

# Rear Adm. Okano: Modern Sensors Making Navy Ships 'Data-Providing Monsters'



Arleigh Burke-class guided-missile destroyer USS Pinckney (DDG 91) transits the South China Sea in July 2021. Surface Electronic Warfare Improvement Program Block 3 is being installed on Pinckney, giving it an electronic attack capability. *U.S. NAVY / Mass Communication Specialist 2nd Class Jeffery L. Southerland*

ARLINGTON, Va. – Sensors on naval platforms are becoming multi-purpose – some even weapons – and are making the U.S. Navy's surface ships the most data-rich platforms in the Department of Defense as their sensors become part of an analog-to-digital transformation, a senior Navy program executive said.

Noting the amount of data that comes from modern surface-ship sensors, Rear Adm. Seiko Okano, program executive officer –

Integrated Warfare Systems, speaking Feb. 3 during the Combat Systems Symposium conducted by the American Society of Naval Engineers, said the amount “is absolutely incredible. ... Our surface ships are the most data-rich platforms ever. ... We are data-providing monsters.”

She noted that each array face of the SPY-6 radar for the Flight III Arleigh Burke guided-missile destroyer (DDG) is producing terabytes per minute of data.

“We’re right now not digesting that to its full capacity,” she said. “We’re doing with that what we did 40 years ago, ... which is why we’ve got to invest in digitizing our fleet and the power of AI/ML [artificial intelligence/machine learning]. There’s so much capability we’ve got to unleash from those sensors alone.

“We’ve shifted to this digital era,” Okano said. “Where before, your hardware and software were really tightly coupled ... now it is all software-programmable. And that’s the world we’re living with SEWIP [Surface Electronic Warfare Improvement Program], Aegis, SPY-6 and our sensors right now, which allows us to change and adapt a lot faster than we ever had before.”

Okano pointed to examples of radars such as the SPS-48 and SPS-49 search radars as single-purpose sensors. The trend now, she said, is “we’re going multi-mission. These sensors are no longer just used for air search or surface search.

“Are we really unleashing the power of what we are putting on board ships?” she asked. “Our infrastructure isn’t one that really we can manipulate that sensor to do whatever we want. We’re already behind the power curve.”

The admiral noted new sensors “are absolutely fantastic and they are only getting more powerful.”

She noted SEWIP Block 3 [SLQ-32(V)7] is being installed on the

Arleigh Burke-class DDG USS Pinckney. This SEWIP block has an electronic attack capability.

“Sensors [are] becoming weapon systems,” Okano said. “You’re both sensing and you’ve got a capability to react as well. [That] is the world we’re getting into.”

---

## **First MQ-4C Triton with Multi-Intelligence Upgrade Delivered to the Navy**



A Northrop Grumman Corp. MQ-4C Triton takes to the skies over the California desert as the Triton low-rate initial production schedule progresses. Known as B8, this is the first production Triton to be upgraded to the multi-intelligence

configuration to meet the Navy's critical maritime intelligence, surveillance, reconnaissance and targeting needs. B8 was delivered to Naval Air Station Patuxent River, Maryland, on Feb. 1.

ARLINGTON, Va. – The first production MQ-4C Triton unmanned aerial vehicle to be upgraded to the multi-intelligence configuration was delivered to the U.S. Navy at Naval Air Station Patuxent River, Maryland, on Feb. 1, Northrop Grumman said in a release.

The MQ-4C's new configuration Integrated Functional Capability Four is designed to bring an enhanced multi-mission sensor capability as part of the Navy's Maritime Intelligence, Surveillance, Reconnaissance and Targeting transition plan.

