

# General Atomics' EMALS and AAG Support Successful Ford Flight Deck Certification



An F/A-18F Super Hornet, attached to the “Gladiators” of Strike Fighter Squadron (VFA) 106, lands on the flight deck of the aircraft carrier USS Gerald R. Ford (CVN 78) during flight operations, March 28, 2020. Ford is underway in the Atlantic Ocean conducting carrier qualifications. U.S. NAVY / Mass Communication Specialist Seaman Apprentice Sawyer Connally  
SAN DIEGO – General Atomics Electromagnetic Systems (GA-EMS) announced April 23 that successful USS Gerald R. Ford (CVN 78) Flight Deck Certification (FDC) has been completed with the support of the electromagnetic aircraft launch system (EMALS) and advanced arresting gear (AAG) system. The number of aircraft to have landed and taken off from CVN 78 now totals more than 2,000. CVN 78 used fleet squadrons from Carrier Air Wing Eight, as well as pilots from Strike Fighter Squadron 106 and Carrier Airborne Early Warning Squadron 120 to obtain hundreds of sorties over a two-week period with all arrested landings and catapult launches completed safely.

“We continue to see EMALS and AAG perform according to specifications to execute cats and traps with the objective of reaching the robust evolution rates necessary for combat,” stated Scott Forney, president of GA-EMS. “We are working closely with the Navy and CVN 78 crew to ensure operational performance is achieved. We remain extremely proud of our team, the squadrons’ pilots and the ship’s crew for all their hard work and dedication and look forward to continuing success as CVN 78 undergoes these continued at sea periods.”

FDC is a qualification of the ship’s various aviation systems and includes the crews’ qualification to operate the numerous systems. FDC was completed March 20 following day and night launch and recovery exercises with F/A-18E/F Super Hornets. FDC is intended to qualify and prove ship and crew capabilities under operational conditions that can occur while on deployment.

On Jan. 31, CVN 78 completed aircraft compatibility testing, a significant milestone that exhibited EMALS and AAG’s ability to launch and recover five types of aircraft in varying configurations – four of which for the first time. CVN 78 proved to accommodate the current naval air wing, including F/A-18E/F Super Hornet, E-2D Advanced Hawkeye, C-2A Greyhound, EA-18G Growler and T-45C Goshawk aircraft.

GA-EMS is delivering EMALS and AAG for the future USS John F. Kennedy (CVN 79) and USS Enterprise (CVN 80).

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## **Coast Guard, Dominican Navy**

# Interdict Migrants, Arrest Smugglers



Coast Guard Cutter Joseph Doyle's cutter boat on scene with a 25-foot illegal migrant vessel interdicted on April 20 south of Isla Saona, Dominican Republic. U.S. Coast Guard SAN JUAN, Puerto Rico – The crew of the U.S. Coast Guard Cutter Joseph Doyle and a Dominican Republic navy vessel combined efforts on April 20 during the interdiction of an illegal migrant voyage transporting 15 migrants in waters south of Isla Saona, according to a Coast Guard 7th District release.

The interdiction, which was part of a joint effort between the Coast Guard, the Dominican navy and U.S. Immigrations and Customs Enforcement-Homeland Security Investigations, led to Dominican authorities arresting Edgar Batista Matos and Manauris Andujar Manon, who reportedly are associated with human smuggling activities and the organization of illegal migrant voyages.

During a patrol in the Caribbean on April 20, the crew of a Coast Guard HC-144 Ocean Sentry aircraft detected a suspect migrant vessel south of Isla Saona. While patrolling nearby waters, the cutter Joseph Doyle responded to the sighting and interdicted the 25-foot make-shift vessel that was carrying 15 migrants, 13 men and two women of Dominican nationality. Shortly thereafter, a responding Dominican Republic Navy vessel arrived on scene and the crew took custody of the migrants and towed the interdicted vessel back to the Dominican Republic.

Following the interdiction, Dominican naval authorities informed the Coast Guard that the known smugglers were found to be among the interdicted migrants.

“This successful interdiction and arrest of two smugglers was the result of the strong partnership and collaboration that exists between the Coast Guard and Dominican Republic navy,” said Capt. Eric King, commander of Coast Guard Sector San Juan.

“The results achieved today, despite the challenging operational environment presented by the global COVID-19 pandemic, reflect the commitment and daily efforts carried out by both countries to protect our borders from existing maritime threats and safeguard the lives of migrants who face the danger of an uncertain and potentially perilous voyage.”

