, we will create a more agile and accountable organization that not only responds rapidly and with precision, but also anticipates future threats and opportunities.”

Saab, Damen Submarine Targets Dutch Requirement

PARIS – Saab and Dutch shipbuilder Damen Shipyards Group have joined forces to develop an expeditionary submarine for the Netherlands' Walrus Replacement Program.

The partnership was highlighted Oct. 23 during a joint press conference at the Euronaval international naval exhibition on the proposed Expeditionary Submarine.

“Replacing the Walrus-class submarines requires a unique approach. Swedish modular submarine design and production techniques coupled with the Dutch shipbuilding tradition bring together the capabilities needed to deliver an assured operational capability,” said Gunnar Wieslander, senior vice president, head of business area Saab Kockums.

“The result of the collaboration will be a customer-adapted submarine for expeditionary missions. This will ensure that the Royal Netherlands Navy continues to play an important role in European waters as well as globally,” said Hein van Ameijden, managing director of Damen Schelde Naval Shipbuilding.

The Expeditionary Submarine builds on the capabilities of the Swedish A26 and puts into practice the experience of the Swedish designed Collins-class submarine in service with the Australian Navy.

In addition, the Walrus replacement will also benefit from the operational lessons reflected in the Swedish Navy's Gotland midlife upgrade. As a result, the Expeditionary Submarine will be equipped with state-of-the-art technology while benefiting from de-risking on three submarine classes. Saab and Damen are thereby creating one of the most modern Air Independent Propulsion submarines in the world, which if selected, will be

done in consultation with the customer using a “design to cost” approach.

The production process will see sections made in Sweden and then assembled at Vlissingen in the Netherlands. Having secured the cooperation of many Dutch companies, Saab and Damen are set to enhance the domestic submarine competence.

This cooperation will also extend beyond the Dutch submarine project, as the two companies see a growing market for this type of advanced conventional submarines.

Raytheon Delivers RAM Launcher to Mexico, Completes SM-2 Tests with South Korea

TUCSON, Ariz. – Raytheon Co. has delivered a Rolling Airframe Missile (RAM) launcher to the Mexican government as part of the long-range offshore patrol vessel (Patrulla Oceánica de Largo Alcance, or POLA) program, marking the first delivery of a RAM product to a Latin American country, the company announced Oct. 23.

The Mexican Navy will use the RAM Block 2 supersonic, quick reaction, fire-and-forget missile to counter enemy anti-ship missiles. This latest version features a larger rocket motor, advanced control section and an enhanced radio frequency receiver.

“RAM Block 2 protects ships against a long list of constantly evolving threats,” said Mitch Stevison, Raytheon Air and Missile Defense Systems vice president. “With RAM protecting

its frigate, Mexico not only enhances its maritime posture, but they also expand their naval support of national security and defense of critical sea lanes.”

The RAM system is the world’s most modern ship self-defense weapon and protects ships of all sizes. It’s deployed on more than 165 ships in eight countries, ranging from 500-ton fast attack craft to 95,000-ton aircraft carriers.

In a separate release, the company announced that five Standard Missile-2 (SM-2) surface-to-air missiles successfully completed five test flights in back-to-back summer exercises conducted at sea by the Republic of Korea Navy, or ROKN.

ROKN fired two Block IIIA missiles in an initial exercise to test the missiles’ advanced semi-active radar seeker technology. During a second exercise, the navy destroyed three aerial threats using the Block IIIB variant.

The SM-2 missile gives navies the capability to defend against anti-ship missiles and aircraft out to 90 nautical miles.

“These successful flight tests add to SM-2’s impressive legacy of more than 2,700 successful firings,” Stevison said. “As we begin to produce a new generation of SM-2s, the missile will be in the inventories of navies worldwide for decades to come.”

Raytheon restarted the SM-2 missile line in 2017 to meet global demands from international customers, which include eight international countries.

New deliveries are scheduled to begin in 2020 and will include more than 280 SM-2 Block IIIA and IIIB missiles.

Ceremony Culminates 12 Months of Centennial Activities

DAHLGREN, Va. – Navy and congressional leaders joined Naval Surface Warfare Center Dahlgren Division (NSWCDD) personnel to celebrate a centennial of technological innovation that revolutionized surface warfare at a grand finale ceremony here, Oct. 19.

Over the past year of centennial activities – from a concert and picnics to podcasts and a rocket contest – government civilians, defense contractors, and military personnel working at NSWCDD travelled down memory lane leading up to the 100-year mark this month.