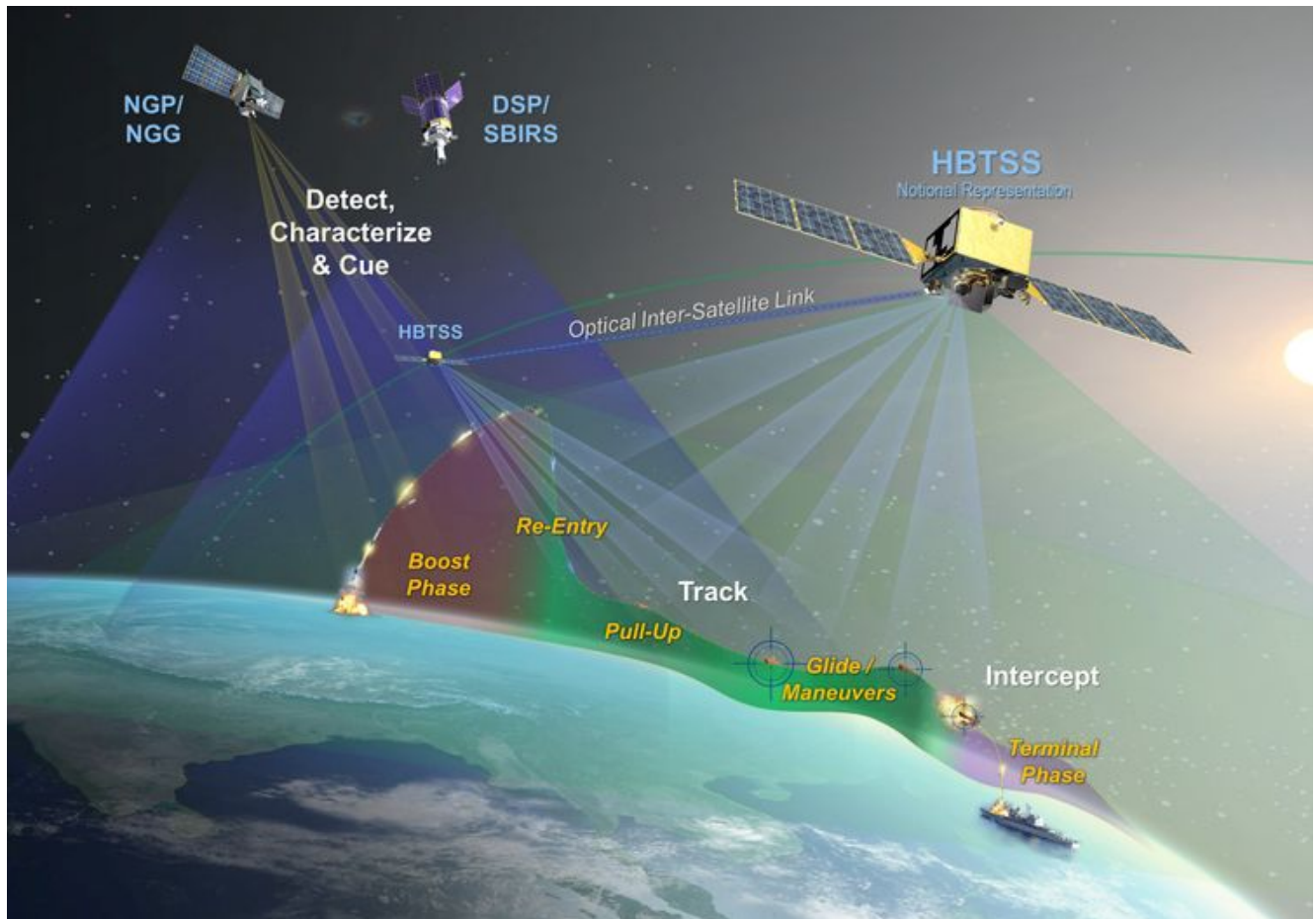
The Triton, designated B8 by the manufacturer, Northrop Grumman, went through a 30-month modification period to the new configuration.

The two MQ-4Cs currently deployed to Guam for the U.S. 7th Fleet's Task Force 72 by Unmanned Patrol Squadron 19 (VUP-19) as part of the early operational capability deployment are in the baseline IFC-3 configuration.

The Triton in the IFC-4 configuration is designed to complement the Navy's P-8A Poseidon maritime patrol aircraft and eventually will enable the Navy to retire its EP-3E Orion electronic reconnaissance aircraft. The initial operational capability for the Triton will be declared in 2023 when IFC-4-configured Tritons are deployed in one complete orbit. The Navy plans to deploy Triton to five orbits worldwide.