The Joseph Doyle is a 154-foot fast-response cutter homeported in San Juan.

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# Senate Bill Would Fund Second Virginia-Class Sub in 2021



The Virginia-class fast-attack submarine USS North Carolina departs Joint Base Pearl Harbor-Hickam on March 25 for a regularly-scheduled deployment. A member of the Senate Armed Services Committee has introduced a \$43 billion bill that would fund, among other things, a second Virginia-class sub in fiscal year 2021. U.S. Navy/Mass Communication Specialist 1st Class Michael B. Zingaro

ARLINGTON, Va. – A member of the Senate Armed Services Committee has introduced a \$43 billion bill to strengthen U.S. forces in the Indo-Pacific to counter Chinese competition and that would fund, among other things, some of the U.S. Navy's priorities on its unfunded list, including a second Virginia-class attack submarine.

Sen. Tom Cotton (R-Ark.) introduced the Forging Operational Resistance to Chinese Expansion (FORCE) Act on April 22, which his office said is a "critical investment in the United

States' ability to compete with China.”

The bill would include “\$6.1 billion to regain the advantage in the Indo-Pacific region; \$9.2 billion in capability increases for Great Power Competition; \$11 billion for mitigating coronavirus impacts to procurement programs; \$3.3 billion for mitigating coronavirus impacts to [the] defense industrial base; \$1.5 billion for hospital ship recapitalization; [and] \$12.0 billion to enhance national resilience and critical infrastructure.”

The bill would provide \$3.9 billion to upgrade naval lethality, a summary of the bill said, including funds for:

- A second fiscal 2021 Virginia-class submarine.
- Virginia-class submarine industrial base expansion.
- Subsea and seabed warfare capability for the Virginia class.
- Advanced procurement for the Columbia-class ballistic-missile submarine
- Additional Naval Strike Missiles and their launchers.
- Integration of the long-range air-to-surface missiles on all combat aircraft.
- Additional sonobuoys for anti-submarine warfare.
- Marine Corps modernization, including ground-based anti-ship missiles.

The bill also would fund adding hypersonic weapons on compatible fighter aircraft and accelerating development of directed energy weapons and cyber offensive and defensive capabilities.

Also provided in the bill would be \$4.88 billion to the Navy and Marine Corps to “provide emergency aid for those programs that are most vulnerable” to mitigate the effects of the COVID-19 pandemic, including funds for shipbuilding and conversion; the Columbia-class submarine industrial base; aircraft procurement; operations and maintenance; and

research, development, test and evaluation.

Cotton's bill also specifically provides "funding for the Navy to replace the [hospital ships] USNS Comfort and USNS Mercy with new American-built vessels. This would be an opportunity to provide American jobs and grow the American industrial base for the future," the bill summary said.

The summary of the bill can be found [here](#).

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## **Cutter Returns Home After Seizing \$21.5 Million in Cocaine During Patrol**



A Coast Guard Cutter Steadfast boarding team searches a suspected smuggling vessel on March 15 interdicted by the crew, resulting in 1,252 pounds of cocaine seized, worth an estimated \$21.5 million, and three suspected smugglers detained. U.S. Coast Guard

ASTORIA, Ore. – The crew of the U.S. Coast Guard Cutter Steadfast returned home on April 17 to Astoria following a 65-day counter-narcotic patrol to the eastern Pacific Ocean, the Coast Guard Pacific Area reported.

The cutter intercepted and boarded five suspected smuggling vessels, including one go-fast-style panga, while patrolling international waters off the coasts of Mexico and Central America. Steadfast's crew apprehended three suspected smugglers and seized 1,252 pounds of cocaine worth an estimated \$21.5 million.

"I am inspired daily by the tenacity and professionalism of this crew," said Cmdr. Dan Ursino, the Steadfast's commanding

officer. “Their resilience to remain focused, in light of the global health crisis and uncertainty back home, has been nothing short of remarkable. Knowing the importance and impact of keeping these harmful substances from reaching our streets help to keep us going.”

On April 1, U.S. Southern Command began enhanced counter-narcotics operations in the Western Hemisphere to disrupt the flow of drugs. Numerous U.S. agencies from the Departments of Defense, Justice and Homeland Security cooperated in the effort to combat transnational organized crime. The Coast Guard, U.S. Navy, Customs and Border Protection, FBI, Drug Enforcement Administration and Immigration and Customs Enforcement, along with allied and international partner agencies, play a role in counter-drug operations.