“The first shot of the new base was fired from a 7-inch, 45-caliber, tractor-mounted gun, just like the one over there,” said Capt. Godfrey “Gus” Weekes, NSWCDD commanding officer, while pointing to the century-old gun on display.

Since that shot was fired on Oct. 16, 1918, Dahlgren scientists and engineers rose to the occasion time and again to provide the Navy with innovative solutions based on their technical capability to integrate sensors, weapons, and associated weapon and combat systems into surface ships and vehicles.

“The men and women of Dahlgren are dedicated to the mission and have always answered the bell,” Weekes told the audience which included 65 distinguished visitors. “We answered the bell in 1918 and we’re answering the bell today. Just like during the Cold War or the Korean War, we’re up against near peer or peer threats. The need for Dahlgren is never more apparent.”

Today, NSWCDD leads in the research and delivery of technological solutions that enable warfighters to counter

emerging threats. The command leverages core naval warfare systems development and integration capabilities in electric weapons such as the electromagnetic railgun and high-energy lasers, mission engineering and analysis, and cyber warfare engineering.

“I’ve been blessed with the opportunity to recognize our workers who have given so much to this institution,” said Weekes, recounting that he has presented scores of certificates recognizing Navy civilians for 30 and 35 plus years of federal service. “I’ve been privileged to recognized employees who were pioneers in GPS, to those who pioneered Aegis Ballistic Missile Defense and the Standard Missile as well as any advanced weaponry which the U.S. Navy is now in the process of realizing or advancing.”

As participants celebrated the division’s impact upon the Navy and nation, a time capsule – 10 105 mm shells surrounding a 16-inch shell – was unveiled and all in attendance had the opportunity to write notes and share their thoughts with future generations.

The writers conveyed how they personally met the challenges of our time and solved them through innovative collaboration, placing their letters inside the capsule that will be displayed on base. Dahlgren personnel can write notes to be placed inside the capsule until the end of 2018 when it will be sealed and opened on Oct. 16, 2068, at the command’s 150th anniversary.

“Think about the contributions Dahlgren has made over the past 100 years,” said John Fiore, NSWCCD technical director. “We have over 500 patents to our name thanks to the men and women here who have done that work. When the Navy struggles with challenges, it is often that they come to Dahlgren to ask what they should be doing, what they should be thinking about, what we should be working on. Our innovations that have become programs of record are changing the face of warfare systems

today.”

Since June 1918, when U.S. President Woodrow Wilson signed a proclamation to acquire nearly one thousand acres to create the original ordnance proving ground during World War I, through today, Dahlgren has served as the center for the scientific research and development that led to hundreds of patents, innovations, and scientific breakthroughs for the U.S. Navy. Dahlgren, today, hosts nine different commands with an expansive array of scientific research and development, and is one of the hubs of naval weapons and weapon system development nationwide.

“There is no technical director who does not appreciate what has happened in the past but let’s think about where we are headed in the future – the kinds of systems and solutions the Navy needs in the future,” said Fiore, speaking to a crowd of more than 700 people – government employees, military personnel, defense contractors and visitors, including former NSWCDD technical directors and commanding officers.

“As I thought about that, I thought about our values. Values that we hold dear at Dahlgren – integrity, courage, imagination, esprit de corps, and urgency. We here overcome change, and we overcome the things we need to do to in order to make a difference in warfare systems throughout the Navy, and that takes courage. The value that I’m the proudest about is urgency, and I think Dahlgren exemplifies that. We’ve been talking urgency and that’s been a core value of Dahlgren for years.

“Recently, I’ve had the privilege of hearing the secretary of the Navy talk. He signs his name, ‘urgently, Richard Spencer’ – understanding that we live in a time when what we do is urgent. If we do not do what we do in developing warfare systems, we’re not enabling our Sailors and Marines to go out and do their mission effectively and come home safe to their families and loved ones – that’s critical.”

Dahlgren's enduring success in research, development, test, and evaluation stems from its ability to handle complex mathematics and engineering associated with ballistic weapons and projectiles. Moreover, the command's civilian scientists and engineers always had the capability to test their ideas in collaboration with military personnel on base to produce proven technological solutions.

"This is an installation where a great deal of innovation and collaboration take place," said Sen. Mark Warner, D-Va., describing Dahlgren's development of technologies revolutionizing military capabilities over the past 100 years. "We're going to need that same level of collaboration, cutting edge experimentation as we move forward for the next 100 years, not only to protect our country but to make sure that we're able to match the innovation and have the kind of protections that will keep this nation strong, safe and free. So, for all you've done for the last 100 years, I say thank you."