---

# Vice Adm. Hill: MDA Pushes Space-Based Sensor for Tracking Hypersonic Missiles for Fleet Defense



A graphic illustrates how Hypersonic and Ballistic Tracking Space Sensor satellites would provide continuous tracking and handoff to enable targeting of enemy missiles launched from land, sea or air. *NORTHROP GRUMMAN*

ARLINGTON, Va. — With hypersonic missiles emerging as a serious threat to U.S. Navy ships, the Missile Defense Agency is focused on the use of a space-based sensor for hypersonic regional defense to provide tracking of both hypersonic and ballistic missiles all the way to hand off to the terminal phase.

The MDA has been designated the Defense Department's executive

agent for defense against hypersonic missiles.

"It's going to maneuver and come in at a high velocity," said Vice Adm. Jon Hill, speaking Feb. 2 during the Combat Systems Symposium conducted by the American Society of Naval Engineers, noting the challenge of defeating hypersonic missiles.

Hill said that tracking of a hypersonic missile in flight will be the job of the Hypersonic and Ballistic Tracking Space Sensor, a satellite with sensors to detect and track hypersonic missiles. Defense against the missiles in the terminal phase would be the job of the ship-based Aegis Combat System and Standard surface-to-air missiles.

Hill said of hypersonic missiles that with existing sensors "we're seeing them, we're capturing data, we're collecting on them, though noting that the U.S. sensors are "not always in the exact right place, because many of them are land-based and stationary because sensors are purpose built for a particular part of the battlespace.

"We have that and the SM-6 missile with its nascent capability to take on a hypersonic [missile]," he said. "We didn't call it that back when we got the letter from the CNO [chief of naval operations] to go develop this program. But the whole idea was to handle high-speed maneuver. [The SM-6] is really the nation's only hypersonic defense capability."

"We can do warning today on hypersonics, so we're not at zero," he said.

"We're going to take those first hypersonic tracking space-based sensors in coordination with the U.S. Space Force and we're going to get them on in orbit," he said. "That's through a competitive process and we're really excited about that. We did so much risk-reduction on the ground we're absolutely confident that those sensors are going to deliver what we need when we put them up."



The admiral said terminal defense is necessary but not sufficient to defeat hypersonic missiles.

“We’re going to leverage space cueing and fire control from space because, to handle maneuvers across the globe, you’ve got to look down” he said. “Field of view is limited from radars and we’re running out of islands to put radars on.

Under the concept, the HBTSS would detect a missile’s launch and the separation of the first and second stages of the rocket motors. The satellite’s data is continuously relayed and is used to create a track of the hypersonic glide vehicle. The remote track data passed via satellite to an Aegis ship to compute an intercept with a glide-phase interceptor.

---

## **Official: Navy Interested in Moving Away from Towed Sensors for USVs**



The Mine Countermeasures USV heads out for an operational assessment in this November 2019 photo. *U.S. NAVY*

ARLINGTON, Va. – The use of towed sensors provides a measure of survivability for small unmanned surface vessels but presents other problems such that the Navy is looking to move away from towed sensors in favor of onboard sensors, a Navy official said.

The Navy is soon to award a production award for the Textron-built Mine Countermeasures USV, equipped with the Unmanned Influence Sweep System, a towed sensor, said George Saroch, director for unmanned surface vessels at Naval Sea Systems Command, speaking Feb. 1 during a panel discussion at the Technology, Systems and Ships Symposium conducted by the American Society of Naval Engineers.

In 2017, Saroch said, the Navy recognized the versatility of the MCM USV and decided to build the boat to handle various payloads, which soon would include the AQS-20 mine-hunting towed sonar and eventually the Barracuda mine-neutralization munition. He sees these as building blocks to a single-sortie



detect-to-engage mine countermeasures system.

“So, fundamentally, it’s focused on building a boat, and then we have separate contracts for the payloads,” he said.

The UISS has been through operational testing and shock testing, he said. The MCM USV with the mine-hunting AQS-20C system will be going through developmental and operational test this spring and summer.

Saroch stressed the importance of automatic target recognition as necessary to avoid the expenditure of neutralization charges on objects other than mines.

