# Northrop Grumman’s Optionally Manned Firebird Demonstrates Operational Flexibility


Northrop Grumman’s optionally manned Firebird, which flew to various locations around the United States to showcase its flexibility and ability to fly in national airspace. *NORTHROP GRUMMAN*

SAN DIEGO – Northrop Grumman Corp.’s Firebird multi-sensor aircraft showcased the versatility of the optionally manned autonomous system as it flew to various locations across the United States last month, the company said in an April 6 release.

The ability of Firebird to be flown manned through national airspace is a demonstration of its unique operational flexibility for self-deployment and its rapid relocation ability to adapt to specific user needs and operational

requirements.

The company flew Firebird almost 9,000 miles around the US with stops in Dayton, Ohio, Washington D.C., Patuxent River, Maryland, as well as Tampa, Miami and Key West, Florida.

“Our flights showcased one of its key differentiators – the ability to position the system in a manned configuration, then convert to autonomous operations for persistent ISR in under two hours,” said Jane Bishop, vice president and general manager, autonomous systems, Northrop Grumman. “At each stop, plane-side briefings provided customers the opportunity to see first-hand the operational versatility of the platform, its large sensor bay, and rapid configurability for changing mission needs.”

Firebird is a medium-altitude, long-endurance unmanned aircraft system designed for flexibility and affordability. Customers can install new payloads in as little as one day and swap payloads in 30 minutes, making the system suitable for numerous domains and missions.

The flights concluded in Key West, where the team conducted a series of manned maritime operational events that included a four-sensor package containing two high-definition electro-optical sensors, a maritime configured multi-spectral sensor for small target detection and an Automatic Information System receiver.

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# Keel Laid for Future USS

# Harvey C. Barnum Jr.

The future USS Harvey C. Barnum Jr. (DDG 124) namesake, Col. Harvey “Barney” Barnum, Jr. (USMC, Ret.) (center) and his wife and ship sponsor, Martha Hill (left) monitor as Bath Iron Works welder Marty Fish (right) inscribes Col. Barnum’s signature onto the keel plate at General Dynamics Bath Iron Works (BIW) shipyard, April 6. *BATH IRON WORKS*

BATH, Maine – The keel of the future USS Harvey C. Barnum Jr. (DDG 124) was ceremoniously laid at General Dynamics Bath Iron Works (BIW) shipyard, April 6, the Navy’s Team Ships Public Affairs said in an April 7 release.

The ship’s namesake, Col. Harvey “Barney” Barnum Jr. (USMC, Ret.) and his wife and ship sponsor, Martha Hill, attended the event. Acting Secretary of the Navy, Thomas W. Harker, Maine Sens. Susan Collins and Angus King Jr. and Rep. Chellie Pingree were also in attendance.

With the assistance of BIW welder Marty Fish, Barnum inscribed his signature onto the keel plate. As the sponsor, Martha Hill

authenticated the keel by etching her initials into the keel plate, a tradition that symbolically recognizes the joining of modular components and the ceremonial beginning of the ship.

“Col. Barnum has spent his life in service to our country and it is an honor to lay the keel of his ship,” said Capt. Seth Miller, DDG 51 class program manager. “This ship and all who serve aboard it will be a reminder of the honor, courage, and commitment that Col. Barnum embodies.”

Barnum twice served in Vietnam and is a Medal of Honor recipient for heroic actions taken against communist forces at Ky Phu in Quang Tin Province in December 1965 after his company came under enemy fire and was separated from the rest of their battalion.

DDG 124 is a Flight IIA Arleigh Burke-class destroyer equipped with Aegis Baseline 9, which provides improved integrated air and missile defense capabilities, increased computing power, and radar upgrades that improve detection range and reaction time against modern air warfare and ballistic-missile defense threats.

BIW is also in production on the future Arleigh Burke-class destroyers Carl M. Levin (DDG 120), John Basilone (DDG 122), Patrick Gallagher (DDG 127), and Flight III ships, Louis H. Wilson Jr. (DDG 126), and William Charette (DDG 130), as well as the future Zumwalt-class destroyer, Lyndon B. Johnson (DDG 1002).