Warner cited Dahlgren's role in the development of long guns for World War II followed by the development of Naval warfare systems, the super computer (Naval Ordnance Research Calculator) during the 1950s, the Naval Space Surveillance Center in the wake of Sputnik, GPS technology, and technological advancements impacting ballistic missile systems.

"How are we going to do more with the resources that we have than our adversaries do with the resources that they have?" U.S. Rep. Rob Wittman, R-Va., asked the audience. "How are we going to do more with our unit of currency than they do with their unit of currency?"

The congressman – focusing on technological solutions required to meet complex threats to U.S. national security – answered his questions.

“We’re not going to have the ability to out-resource people anymore,” said Wittman. “Today, it’s about the creation and innovation that goes into doing more with what we have than anybody around the world. We have done that, we can do that, and we will continue to do that to make sure that our nation’s Navy, Marine Corps, Air Force, Army and indeed our Coast Guard, continue to be the greatest the world has ever known because we have the best and brightest men and women serving our nation both in uniform and here at the base in making sure that we have what we need to defend our nation’s interest. And you will do it better than anybody else in more creative and innovative ways than anybody else, that’s what has made Dahlgren great in the first 100 years and that’s what will make it great in the next century.”

At one point in the ceremony, Virginia State Sen. Richard Stuart and Virginia Delegate Margaret Ransone read and presented the Virginia General Assembly Resolution proclaiming Oct. 16 as Dahlgren Day.

“NSWC Dahlgren Division is the largest employer in central Virginia and the Northern Neck with over 8,000 civilian and military and contract personnel,” said Stuart. “The workforce – composed of 14 counties in Virginia and five counties in Maryland – contributes more than \$6.5 billion to the local economy. That is incredible to a boy who grew up in the small town of Montross and understands how important Dahlgren is to this entire region. For your economic activity, for your amazing technological advancements, and for your invaluable contributions to modern warfare systems, we thank you.”

As the U.S. Navy band played “Stars and Stripes Forever” to conclude the ceremony, people from the audience began making their way up for a closer look at the time capsule. They took pictures and in response to the invitation to share their thoughts with future generations – wrote letters to be placed in the capsule.

JFD Completes Sea Trials for First Deep Search and Rescue Vehicle for the Indian Navy

OLDMELDRUM, Scotland – JFD, part of James Fisher and Sons plc, has successfully completed the sea trials of the deep search and rescue vehicle (DSRV) for the first of two third-generation submarine rescue systems being delivered to the Indian Navy, the company announced in an Oct. 22 release.

The Deep Search and Rescue Vehicle (DSRV) carried out underwater mating with a bottomed submarine at a depth of over 300 feet, followed by a target mating and hatch opening at 45 degrees. On successful mating with the bottomed submarine, JFD and the Indian Navy then carried out a safe transfer of personnel from the submarine to the DSRV.

The sea trials have proven the newly inducted DSRV's ability to undertake rescue operations from a disabled submarine at sea, providing the Indian Navy with a critical submarine rescue capability. In addition to the mating and transfer of personnel exercises, the DSRV conducted a record dive which represents the deepest submergence by a "manned vessel" in Indian waters, as well as remotely operated vehicle operations at a depth of over 750 meters and side-scan sonar operations at a depth of over 650 meters, all of which represent significant 'firsts' for the Indian Navy.

In a statement on social media, the Indian Navy said it now "joins a select league of nations with the capability to search, locate and provide rescue to distressed submarines by induction of our first DSRV and associated kit, which in a fly

away configuration can be rapidly mobilized. The DSRV can be mobilized from the naval base at Mumbai to the nearest mounting port by air, land or sea, ready to provide rapid rescue to the submarine in distress.”

Having already successfully completed harbor trials earlier this year, the DSRV has now completed a full launch deployment, dive and recovery in open sea as well as an underwater mating exercise, replicating the operating conditions of a real submarine rescue operation. The completion of open sea trials represents a significant milestone in the ongoing delivery and acceptance of the 3rd Generation Submarine Rescue System, which is grounded in a rigorous trials and testing process that ensures the highest safety standards are upheld.

“JFD is pleased to have successfully completed a period of rigorous sea trials, working in close partnership with the Indian Navy who provided the commercial mothership and associated trials consort vessels,” said Ben Sharples, India DSRV project director. “The Indian Navy west coast-based rescue team, who will operate the system when in service, were active participants throughout this phase of the trials, ensuring they are equipped with the skills and expertise to conduct safe and efficient submarine rescue operations, should the need ever arise.