However, Saroch said the Navy is “very interested in getting away from towing things. You can snag a lot of things when you tow systems, a lesson from the [MH-53E MCM helicopter] community” which often snags objects while towing MCM systems through the water.

“We’re learning that lesson over again about snagging things,” he said, noting that the Navy is trying to move sensors back aboard the boat, “which brings some other operational capabilities.”

---

## **Meier: Ford CVN to Range Widely in the Atlantic for U.S. 2nd Fleet**



The aircraft carrier USS Gerald R. Ford (CVN 78) departed Naval Station Norfolk to transit to Newport News Shipyard in support of its planned incremental availability, a six-month period of modernization, maintenance, and repairs, Aug. 20, 2021. *U.S. NAVY / Mass Communication Specialist 1st Class William Spears*

ARLINGTON, Va. – The Navy's newest aircraft carrier, the USS Gerald R. Ford (CVN 78), will operate all over the North Atlantic this year when it completes its current shipyard availability, a Navy admiral said, and will operate under the auspices of the U.S. 2nd Fleet.

"Ford is doing amazingly well, coming out of the shipyard her for initial employment," said Rear Adm. John F. Meier, commander, Naval Air Force Atlantic, speaking Feb. 1 during a panel discussion at the Technology, Systems and Ships Symposium conducted by the American Society of Naval Engineers.

"I think it's a great opportunity for us to demonstrate the new technology," Meier said. "We're going to do that as a

service-retained employment, so not part of the normal global force deployment schedule, but we will be working with partners, we'll be working all over the place as 2nd Fleet takes charge of that carrier and operates with a wide variety of operations up and down the coast, across the Atlantic [and] down in the Caribbean."

Meier said the Ford's upcoming operations would be "a really great opportunity to show off that aircraft carriers are in fact extremely maneuverable, upwards of 700 [nautical] miles a day. And robust – most especially robust when you think about the refueled range of the aircraft that fly from them."

The Ford currently is in a planned incremental availability at Newport News Shipbuilding. All 11 weapon elevators have been certified as of December. Since it began flight operations, it has completed 8,100 catapult launches and the same number of arrested landings, said Rear Adm. Jim Downey, program executive officer for aircraft carriers, also speaking at the event.

---

## **Navy Looking to Launch Analysis of Alternatives for SSN(X) Within the Next Year**



The Virginia-class submarine USS Minnesota (SSN 783) transits the Thames River toward Naval Submarine Base New London in Groton, Conn., Nov. 26, 2021. *U.S. NAVY / Chief Petty Officer Joshua Karsten*

ARLINGTON, Va. – The Navy plans to begin a formal Analysis of Alternatives for its next generation nuclear-powered attack submarine, or SSN(X), a senior program official said.

“We are looking at starting an AoA here probably within the next year said Lisa Radocha, executive director of the Navy’s Program Executive Office – Attack Submarines, speaking Jan. 31 on a panel at the Technology, Systems and Ships Symposium conducted by the American Society of Naval Engineers.

Radocha said the Initial Capabilities Document for the SSN(X) is now under development. Research and development funds for the SSN(X) program are in the fiscal 2022 budget.

She said the SSN(X) design will feature increased speed, an increased horizontal payload, improved acoustic superiority, and higher operational availability.

Radocha pointed out that the period between the delivery of the first Virginia-class SSN and the planned delivery of the first SSN(X) will be four decades. She said one of her concerns is holding onto the engineering and design expertise in the shipbuilding industrial base for the SSN(X) program.

The Virginia-class SSN program will total 48 boats. The technological improvements over the seven blocks of the Virginia SSN will help to reduce risk for the SSN(X) program.

Radocha said her focus is creating an “on-ramp” for the SSN(X) program over the next two fiscal years.

Last August, during the Navy League’s Sea-Air-Space Expo, Rear Adm. (now Vice Adm.) Bill Houston, then-director, Undersea Warfare, Division, Office of the Chief of Naval Operations and now commander, Submarine Forces, labeled the SSN(X) as “the ultimate apex predator for the maritime domain.”

Houston said the SSN(X) has “got to be faster, carry a significant punch, a bigger payload, a larger salvo rate. It’s got to have acoustic superiority and simultaneously we’re going to work on operational availability with respect to maintenance and life of the ship.”