Steadfast also continued to participate in the Columbia River Maritime Museum’s Mini Boat Project, which connects students from local Oregon elementary schools with their peers in Japan. Students learn about the significance of ocean currents and weather while building miniature boats to send across the ocean to one another. During this patrol, Steadfast launched two boats, Boat-A-Lohti and Philbert, about 200 miles off the southern tip of Baja, Mexico. Follow along [here](#).

Commissioned in 1968, Steadfast is one of two Reliance-class cutters homeported in Astoria. Reliance-class cutters are 210-foot long, 34-foot wide and have a 1,100 long-ton displacement. The ships hold a crew of 76 and have served the nation for more than 50 years.

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# Pentagon Plans Testing, Screening, Manufacturing Push in COVID-19 Battle



Master Chief Personnel Specialist Nikita Maher (left) uses a touchless thermometer on Personnel Specialist 2nd Class Francisco Cervantes at an entrance checkpoint of Goetsch Hall at Navy Personnel Command in Millington, Tennessee. U.S. Navy/Chief Mass Communication Specialist Michael Russell

ARLINGTON, Va. – The Defense Department is rolling out new strategies for screening the force for the novel coronavirus to halt the spread, spot those needing medical treatment early and still enable the military to fulfill its mission, according to two top Pentagon officials.

“As we learn more about the virus, we will continue to evolve our approach,” Deputy Defense Secretary David Norquist told a Pentagon press briefing that was live-streamed on April 22.

He noted that hundreds of thousands of active-duty and civilian personnel are teleworking. However, for thousands more who cannot practice social distancing because they work in constrained spaces like new recruits in training or Sailors and Marines on ships or submarines at sea, there is a new general process to screen for COVID-19.

For those groups, the first of four containment steps is screening with the use of questionnaires and thermometers to identify at-risk individuals. Next comes 14 to 21 days of quarantine, depending on a unit's risk tolerance, to identify those who are infected but not yet showing symptoms. A third step calls for conducting swab tests and temperature checks, prior to leaving quarantine, to identify those who have since become infected but remain asymptomatic. Finally, as a unit moves to its mission, Norquist said, "we'll keep this group together but limit its outside interaction to prevent the introduction of infection."

*"As we learn more about the virus, we will continue to evolve our approach."*

*Deputy Defense Secretary David Norquist*

Procedures like face coverings, hand washing, maintaining clean workspaces and continued monitoring will all still apply as units move forward while therapeutic treatments and vaccines are still being developed, he said.

COVID-19 had infected more than 802,000 people in the U.S. and had killed 44,575 as of April 21, according to the U.S. Centers for Disease Control and Prevention. The Pentagon reported on April 22 that 3,578 cases of COVID-19 have been detected among U.S. military and civilian personnel, dependents and contractors; 25 have of those have died. The U.S. Navy continues to have the largest number of cases – 1,298 – compared to 841 for the Army, 337 for the Air Force, 259 for the Marine Corps and 713 for the National Guard.

Meanwhile, under the authorities granted by the Defense Production Act, the government is moving to increase production of critical N95 masks to 39 million in the next 90 days and to 141 million over the next six months, Norquist said. The Pentagon is working with vendors to increase swab production from three million a month to 20 million, also boosting production of personal protective equipment for medical personnel, reagents for testing kits and active pharmaceutical ingredients.

As testing supplies become more prevalent, testing will be conducted through a priority-based, tiered system recently approved by Defense Secretary Mark Esper, Air Force Gen. John Hyten, the vice chairman of the Joint Chiefs of Staff, told the press briefing.

Tier 1 will focus on critical national capabilities, like strategic nuclear deterrent units. Tier 2 will focus on engaged, fielded forces around the world. Tier 3 is for forward-deployed and redeploying forces and Tier 4 includes the remainder of the military.

Hyten was asked if he thought it was unwise for the Army Corps of Engineers to continue building treatment facilities, with hundreds of beds, in big city convention centers, even as existing ones are under-used.

“For gosh sakes, no! That’s what I want to see,” he said. If the beds are all filled, that means local hospitals have been overwhelmed. “You always want to have excess capacity, not too little capacity,” he added.