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# Flight Control Technology Set

# to Dive Underwater for Submarine Mobility

An artist's rendering of future Successor-class submarine, the first of which will be named Dreadnought. Successor-class is the United Kingdom's future ballistic missile submarine, to replace the Vanguard class. *U.K. ROYAL NAVY*

ROCHESTER, U.K. – BAE Systems is taking decades of flight controls expertise underwater on-board the United Kingdom's next-generation submarine, Dreadnought. This innovative approach involves adapting controls that are usually used in fly-by-wire aircraft and applying them in a marine environment, the company said in a March 29 release.

The complete Active Vehicle Control Management (AVCM) system will oversee all major aspects of the submarines' maneuvering capability to the highest levels of safety and reliability, similar to existing systems on modern air transport platforms.

“With over 50 years of avionics experience, we already have a great understanding of how to develop complex, control systems for hi-tech platforms,” said Jon Tucker, director for Maritime Controls at BAE Systems Controls and Avionics. “However, taking our technology underwater brings exciting new challenges and we are proud to support the Dreadnought program and play an important part in our national security effort.”

Similar to how fly-by-wire works for aircraft – whereby electronic systems are used to control the movement of aircraft – the company’s engineers are developing electronics that control the heading, pitch, depth and buoyancy of the Dreadnought class among other critical elements with added safety benefits.

Work has already begun, supporting more than 130 highly skilled jobs in Rochester, U.K, with the number expected to grow. The program is one of the largest developmental projects taking place at the Rochester site and the company says it has made significant investments at the site to create new labs and workspaces to support the program.

The innovation has been developed by engineers in the BAE Systems’ Electronic Systems business working closely with colleagues across the company’s Maritime and Air sectors to develop a world-class system as part of BAE System’s Active Vehicle Control One-Team. Its engineers will continue to develop the technologies with a view to expanding its applications to both other underwater and surface vessels.

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# Navy Announces New

# Assignments for Flag Officers

Rear Adm. Blake L. Converse, assigned as deputy commander, U.S. Pacific Fleet, one of a number of new assignments announced March 29. *U.S. NAVY*

ARLINGTON, Va. – The acting secretary of the Navy and chief of naval operations announced on March 29 the following assignments:

Rear Adm. Blake L. Converse will be assigned as deputy commander, U.S. Pacific Fleet, Pearl Harbor, Hawaii. Converse is currently serving as commander, Submarine Force, U.S. Pacific Fleet, Pearl Harbor, Hawaii.

Rear Adm. Frederick W. Kacher will be assigned as assistant deputy chief of naval operations for operations, plans and strategy, N3/N5B, Office of the Chief of Naval Operations, Washington, D.C. Kacher is currently serving as commander, Expeditionary Strike Group Seven; and commander, Amphibious Force, Seventh Fleet, Okinawa, Japan.

Rear Adm. (lower half) James A. Aiken, selected for promotion to rear admiral, will be assigned as commander, U.S. Naval Forces, Southern Command; and commander, U.S. Fourth Fleet, Jacksonville, Florida. Aiken is currently serving as commander, Carrier Strike Group Three, Bremerton, Washington.

Rear Adm. (lower half) Joseph D. Noble Jr., selected for promotion to rear admiral, will be assigned as director, logistics operations, Defense Logistics Agency; and commander, Joint Regional Combat Support, Fort Belvoir, Virginia. Noble is currently serving as commander, Naval Supply Systems Command Weapons Systems Support, Philadelphia, Pennsylvania.

Rear Adm. (lower half) Dean A. VanderLey, selected for promotion to rear admiral, will be assigned as commander, Naval Facilities Engineering Systems Command Pacific; and director, Fleet Civil Engineer, U.S. Pacific Fleet, with additional duties as fleet civil engineer, N46, U.S. Pacific Fleet, Pearl Harbor, Hawaii. VanderLey is currently serving as commander, Naval Facilities Engineering Systems Command Atlantic with additional duties as fleet civil engineer (N01CE), U.S. Fleet Forces Command, Norfolk, Virginia.

Rear Adm. (lower half) Peter G. Vasely, selected for promotion to rear admiral, will be assigned as commander, special operations, Special Operations Joint Task Force – Afghanistan, U.S. Special Operations Command, Kabul, Afghanistan. Vasely is currently serving as director for operations, Defense Intelligence Agency, Washington, D.C.