The admiral explained that the SSN(X) is timed to capitalize on the ‘very robust’ design team for the Columbia-class SSBN when that program is ramping down amid production of the SSBNs.

---

## **Radar Integration Determined**



# Deployment Timing of Navy's MQ-8C Fire Scout



Lt. Cmdr. Joe Johnson assigned to the “Sea Knights” of Helicopter Sea Combat Squadron (HSC) 22, Detachment 5, mans the flight deck control tower during flight quarters aboard the Freedom-variant littoral combat ship USS Milwaukee (LCS 5), Dec. 15, 2021. *U.S. NAVY / Mass Communication Specialist 2nd Class Danielle Baker*

ARLINGTON, Va. – The U.S. Navy’s MQ-8C Fire Scout unmanned helicopter reached initial operational capability more than 2.5 years ago but made its first operational deployment only last month. The reason, the Navy’s program manager explained, centered on the integration of a radar into the new Fire Scout version.

Navy Capt. Eric Soderberg, the Navy’s Fire Scout program manager, speaking to reporters Jan. 25, explained the MQ-8C as a platform reached initial operational capability in June

2019, but the service decided to wait until it could complete integration of the Leonardo ZPY-8 surface search radar on the MQ-8C, which has now been accomplished. The radar already was integrated on the older MQ-8B version, which the MQ-8C is scheduled to replace.

Soderberg said that “the fleet made a decision that a radar-equipped Bravo [MQ-8B] was more suitable to deploy than a non-radar-equipped Charlie [MQ-8C]. Now that we have that radar on the Charlie, it becomes a pretty clear answer that the Charlie is the superior platform, and that’s why we’re accelerating the transition from the 8B to the 8C.”

An MQ-8C, built by Northrop Grumman, was deployed operationally on Dec. 14 on board the Freedom-class littoral combat ship USS Milwaukee (LCS 5), which is deployed in the U.S. 4th Fleet’s area of operations in support of Joint Interagency Task Force South’s mission, which includes counter-illicit drug trafficking missions in the Caribbean and Eastern Pacific, according to the caption.

Soderberg said the MQ-8C was “performing up to expectations” on the deployment.

The Leonardo ZPY-8 on the Fire Scout gives the host ship a far greater ability to detect and track surface contacts and maintain over-the-horizon situational awareness.

The MQ-8C’s larger airframe and greater fuel load gives it an endurance is 10 to 12 hours, far greater than the four to five hours of the MQ-8B.

The improved software on the MQ-8C system eases the workload on the controllers. The software integrates the radar, electro-optical sensor, and Automatic Information System in the MQ-8C.

The MQ-8C on the Milwaukee is teamed with an MH-60S Seahawk helicopter, which is not equipped with a radar. Both aircraft

are operated by the "Sea Knights" of Helicopter Sea Combat Squadron (HSC) 22, Detachment 5.

Soderberg said although the detachment's officers all can control the Fire Scout, one officer is assigned as the main specialist for the system. The Navy also is qualifying MQ-8B and MQ-8C operators separately now, as opposed to personnel operating both types.

The program manager also said a data link designed to allow the MQ-8C to share sensor data with multiple platforms is being introduced, but some budget uncertainty is slowing that process.

He said there is a well-defined need for a mine-countermeasures sensor with both littoral surf zone and deeper water capabilities. The COBRA II sensor, equipped with lidar, is considered suitable.

A passive electronic warfare sensor for the platform is under discussion. Soderberg also said there is a "technical way forward" to arm the MQ-8C with weapons such as rockets, but there are "no funded efforts to implement" a weapons

He also said the MQ-8C is ready if needed for on the Lewis B. Puller-class expeditionary sea base ship. The mobile mission-control station is ready and certified for the ship.

---

## **Northrop Grumman Delivers MYP-1's Final E-2D to U.S.**

# Navy; Begins MYP-2



Northrop Grumman successfully delivered the 51st U.S. Navy E-2D Advanced Hawkeye production aircraft, AA-52. The aircraft represents the last to be delivered under the Multi-Year Procurement 1 contract. *NORTHROP GRUMMAN*

ARLINGTON, Va. – Northrop Grumman has successfully delivered the 51st E-2D Advanced Hawkeye for the U.S. Navy. The aircraft is the final one of a Multi-Year Procurement-1, the company said Jan. 21.