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# Trump Authorizes Navy to Fire on Harassing Iranian Craft



Iranian vessels harass a U.S. ship by crossing its bow and stern. U.S. forces are conducting joint interoperability operations in the U.S. 5th Fleet area of operations in the northern Persian Gulf. U.S. Navy

ARLINGTON,

Va.

– President Trump has authorized the U.S. Navy to fire on Iranian boats that harass American ships, following a recent episode where armed Iranian craft came dangerously close to and harassed Navy and U.S. Coast Guard vessels engaged in an exercise in the northern Persian Gulf.

“I have instructed the United States Navy to shoot down and destroy any and all Iranian gunboats if they harass our ships at sea,” Trump said in an April 22 tweet.

Under routine rules of engagement, U.S. ships are inherently authorized to fire in self-defense, but this new authority gives the ships’ commanders permission to fire if they are being harassed by the Iranian craft.

*“If we see a hostile act, if we see hostile intent, we have*

*the right to respond up to and including lethal force and, if it happens in the Gulf, if it happens in any way, we will respond with overwhelming lethal force, if necessary, to defend ourselves. It's really that simple."*

*Air Force Gen. John Hyten, vice chairman of the Joint Chiefs of Staff*

"On April 15, 11 Iranian Islamic Revolutionary Guard Corps Navy (IRGCN) vessels repeatedly conducted dangerous and harassing approaches of the USS Lewis B. Puller, USS Paul Hamilton, USS Firebolt, USS Sirocco, USCGC Wrangell and USCGC Maui while the U.S. vessels were conducting joint integration operations with U.S. Army AH-64E Apache attack helicopters in the international waters of the North Arabian Gulf," the U.S. 5th Fleet said in a release.

"The IRGCN vessels repeatedly crossed the bows and sterns of the U.S. vessels at extremely close range and high speeds, including multiple crossings of the Puller with a 50-yard closest point of approach and within 10 yards of Maui's bow," the release added.

"The U.S. crews issued multiple warnings via bridge-to-bridge radio, five short blasts from the ships' horns and long-range acoustic noise maker devices but received no response from the IRGCN. After approximately one hour, the IRGCN vessels responded to the bridge-to-bridge radio queries, then maneuvered away from the U.S. ships and opened distance between them."

The Iranians occasionally have used their small, fast, armed and highly maneuverable boats in swarms to harass naval and merchant ships in the Persian Gulf and last year captured merchant ships flagged in the United Kingdom and other nations.

Many U.S. ships are armed with Mk38 25 mm chain guns and M2

.50-caliber machine guns – in addition to larger-caliber guns on some ships – for countering fast attack craft, while many helicopters based on U.S. ships are armed with Hellfire and Advanced Precision Kill Weapon System guided missiles that are effective against such craft.

In January 2016, Iranian boats seized two U.S. Navy riverine command boats and detained the crews after the U.S. boats strayed into Iranian waters off Farsi Island in the Persian Gulf. The crews and boats later were released.

“The IRGCN’s dangerous and provocative actions increased the risk of miscalculation and collision, were not in accordance with the internationally recognized Convention on the International Regulations for Preventing Collisions at Sea ‘rules of the road’ or internationally recognized maritime customs and were not in accordance with the obligation under international law to act with due regard for the safety of other vessels in the area,” according to the 5th Fleet release.

Questioned at an April 22 Pentagon news conference, Deputy Defense Secretary David L. Norquist said that “all of our ships retain the right of self-defense and people need to be very careful in their interactions to understand the inherent right of self-defense.”

“Every capability that we deploy – every ship that deploys into harm’s way – has the inherent right of self-defense, as the secretary just described,” said Air Force Gen. John Hyten, vice chairman of the Joint Chiefs of Staff, who also spoke at the news conference.

“What that means: if we see a hostile act, if we see hostile intent, we have the right to respond up to and including lethal force and, if it happens in the Gulf, if it happens in any way, we will respond with overwhelming lethal force, if necessary, to defend ourselves. It’s really that simple.

Nobody should doubt that the commanders have the authority right now to respond to any hostile act or hostile intent.”

“I like that the president warned an adversary,” Hyten said. “That’s what he’s doing – he’s providing a warning. ‘If you want to go down that path, we will come, and we will come large, so don’t go down that path.’ He’s saying it in clear, certain terms. We understand that direction, and every commander that is deployed has the ability to execute that.”