Rear Adm. (lower half) Stephen D. Barnett will be assigned as commander, Navy Region Southwest, San Diego, California. Barnett is currently serving as commander, Navy Region Northwest, Silverdale, Washington.

Rear Adm. (lower half) Michael A. Brookes will be assigned as director, J2, U.S. Southern Command, Doral, Florida. Brookes is currently serving as director of intelligence, J2, U.S. Strategic Command, Offutt Air Force Base, Nebraska.

Rear Adm. (lower half) Timothy J. Kott will be assigned as commander, Navy Region Hawaii; and commander, Naval Surface Group Middle Pacific, Pearl Harbor, Hawaii. Kott is currently serving as commander, Carrier Strike Group One, San Diego, California.

Rear Adm. (lower half) Carl A. Lahti will be assigned as commander, U.S. Naval Forces, Japan; and commander, Navy Region Japan, Yokosuka, Japan. Lahti is currently serving as commandant, Naval District Washington, Washington, D.C.

Rear Adm. (lower half) Matthew N. Ott III will be assigned deputy chief of staff for Fleet Ordnance and Supply; and fleet supply officer, N41, U.S. Fleet Forces Command, Norfolk, Virginia. Ott is currently serving as executive director, operational contract support, Office of the Under Secretary of Defense for Acquisition and Sustainment, Washington, D.C.

Rear Adm. (lower half) Milton J. Sands will be assigned as commander, Special Operations Command Africa, U.S. Special Operations Command, Stuttgart, Germany. Sands is currently serving as commander, Naval Service Training Command, Great

Lakes, Illinois.

Capt. Christopher D. Alexander, selected for promotion to rear admiral (lower half), will be assigned as commander, Naval Surface and Mine Warfighting Development Center, San Diego, California. Alexander is currently serving as commanding officer, Surface Warfare Officer School Command, Newport, Rhode Island.

Capt. Sean R. Bailey, selected for promotion to rear admiral (lower half), will be assigned as deputy commander, U.S. Naval Forces, U.S. Central Command; and deputy commander, U.S. Fifth Fleet, Manama, Bahrain. Bailey is currently serving as chief of staff, Naval Air Force Atlantic, Norfolk, Virginia.

Capt. Thomas R. Buchanan, selected for promotion to rear admiral (lower half), will be assigned as deputy director for plans and policy, DJ5, U.S. Central Command, Tampa, Florida. Buchanan is currently serving as commandant of midshipman, U.S. Naval Academy, Annapolis, Maryland.

Capt. Christopher J. Cavanaugh, selected for promotion to rear admiral (lower half), will be assigned as director, Maritime Headquarters (N03), U.S. Pacific Fleet, Pearl Harbor, Hawaii. Cavanaugh is currently serving as director, submarine/nuclear power distribution (PERS-42), Navy Personnel Command, Millington, Tennessee.

Capt. Brad J. Collins, selected for promotion to rear admiral (lower half), will be assigned as commander, Navy Region Northwest, Silverdale, Washington. Collins is currently serving as chief of staff, Navy Installations Command, Washington, D.C.

Capt. Jennifer S. Couture, selected for promotion to rear admiral (lower half), will be assigned as commander, Naval Service Training Command, Great Lakes, Illinois. Couture is currently serving as assistant chief of staff, Naval Surface Force, Atlantic, Norfolk, Virginia.

Capt. William R. Daly, selected for promotion to rear admiral (lower half), will be assigned as deputy director for policy, plans, strategy, capabilities and resources, J-5/8, U.S. European Command, Stuttgart, Germany. Daly is currently serving as chief of staff, Naval Surface Forces, U.S. Pacific Fleet, San Diego, California.

Capt. Ronald A. Foy, selected for promotion to rear admiral (lower half), will be assigned as deputy director for global operations, J-3, Joint Staff, Washington, D.C. Foy is currently serving as deputy commander, Naval Special Warfare Command, Virginia Beach, Virginia.

Capt. Patrick J. Hannifin, selected for promotion to rear admiral (lower half), will be assigned as deputy director for political-military affairs (Asia), J5, Joint Staff, Washington, D.C. Hannifin is currently serving as director, aircraft carrier requirements, N98, Office of the Chief of Naval Operations, Washington, D.C.