The E-2D, numbered AA-52 in company production, is equipped with the Delta System/Software Configuration Build 3, which provides an additional leap in operational effectiveness and technology for the E-2D with the incorporation of aerial refueling and a dwell-based tracker, the release said.

MYP-1, awarded in June 2014, called for the production of 25 E-2Ds, later increased to 26.

The E-2D now equips six of the Navy's nine fleet airborne



command and control squadrons and eventually will replace the E-2C in the remaining three squadrons.

Northrop will begin deliveries this year of E-2Ds through MYP-2, which was awarded in April 2019 for 24 E-2Ds.

The Navy's program of record is for 86 E-2Ds. Japan has ordered 13 E-2Ds, and France has ordered four.

---

## Marine Squadron First to Complete Transition to CH-53K



A CH-53K King Stallion (right) and a CH-53E Super Stallion are staged during a redesignation ceremony at Marine Corps Air



Station New River, North Carolina, Jan. 24, 2022. *U.S. MARINE CORPS / Lance Cpl. Elias E. Pimentel III*

MARINE CORPS AIR STATION NEW RIVER, N.C. – The CH-53K King Stallion heavy-lift helicopter now equips an operational Marine heavy helicopter squadron, the 2nd Marine Aircraft Wing said Jan. 25.

A Jan. 24 ceremony at New River marked the transition of Marine Heavy Helicopter Squadron 461 (HMH-461) from the CH-53E Super Stallion to the CH-53K.

“Today our Marine Corps got a little stronger,” said Maj. Gen. Michael Cederholm, commanding general of 2nd Marine Aircraft Wing, described the significance of HMH-461’s transition to the CH-53K. “It is only appropriate that 2nd Marine Aircraft Wing, and in particular Marine Corps Air Station New River, would be the first to receive the newest land and sea-based heavy helicopter because this is the home of the Marine Corps’ assault support. Placing the CH-53K King Stallion into the hands of our warfighters will ensure we capitalize on the unique qualities and characteristics of the 53K and will allow 2nd MAW to continue to provide the best aviation support to the Marine Air-Ground Task Force right now, and well into our future.”

The CH-53K is designed to lift nearly 14 tons (27,000 pounds) at a mission radius of 110 nautical miles, in high and hot environments. It can lift almost triple the baseline CH-53E lift capability. It is also designed to have a smaller shipboard footprint, lower operating costs per aircraft and less direct maintenance man hours per flight hour. The CH-53K is expected to externally lift two up-armored high mobility multipurpose wheeled vehicles, light armored vehicles and dual joint light tactical vehicles. It features a cabin section 12 inches wider than the CH-53E that can internally load two AMC 463L pallets or five AMC 463L half-pallets or internally load a Humvee.

The CH-53K leverages a next-generation glass cockpit Common Avionics Architecture System open-architecture design; utilizes triple redundant fly-by-wire flight controls adding additional survivability, safety and maintenance improvements; includes fourth-generation high-efficiency composite rotor blades with swept anhedral tips; and leverages a low-maintenance elastomeric rotor head.

“Quite simply, 2nd MAW will be able to move more troops and equipment, at higher altitudes, faster speeds, and in more austere environments than ever before,” Cederholm said. “We continue to become a more modernized and lethal force so, when the time comes, we will deliver on II Marine Expeditionary Force’s motto: ‘Come to Fight – Come to Win.’ I am so proud of the Marines and Sailors of 2nd MAW and find it appropriate that they are a part of this moment in Marine Corps aviation history.”

The Marine Corps plans to stand up eight active-duty squadrons, one training squadron and two reserve squadrons to support operational requirements. The CH-53K is currently on track to deploy to the fleet as needed by the Marine Corps in fiscal 2024.