Norquist said he thought the intent of the president’s tweet was clear. “When you talk about harassment, you’re talking about actions designed to provoke, actions designed to threaten. It’s a very clear message that the Iranians should understand.”

Hyten added: “You can’t let a fast boat get into a position where they can threaten your ship. We have very specific guidance on how we can use lethal force.”

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## **Bollinger Delivers Articulated Tug and Barge Unit to Crowley Fuels**

LOCKPORT, La. – Bollinger Shipyards Lockport delivered an articulated tug-barge (ATB) unit capable of transporting multiple clean petroleum products in the Alaska market to Crowley Fuels, the Alaska-based petroleum transportation, distribution and sales unit of Crowley Maritime Corp.

Crowley Shipping provided vessel construction management services in Bollinger Marine Fabricators, Bollinger’s Amelia,

Louisiana, facility from the final design phase through delivery. The company's Seattle-based naval architecture and marine engineering firm, Jensen Maritime, provided the functional design. Bollinger's engineering team provided the integration, detail design and construction package.

"On behalf of our skilled workforce, along with a strong operational support group, the Bollinger team is proud to have built this ATB for Crowley Fuels," said Ben Bordelon, Bollinger Shipyards president and CEO. "Contracts like this to build Jones Act-classed ATB units, create and protect many jobs for U.S. mariners, shipyards and ancillary vendors, and that strengthens our local and regional industrial base."

The Alaska-class ATB unit consists of one twin Z-Drive, 7,000-horsepower ocean tugboat paired with an ocean barge.

The ATB was designed and built to meet ice class and polar code requirements, which include increased structural framing and shell plating and extended zero discharge endurance. The double-hulled design also features a barge form factor to achieve high-cargo capacity on minimal draft.

The tug is fitted with two GE 8L250 main engines that meet U.S. Environmental Protection Agency's Tier 4 emissions standards. The generators on the tug and barge meet EPA Tier 3 and IMO Tier II emissions standards. In addition, a closed loop, freshwater ballast system will eliminate the need to discharge tug ballast water into the sea.

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# Corps Requests Proposals for Tropical Uniforms; Plans to Field Later This Year

MARINE CORPS BASE QUANTICO, Va. – Marine Corps Systems Command (MCSC) on April 14 released a request for proposals to industry for new tropical uniforms for Marines to wear while training or embarking on missions in warm-weather climates, MCSC public affairs said in a release.

The Marine Corps Tropical Combat Uniform (MCTCU) is a rapid-dry, breathable uniform that can sustain for prolonged periods in hot, humid and wet environments. The MCTCU will provide an alternative to the current combat utility uniform and combat boot.

“This new tropical uniform allows Marines to be more comfortable and less fatigued while focusing on the mission at hand,” said Lou Curcio, MCSC’s MCTCU project officer.

The MCTCU is made up of trousers, a blouse and a pair of boots. The trousers and blouse – the focus of the RFP – are made of the same blend of cotton and nylon as the current combat utility uniform and features the same camouflage pattern. The difference is in the weave and weight, resulting in a lighter material that dries more quickly.

Both pieces of clothing are treated with permethrin to provide protection from insects.

The boots, awarded on a separate contract, are also lightweight, with self-cleaning soles to improve mobility in a tropical environment. They are more than a pound lighter than the current boot fielded by the Marine Corps.

“MCTCU will bring many advantages during training and combat

in tropical environments,” Curcio said. “For all the sacrifices and challenges they endure, Marines deserve a uniform like this one.”

Between June and September 2017, hundreds of Marines participated in various user evaluations to assess the durability, fit and function of a prototype tropical uniform. The prototype was made up of a fabric blend of nylon and cotton, designed to dry faster and keep Marines cooler in warm climates.

MCSC’s Program Manager for Infantry Combat Equipment leveraged this feedback to inform industry solicitations and other decisions.

“Many Marines said the MCTCU feels like pajamas, appreciating how lightweight it is,” Curcio said. “They also noted how quickly the uniform dries upon getting wet.”

Based on January 2020 market research and responses to a November 2019 request for information, the Marine Corps should see a potential cost reduction of at least 25% and as much as 60% per uniform.

MCSC plans to purchase 70,000 trousers, blouses and pairs of boots for the MCTCU to support fleet training or operating in tropical climates. The command procured more than 10,000 sets of blouses and trousers under a manufacturing and development effort.