Capt. Oliver T. Lewis, selected for promotion to rear admiral (lower half), will be assigned as deputy director for political-military affairs (Europe, NATO, Russia), J-5, Joint Staff, Washington, D.C. Lewis is currently serving as executive assistant to the chief of naval operations, Office of the Chief of Naval Operations, Washington, D.C.

Capt. Benjamin R. Nicholson, selected for promotion to rear admiral (lower half), will be assigned as U.S. Indo-Pacific Command representative, Guam, Commonwealth of the Northern Mariana Islands, Federated States of Micronesia, Republic of Palau; commander, U.S. Naval Forces, Marianas; and commander, Joint Region Marianas, Guam. Nicholson is currently serving as executive assistant to the vice chairman of the Joint Chiefs of Staff, Joint Staff, Washington, D.C.

Capt. Randall W. Peck, selected for promotion to rear admiral (lower half), will be assigned as president, Board of

Inspection and Survey, Virginia Beach, Virginia. Peck is currently serving as commanding officer, USS John C. Stennis (CVN 74), Norfolk, Virginia.

Capt. Ronald J. Piret, selected for promotion to rear admiral (lower half), will be assigned as commander, Naval Meteorology and Oceanography Command, Stennis Space Center, Mississippi. Piret is currently serving as chief of staff, Naval Meteorology and Oceanography Command, Stennis Space Center, Mississippi.

Capt. Benjamin G. Reynolds, selected for promotion to rear admiral (lower half), will be assigned as director of Maritime Headquarters, U.S. Naval Forces Europe/Africa/Sixth Fleet, Naples, Italy. Reynolds is currently serving as director, Operations Division, Office of the Assistant Secretary of the Navy for Financial Management and Comptroller; and director, Operations Division, Fiscal Management Division, N821, Office of the Chief of Naval Operations, Washington, D.C.

Capt. Mark A. Schafer, selected for promotion to rear admiral (lower half), will be assigned as commander, Navy Region Korea; commander, U.S. Naval Forces Korea; and commander, Naval Component, U.S. Forces Korea, United Nations Command, Korea, Busan, Korea. Schafer is currently serving as deputy, staff operations and plans, Joint Special Operations Command, Tampa, Florida.

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# Austal USA Enters Steel Shipbuilding Market

An artist’s conception of Austal USA’s new steel shipbuilding facility. *AUSTAL USA*

MOBILE, Ala. — Austal USA broke ground on its steel manufacturing line March 26, positioning the company to start steel production in April 2022, the company said in a release. This addition of steel capability ensures Austal USA will remain a major contributor to the U.S. shipbuilding industrial base.

“This world-class steel manufacturing line is a treasure for the Gulf Coast, the U.S. Navy and the U.S. Coast Guard that will provide a much needed boost to the defense industrial base and our Nation’s defense,” said Rep. Jerry Carl, R-Alabama, the congressman for Alabama’s 1st District.

The ceremony marked the start of a new era for Austal USA as the company adds steel shipbuilding capability to its growing business portfolio.

“As demand for the greater and larger Navy and Coast Guard fleets grows, Austal USA is investing to meet those changing requirements,” said Rusty Murdaugh, the company’s interim president. “We’re investing in our people, we’re investing in our processes and we’re investing in our facilities and capabilities.”

Just as Austal helped turn Mobile into the nation’s premier

location for construction of aluminum ships, the company is poised to do the same for steel. During World War II, residents of Mobile built steel Liberty ships that were critical to the war effort. In the coming years, Austal will look to build and deliver steel ships needed by the U.S. Coast Guard and Navy.

Founded on innovation, effectiveness and efficiency, Austal USA will bring its proven lean manufacturing processes and facility design to the steel shipbuilding market. These processes have helped deliver 24 ships to the Navy in the last nine years.

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# Raytheon to Continue to support U.S. Navy Counter-Narco-Terrorism Operations

U.S. Navy AN/TPS–71 Relocatable Over-the-Horizon Radar (ROTHR) stations. *U.S. NAVY / Wikipedia*

ARLINGTON, Va. – Raytheon Intelligence & Space (RI&S), a Raytheon Technologies business, will continue operating and maintaining the U.S. government's Relocatable Over-the-Horizon Radar (ROTHR) system under a $146 million, five-year contract, the company said in a March 24 release.