“The sea trials of the DSRV has ushered in a niche capability into the Indian Navy,” he said. “The DSRV, which is operated by a crew of three, can rescue 14 personnel from a disabled submarine at one time. These sea trials have proven the newly inducted DSRV’s ability to undertake rescue operations from disabled submarines at sea and has provided the Indian Navy with a critical capability.”

JFD is delivering two complete third-generation submarine rescue systems, including launch and recovery systems equipment, Transfer Under Pressure systems, logistics and

support equipment, and a 25-year all-inclusive annual maintenance contract.

MBDA Introduces Naval Versions of MMP Ground Combat Missile System

PARIS – MBDA has unveiled its new naval offering based on the fifth-generation MMP ground combat missile at Euronaval, the company announced in an Oct. 23 release. This decision follows the operational evaluation campaign carried out at the end of the summer by the French armed forces in Djibouti to confirm the reliability and operational performance of the MMP system in a hot environment, both from the ground and from a rigid-hull inflatable boat (RHIB) moving at high speed.

A total of nine MMP missiles were fired with all reaching their target. Two of these shots were fired by the maritime force of marines and commandos from an ECUME RHIB. A first firing from the sea-to-land and the second from sea-to-sea have demonstrated the ease of use of the MMP.

The success of this evaluation allows MBDA to extend the integration perspectives of the MMP system and to propose it on fast attack craft or semi-rigid boats for missions against hostile ships, coastal defenses or armored vehicles, especially in support of a landing of small units or special forces.

On fast patrol boats, the MMP will be fired from a stabilized turret carrying four ready-to-fire ammunitions installed in launchers protecting the missiles from the maritime

environment. The turret can be controlled from a dedicated console or from a multifunction console in the ship's operations center.

“Today's launch of a family of naval systems based on the MMP missile is aligned with the trajectory we initiated with the French armies at the launch of the MMP program in 2011,” said Antoine Bouvier, chief executive of MBDA. “By deciding at that time to introduce the most modern technologies of guidance and propulsion together with a multi-effect warhead, we laid the foundations of a family of weapons capable of meeting the most demanding constraints the armed forces may encounter in the field, in terms of tactical effects, in terms of mobility, as well as in environmental terms. The MMP family sees today the advent of naval versions. I have no doubt that the MMP will give birth to other more powerful versions in the near future.”

L3 ASV to Conduct Autonomous Navigation Study for U.K. Government

PORTCHESTER, England – L3 ASV has received U.K. government funding for a pioneering project on autonomous navigation of maritime vessels, the company announced in an Oct. 23 release. The company will conduct a study with its partners in the Maritime & Coastguard Agency (MCA) and U.K. Hydrographic Office (UKHO), focusing on the future of marine navigational data and charts.

The project is funded by the Department for Transport's Transport Technology Research Innovation Grant (T-TRIG) and

aims to promote early-stage science, engineering or technology innovations with the potential to advance the U.K.'s transport system.

L3 ASV's T-TRIG project will begin by exploring the characteristics of navigational data and charts in terms of what they comprise, their structure and how they are updated.

"Current navigational data and charts have been developed over centuries to be read and interpreted by humans," said Dan Hook, senior director of business development at L3 ASV. "Today, and over the coming decade, more and more marine vessels will be operating unmanned, and the charts will be read by computers."

The project will identify the technical data requirements to enable the development of a Smart Chart system, which will then provide information to autonomous vessels to enable safer navigation.

"Understanding the data requirements of autonomous vessels is going to be hugely important for the MCA if we are to continue to ensure the safety of navigation in U.K. waters to save lives and combat pollution," said Tim Wilkes, product manager for the MCA. "This project will help us identify some of the regulatory issues that accompany a shift to smart and autonomous shipping and will highlight how the MCA can use its wealth of bathymetric and ship movement data to support this growing industry."

"As we move through the 21st century, technology will continue to transform the U.K.'s world-leading maritime sector," said Shipping Minister Nusrat Ghani. "Innovations such as Smart Charts pave the way for automation and Smart Shipping, and we are keen to support British companies making the most of new technologies, giving our vibrant sector a competitive edge. Technology and innovation are a key part of our Maritime 2050 initiative, which will set a vision for the growth and success

of our maritime sector over the next 30 years.”

“A wealth of marine geospatial data, from bathymetry depicting the seafloor to the speed and direction of the tides, supports navigation across our oceans,” said Mark Casey from the UKHO. “For over 200 years, the UKHO has supplied this information to shipping and defense to help keep mariners safe at sea. And we have developed our expertise in sourcing and processing this location-based information to help others better understand the marine environment. With this expertise and knowledge, we are well placed to help our partners identify the data requirements and standards needed to support autonomous vessels of the future.”