---

## **Navy Delayed Announcement of First MQ-8C Deployment Five Weeks**



An MQ-8C Fire Scout attached to the “Sea Knights” of Helicopter Sea Combat Squadron (HSC) 22, Detachment 5, takes off from the flight deck of the Freedom-variant littoral combat ship USS Milwaukee (LCS 5), Jan. 6, 2022. *U.S. NAVY / Petty Officer 2nd Class Danielle Baker*

ARLINGTON, Va. – The Navy has deployed the MQ-8C version of its Fire Scout unmanned helicopter for the first time but waited five weeks to make the announcement.

An MQ-8C, built by Northrop Grumman, was deployed operationally on Dec. 14 on board the Freedom-class littoral combat ship USS Milwaukee (LCS 5), the Navy and Northrop Grumman announced in Jan. 24 releases.

The deployment was apparent before Jan. 24 in a series Navy photographs taken Jan. 6 while the MQ-8C was operating from the USS Milwaukee in the Caribbean Sea. The ship was deployed in the U.S. 4th Fleet’s area of operations in support of Joint Interagency Task Force South’s mission, which includes counter-illicit drug trafficking missions in the Caribbean and Eastern Pacific, according to the caption.

The Milwaukee had departed Naval Station Guantanamo Bay, Cuba, on Jan. 3 after two weeks in port following an outbreak of the COVID-19 virus in the crew.

The MQ-8C was being operated by the "Sea Knights" of Helicopter Sea Combat Squadron (HSC) 22, Detachment 5. The squadron also operates the MH-60S Seahawk manned helicopter and is using both aircraft in counter-narcotics operations.

The Fire Scout "will identify targets of interest and refine surveillance data of existing targets of interest, allowing for enhanced capabilities for counter illicit drug trafficking missions," the Navy said in a release.

"This is a significant milestone in the MQ-8C Fire Scout program," said Navy Capt. Eric Soderberg, the Navy's Fire Scout program manager. "The transition from the MQ-8B to the MQ-8C Fire Scout has brought improved sensors and more than doubles the on-station endurance. Advances in Fire Scout's capabilities further our successful integration of unmanned platforms at sea and the Navy and Marine Corps unmanned campaign plan."

"Our partnership with the U.S. Navy has been critical in developing Fire Scout's multi-mission autonomous capabilities which provide greater situational awareness to the joint force," said Lance Eischeid, director, Fire Scout program, Northrop Grumman. "With the ability to operate from a range of surface ships, MQ-8C Fire Scout is a powerful platform that allows the U.S. Navy to increase the detection and tracking of targets through its onboard sensors and integration with manned assets."

"Fire Scout is a force multiplier, not only in our current mission, but in every mission the U.S. Navy conducts," said Cmdr. Brian Forster, commanding officer of Milwaukee. "I am very excited of the team I have onboard which has already, and will continue to, demonstrate how manned and unmanned assets

can work together to effectively achieve the mission.”

In December, an MQ-8C was photographed on the deck of Independence-class littoral combat ship USS Jackson (LCS 6) while in port in Apra Harbor, Guam. The caption stated the Jackson was part of Destroyer Squadron Seven “on a rotational deployment in the U.S. 7th Fleet area of operation to enhance interoperability with partners and serve as a ready-response force in support of a free and open Indo-Pacific region.”

The MQ-8C in the Guam photograph was going through pre-deployment functional ground checks for a detachment of Helicopter Sea Combat Squadron 23 – based at Naval Air Station North Island, California – that will operate the MQ-8C from the USS Jackson.

The MQ-8C, which achieved initial operational capability in June 2019, is an upgrade to the Fire Scout System mainly in that it uses a Bell 407 airframe, which is larger than the earlier-design MQ-8B’s airframe and equipped with more powerful engines, thus having a greater speed, payload and endurance, up to 10+ hours of endurance on station and a range of more than 1,000 nautical miles.

The MQ-8C is equipped with the Leonardo ZPY-8 Osprey search radar or an electro-optical/infrared sensor and uses the same ground control station and the MQ-8B. The Navy plans to add more capability in the form of Link 16 data link, passive targeting, and a mine-countermeasures payload.

Northrop Grumman was under contract to deliver 38 MQ-8Cs, all of which have been delivered and will replace the earlier MQ-8B version, of which 30 have been delivered to the fleet.