Originally developed to track long-range targets for aircraft and ships, ROTHR is now the primary detection system for border security and drug smuggling interdiction for the Joint Interagency Task Force South. In 2020 alone, ROTHR contributed to the seizure of 26 metric tons of cocaine from drug smugglers attempting to cross into U.S. territory.

"Raytheon Technologies' ROTHR systems have supported U.S. Navy operations for over 30 years," said John DeSimone, vice president of Cybersecurity, Training and Services for RI&S.

“We will continue to work closely with the Navy and JIATF South to help protect our national security.”

The contract covers operations and maintenance at six ROTHR locations in Puerto Rico, Texas and Virginia. Each radar provides more than 2.5 million square miles of coverage area, resulting in extremely low operational costs.

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# Bell Boeing V-22 Osprey Soars Past 600,000 Fleet Flight-hours

An MV-22 Osprey tiltrotor aircraft, attached with Marine Medium Tiltrotor Squadron (VMM) 165 (Reinforced), 11th Marine

Expeditionary Unit, takes off from the flight deck of Wasp-class amphibious assault ship USS Essex (LHD 2) on March 21. *U.S. NAVY / Mass Communication Specialist 3rd Class Brett McMinoway*

ARLINGTON, Va., and Fort Worth, Texas – The Bell Boeing V-22 Osprey has logged more than 600,000 flight-hours, providing continuous customer support to maintain mission readiness and transport critical cargo and personnel, Bell and Boeing said March 24 in a joint release.

Built by Bell Textron Inc., a Textron Inc. company, and Boeing, the V-22 fleet has grown to more than 400 aircraft and is operated by the United States Marine Corps, U.S. Air Force, U.S. Navy and the Japan Ground Self-Defense Force.

The V-22 is the only military production tiltrotor aircraft in the world. Its speed, range, maneuverability and logistical capability make it one of the most versatile and cost-effective solutions for its customers.

“There is no other aircraft in the world capable of matching the unique capabilities of the Osprey,” said Kurt Fuller, Bell V-22 vice president and Bell Boeing program director. “The 600,000 flight-hours represent countless tactical, logistical and humanitarian assistance missions, and the dedication of the men and women who maintain and operate the aircraft every day to keep it an advanced aircraft.”

Bell Boeing directly supports V-22 readiness by providing comprehensive global services to V-22 squadrons, including maintenance support, training, on-site field representatives, data analytics and new and repaired parts. For example, the Naval Air Systems Command recently awarded Bell Boeing a contract to deliver and install kits for nacelle improvements and the conversion area harness onto the CV-22 aircraft for the Air Force. The program refines the design of the nacelles and wiring harnesses for better reliability and maintainability, ultimately reducing repair time and improving

readiness.

“Each V-22 flight hour is the product of a team effort,” said Col. Matthew Kelly, V-22 Joint Program Office program manager. “Enabled by pilots, maintainers, testers, engineers, the program workforce and our industry partners who, together, ensure safe and effective V-22 operation.”

Recent program accomplishments include the V-22’s latest variant, the CMV-22B, assigned to the “Titans” of Fleet Logistics Multi-Mission Squadron 30, completing the first delivery of an F-35 engine to the USS Carl Vinson, along with successful paradrops with the U.S. Navy’s parachuting team, “The Leap Frogs,” earlier in the year.

“From its first flight over 30 years ago to achieving this significant flight-hour milestone, the V-22 has a demonstrated legacy of mission success,” said Shane Openshaw, Boeing V-22 vice president and Bell Boeing V-22 deputy program director. “As we look at optimizing future sustainment and support, our customer partnerships and commitment to innovation, flexibility and agility will ensure we build on the aircraft’s ability to support whatever the mission demands.”

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# Japan Launches Lead Ship of 22 Mogami-Class Frigates


Mitsubishi Heavy Industries launched Mogami, the first of a new class of 22 multirole frigates for the Japanese Maritime Self Defense Force, in a March 3 ceremony at the company's Nagasaki Shipyard & Machinery Works. *Japanese Maritime Self Defense Force*

The Japanese Maritime Self Defense Force has launched the first of a new class of multi-mission surface combatant.