Fielding of the MCTCU is slated for the fourth quarter of fiscal year 2020.

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# Navy Awards \$99.8 Million to Rebuild Earthquake-Damaged China Lake Facilities

SAN DIEGO – Naval Facilities Engineering Command (NAVFAC) Southwest on April 14 awarded a \$99.8 million task order for the design and construction of 25 new ordnance magazines and an inert storage facility at Naval Air Weapons Station, China Lake, California, according to NAVFAC Southwest public affairs.

Last July, two major earthquakes struck the China Lake area. The task order will fund the demolition of an inert storage facility and 32 critically damaged magazines and design and construct 25 new modern magazines as well as an inert storage facility.

Construction will include electrical, telecommunications, intrusion detection systems, roadway and apron paving, a bridge crane and positive drainage for the new magazines and storage facility.

The task order is part of a multiple award construction contract. The awardee, Reyes Construction of Pomona, California, was one of multiple companies to submit proposals.

“This is the first major new construction project awarded in support of the NAWS China Lake earthquake recovery effort and is an important part of restoring the installation to its full operational capability,” said Capt. Mike Oestereicher, commanding officer of NAVFAC Southwest.

“Mission-critical operations and RDT&E support to the fleet were adversely impacted by the damaged magazines, with ordnance being jam-stowed in the handful of remaining adequate

magazines or shipped off-base to other sites," Oestereicher said. "This project will restore that lost capability and help bring NAWS China Lake back up to full readiness."

"Award of this project in such a short time represents a tremendous team effort with support from a myriad of stakeholders and support organizations," said Cmdr. Dan Stokes, NAVFAC Southwest assistant operations officer.

"We are eager to move forward into the construction phase to help restore full mission capability to the base and to provide support to the fleet."

NAWS China Lake is in the western Mojave Desert region of California, about 150 miles north of Los Angeles. China Lake's mission is to support the Navy's research, testing and evaluation missions to provide cutting-edge weapons systems to the warfighter.

The installation is the Navy's largest single landholding. In total, its two ranges and main site cover more than 1.1 million acres, an area larger than Rhode Island.

"This critical investment will bring our weapons storage capability into the modern era and will support testing programs for current and future weapons systems," said Capt. Jason "Sherm" Sherman, Navy Munitions Command Pacific, CONUS West Division commander and Naval Weapons Station Seal Beach commanding officer. "Importantly at China Lake, these new magazines will be seismically rated to modern standards for increased environmental resiliency."

The project is scheduled for completion by August 2022.

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# **BAE Wins DARPA Contract to Develop Machine Learning Analytics**

BURLINGTON, Mass. – BAE Systems was awarded a contract by the U.S. Defense Advanced Research Projects Agency (DARPA) to develop machine learning analytics as a service – a first-of-its-kind, cloud-based model for the government, the company said in an April 21 release.

This new technology model seeks to provide an automated service that aims to leverage commercial and open source data, including satellite imagery, to deliver continuous worldwide situational awareness for a diverse range of challenges, including anomaly detection and prediction.

As part of DARPA's Geospatial Cloud Analytics (GCA) program, the BAE Systems FAST Labs research and development team aims to use the company's Multi-INT Analytics for Pattern Learning and Exploitation (MAPLE) technology.

This approach seeks to apply automated analytics to a problem, freeing operators to query the data to answer specific questions about important mission issues at hand while removing the traditional need to conduct extensive manual analysis. For the purposes of this program, the BAE team seeks to apply MaaS to a proposed maritime challenge to automatically and reliably detect vessels that are engaging in illegal fishing.

Our technology can be used across a number of domains and can be leveraged in the cloud, making it an extremely flexible and easily scalable solution that provides operators with worldwide vigilance. Our goal is to automate analytics in a new way so that we can take the incredible capabilities of machine learning to discover nuanced patterns in both sparse

and large data volumes to solve extremely complicated problems that could threaten our nation's security.

Research on the GCA program leverages BAE's machine learning and artificial intelligence capabilities such as adaptive reasoning and analysis in its autonomy technology portfolio. The GCA program is one of several fields BAE Systems is researching, including current work on DARPA's Hallmark Tools, Capabilities, and Evaluation Methodology program, and represents several years of research on various other programs with DARPA as well as the Air Force Research Lab.