The Mogami (FFM 1)-class frigate, also known as the 33FFM program, will be stealthy multi-mission surface combatants with the capability to employ unmanned surface and undersea vehicles to conduct mine countermeasures operations.

The first ship was launched at Mitsubishi Heavy Industries in Nagasaki on March 3. The second ship in the class, Kumano, is being built at Mitsui Engineering and Shipbuilding Tamano Works in Okayama.

Eight of the 426-foot, 5,500-ton Mogami-class FFMs are currently under contract, with 22 of them planned. The

Maritime Self Defense Force plans to build two per year.

The Mogami will be armed with a MK 45 5-inch gun, 16 MK 41 Vertical Launch System tubes, eight anti-ship missiles, SeaRAM ddefensive missiles, torpedoes and decoy launchers.

The FFM has a flight deck and hanger to embark an SH-60L helicopter and could also handle unmanned aircraft systems. A rear ramp beneath the flight deck can be used to launch and recover unmanned surface vehicles and unmanned underwater vehicles as well as lay sea mines.

The 30FFM features a futuristic combat information center with a 360-degree video wall.

The stealthy design draws from MHI's experience with the Mitsubishi X-2 Shinshin stealth fighter technology demonstrator.

The Combined Diesel and Gas Turbine propulsion system features a Rolls Royce MK30 gas turbine and two MAN diesels, delivering speeds of up to 30 knots. The crew of 90 personnel is smaller than existing combatants of comparable size.

The Mogami class will replace some mine warfare ships and escort ships, and will be available for peacekeeping, anti-piracy and humanitarian missions, freeing  larger and more capable combatants that are now being used in those roles to assume other duties.

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# Philippine Navy Retires Four

# Ships as it Transitions to Modern Fleet

*Republic of the Philippines navy ship BRP Jose Rizal (FF 150) conducts flight operations during Exercise Rim of the Pacific 2020. Republic of the Philippines navy / SN1 Pataueg*

The Republic of the Philippines' navy is making a pivot from older legacy ships and craft to newer and more capable surface combatants.

On March 1, 2021, the RPN decommissioned four of its oldest ships in a ceremony at the Heracleo Alano Naval Base in Sangley Point, Cavite City on the island of Luzon. Following guidance from Defense Secretary Delfin Lorenzana, decommissioning "vintage assets" paves the way for the new platforms pursuant to the Armed Forces of the Philippines Modernization Program.

To be decommissioned are Patrol Corvettes BRP Pangasinan

(PS-31) and BRP Quezon (PS-70), and Fast Attack Craft BRP Salvador Abcede (PC-114) and BRP Emilio Liwanag (PC-118).

“Indeed, the decommissioning of PS-31, PS-70, PC-118, and PC-114 is a symbolism that there is a new horizon in sight. We are geared towards becoming a stronger and more capable Philippine navy [PN]. With our newest acquisitions, we are more confident that we can better perform our mandate and provide better protection of our maritime domains,” Vice Adm. Giovanni Carlo Bacordo, chief of the navy, said in a statement.

“The accomplishments of these PN vessels won’t be possible without their courageous crew. We are preparing and transitioning from a legacy navy into a modern navy, and part of this is making sure that we allocate our valuable resources and manpower to our new platforms,” Bacordo said in his speech, delivered by PN vice commander Rear Adm. Adeluis Bordado.

The Navy is implementing Defense Secretary Delfin Lorenzana’s guidance to decommission vintage assets to pave the way for the incoming platforms as part of the Armed Forces of the Philippines Modernization Program, and supports the PN’s capability development program to acquire modern platforms with state-of-the-art equipment, sensors, weapons and combat management systems.

In a release from the government-run Philippine News Agency (PNA), Bacordo said the old ships are too old and costly to maintain and operate, and that by decommissioning them, the Navy could “devote more resources to our newly-acquired ships.”

**Long-serving veterans**

BRP Quezon was one of the last of the 95 Auk-class of minesweepers built during the second world war. She was originally the 221-foot, 1,100-ton Auk-class minesweeper USS

Vigilance (AM-324), and  was commissioned in January 1943, serving in the Pacific during World War II. She was transferred to the Philippines in 1967 and underwent a major refit in the mid-1990s. At the time of her decommissioning, Quezon was one of the oldest active fighting ships in the world, serving for 77 years, of which 53 years were with the Philippine navy.

The 185-foot, 914-ton BRP Pangasinan began life as PCE 891, a patrol craft commissioned in the U.S. Navy in 1944 and transferred to the Philippines four years later.  Although her armament changed over the years, at the time of her deactivation she carried a Mk.26 3-inch/50-caliber gun, three twin Mk.1 Bofors 40mm cannons, four Mk.10 Oerlikon 20mm cannons, and four M2 Browning 12.7mm 50-caliber machine guns. She had 72 years of active service at the time of her retirement.

The two Tomas Batilo-class patrol boats among the four ships deactivated, BRP Salvador Abcede (PC-114) and BRP Emilio Liwanag (PC-118), previously served in the Republic of Korea navy as fast attack craft, designated Patrol Killer Medium (PKM), and were the last of eight ex-Korean PKMs in the Philippine Navy. The PKMs were built in Korea in the 1970s. Five of them were acquired in 1995, one in 1998 and two in 2006. Salvador Abcede and Emilio Liwanag were transferred from the Korean navy in 1996.

The 121-foot, 170-ton PKMs could achieve speeds up to 37 knots, and were armed with Bofors 40/60 caliber guns and pair of Oerlikon 20mm/70 caliber Gatling guns and two 12.7mm/50 caliber machine guns.

**Fleet renewal**

New ships are joining the fleet.  Two new Jose Rizal-class frigates, built by Hyundai Heavy Industries (HHI) in South Korea BRP Antonio Luna (FF 151) was commissioned at Subic Bay

earlier this month.  The lead ship in the class, BRP Jose Rizal (FF 150), was commissioned in July 2020, and promptly deployed to Hawaii to participate in the Rim of the Pacific multi-national fleet exercise.

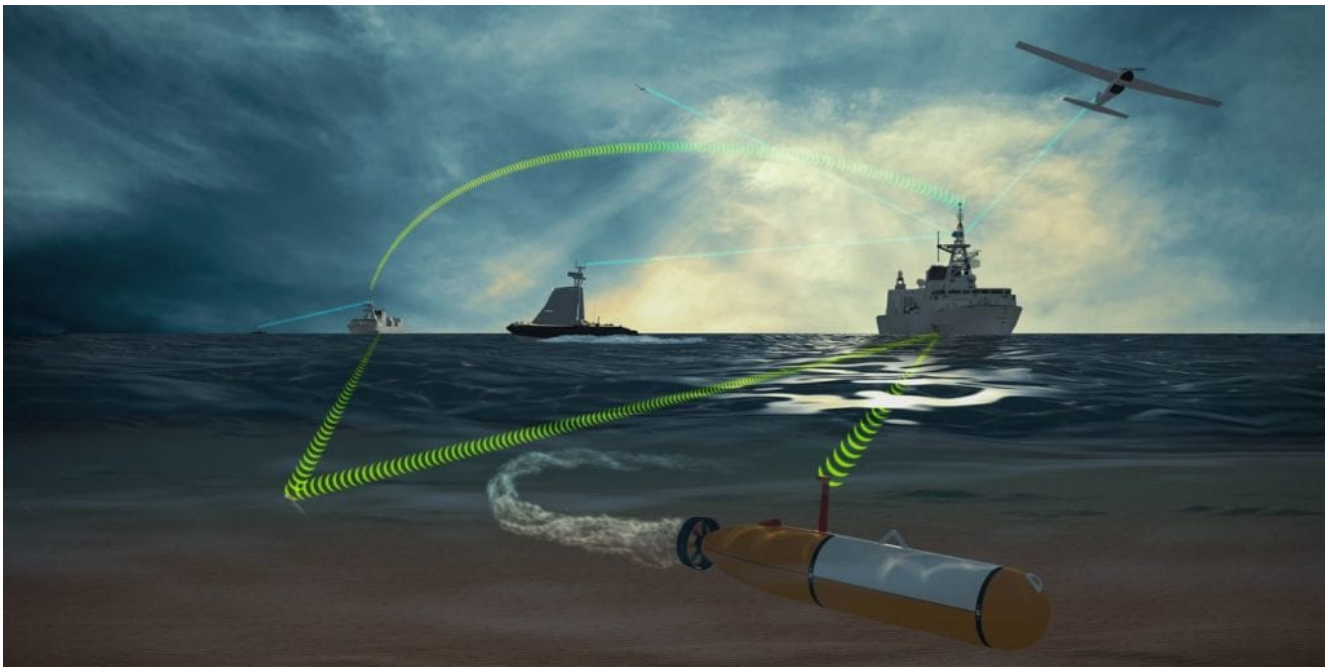
These two ships are the Philippine Navy's most modern surface combatants, and the first with surface-to-air missiles for defense, but the ships were delivered without all of the combat systems installed, including VLS launchers, a close-in weapon system and towed array sonar. They will also be able to embark an AW-159 Wildcat helicopter.

The Philippine navy also received one former Republic of Korea navy Pohang-class coastal defense and anti-submarine corvettes, the BRP Conrado Yap (PS 39), in 2019. At 353 feet long and 2,600 tons, she carries a 76-mm gun, twin 40mm/70 caliber guns and torpedoes.

The 24 ships of the Pohang class were designed and built in Korea and commissioned in the Republic of Korea navy between 1984 and 1993. Ten remain in service with the ROKN, while others have been disposed of or transferred to other navies, as was BRP Conrado Yap. One of the ships in the class, ROKS Cheonan (PCC 772), was sunk by North Korean torpedoes in 1989.

Three former U.S. Coast Guard 378-foot Hamilton-class cutters – Hamilton (WHEC 715), Dallas (WHEC 716) and Boutwell (WHEC 719) – were transferred to the Philippine navy between 2011 and 2016 and became BRP Gregorio del Pilar (PS-15), BRP Ramon Alcaraz (PS 16) and BRP Andres Bonifacio (PS 17), respectively. Although these former 3,250-ton cutters had been in service for about 45 years, they were extensively modernized before being turned over to the Philippines.

# Team Cohort to Develop Multi-Domain, Multi-Autonomous Vehicle Control System for Canadian Warships



Team Cohort has been awarded a contract to develop a Multi-Domain, Multi-Autonomous Vehicle Control System for Canadian warships, as illustrated here. *Kongsberg Geospatial*

OTTAWA, Ontario – Team Cohort, a team of autonomous industry experts comprising Kongsberg Geospatial, Four DRobotics Corp and SeeByte, has been awarded a contract from Weir Marine Engineering to develop and test a Maritime Multi-Domain Control System (MMDCS), Kongsberg Geospatial said in a March 18 release. The system will allow operators to simultaneously operate multiple autonomous vehicles in the air, on the water, and underwater – all from a single shipboard control station.

The system could allow Royal Canadian Navy (RCN) warships to effectively extend their sensor range using autonomous vehicles, while providing protection from seaborne threats such as mines or hostile unmanned craft.

The MMDCS is a challenging project that requires experience with the deployment of autonomous unmanned vehicles, and operations of maritime control stations, as well as existing and emerging NATO standards including Stanag 4586 and 4817. This specialized knowledge and expertise is provided by the team of Kongsberg Geospatial and Four DRobotics Corp of Ottawa, Canada, and SeeByte of Edinburgh, Scotland.

For this project, Kongsberg Geospatial will provide operator control stations based on its IRIS UxS vehicle command and control software product, which provides an overall real-time picture of the terrain, airspace, and underwater environment where the ships and their supporting UxV (Unmanned [X] Vehicle) teams are operating.

Four DRobotics Corp and SeeByte will provide goal-based mission planning and reasoning (AI-supported) software systems to support autonomous mission development and execution for a UxV team consisting of an unmanned aerial vehicle, an unmanned surface vehicle, and an unmanned underwater vehicle.

The MMDCS will provide a tactical capability for the command and control and information management required to simultaneously support unmanned vehicles in all three naval operations domains, including air, surface, and subsurface.

The final objective of the project is to provide real-time or near-real-time situational awareness for warships in all three domains: underwater, on the water, and in the air, allowing improved threat assessment and target engagement.

The development and testing of the prototype MMDCS is expected to be completed by mid-2021.