# Navy Orders F-35s Under Contract Modification

ARLINGTON, Va. – The Navy has awarded Lockheed Martin a $22.7 billion contract modification for 255 F-35 Lightning II joint strike fighters, the Defense Department said in a Nov. 14 release. Of the order, 42 aircraft are for the Navy and Marine Corps.

Naval Air Systems Command awarded the low-rate initial production contract modification for Lot 12 aircraft plus more added by Congress for fiscal 2018-2019.

The 255 Lightning IIs in this order include 36 F-35Bs for the U.S. Marine Corps and 16 F-35Cs for the U.S. Navy. The order includes 64 F-35As for the U.S. Air Force; 60 F-35As for Foreign Military Sales; and 71 F-35As and 18 F-35Bs for nations partnered in the F-35 program. Work under the contract is expected to be completed by March 2023.

The F-35's production remains in low rate because it has not yet completed its operational test and evaluation.

The Marine Corps' F-35B made its first operational shipboard deployments this year and on Sept. 27 Marine Fighter Attack Squadron 211 conducted the Lightning II's first combat missions, over Afghanistan in support of Operation Freedom Sentinel. The Navy's first F-35C fleet squadron, Strike Fighter Squadron 147, has been formed and is training in its new aircraft.

# Navy Super Hornet Crashes in Philippine Sea; Crew Rescued

PHILIPPINE SEA – A Carrier Air Wing 5 (CVW-5) F/A-18F experienced a mechanical issue that resulted in the crew ejecting while conducting routine operations in the Philippine Sea Nov. 12, Task Force 70 public affairs said in a release.

“The crew was immediately and safely recovered by USS Ronald Reagan search-and-rescue aircraft and brought back to the ship for evaluation by medical personnel, the release said. “Both aviators are in good condition.”

The F/A-18F was flown by Strike Fighter Squadron 102, one of four Super Hornet squadrons assigned to Carrier Air Wing Five.

Two other CVW-5 aircraft have been lost in mishaps over the past year. On Nov. 22, 2018, a C-2A Greyhound assigned to Fleet Logistics Support Squadron 30 Detachment Five crashed into the Philippine Sea while en route to Ronald Reagan, killing three Sailors. On Oct. 19, an MH-60R Seahawk assigned to Helicopter Maritime Strike Squadron 77 crashed on the flight deck of the carrier, injuring 12 persons.

CVW-5 is embarked onboard Ronald Reagan and is currently underway in the U.S. 7th Fleet area of operations in support of security and stability in the Indo-Pacific region.

Ronald Reagan has resumed normal operations and the crash is under investigation.

# Navy Submarine Force Boss: All Submarines to Get 3D Printers

ARLINGTON, Va. – The Navy is moving to equip all of its submarines with additive manufacturing capability, also known as 3D printing, as part of an initiative to increase at-sea repair capability for the submarine force.

"[We're] actively experimenting with additive manufacturing and working expediently to provide this capability to all my ships," Vice Adm. Chas Richard, commander, Submarine Forces, said Nov. 7 at the Naval Submarine League's symposium. "All my boats will get 3D printers in the near term."

Richard said that the crew of the attack submarine USS Virginia "went and got their own 3D printer and, using that, built themselves apart at sea to help keep their boat on deployment. It is that type of problem-solving that happens daily across the force."

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# Navy: Torpedo Tube-Launched Version of Razorback UUV Planned

ARLINGTON, Va. – The Navy is on track to deliver an operational unmanned underwater vehicle (UUV) for routine submarine deployment but also plans to develop the capability to launch it from a submarine's torpedo tubes.

The Razorback is a submarine-launched version of the Hydroid-built Littoral Battlespace Sensing Autonomous Underwater Vehicle, a version of the REMUS 600 UUV that entered full-rate production for the Navy in 2013. Details of the Razorback's payloads and capabilities are classified, but it is planned for launch and recovery from a Dry Deck Shelter, a compartment than can be carried on top of the hull of certain submarines.

"We're currently fielding those vehicles for integration with the Dry Deck Shelter and we have plans to develop a torpedo tube-launched version of that in the near future," said Capt. Peter Small, the Navy's program manager for UUVs and unmanned surface vehicles, Nov. 7 at the Naval Submarine League's symposium.

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# Navy Submarine Programs Facing Many Pressing Challenges, Deadlines

ARLINGTON, Va. – The Navy's submarine production enterprise is besieged by growing demands as it moves Virginia-class construction to two a year, is building payload models for future Virginias and is designing new models, and is working on refueling some of the Los Angeles-class attack boats, while focusing on the No. 1 priority – keeping the Columbia-class program on the tight schedule to replace the aging Ohio-class boomers.

On top of all that is the urgent requirement to overcome the "debacle" of faulty welding in new ballistic-missile tubes that will impact the narrow schedule margin to meet the Columbia's firm 2031 start of patrols, and the possibility

that Virginia production could be increased to three a year in the near future.

Adding to that staggering array of challenges described by the top submarine program officials Nov. 7, the Navy program managers and the sub building industry are confronted with a need to not only expand their workforces to meet the growing demands, but to find new skilled builders and designers to replace an aging cadre of workers.

But during their presentations at the Naval Submarine League's annual symposium, the Navy officials returned repeatedly to the crucial requirement to have the first Columbia-class ballistic-missile submarines ready for their nuclear-deterrence missions before the current Ohio-class boats hit their already extended service life.

"We're doing everything we can to deliver Columbia on patrol, on time," said George M. Drakeley, executive director in the submarine program executive office. "Beside keeping the Columbia program at an affordable cost, "our biggest challenge is to deliver on time."

History shows that the first of class in any ship program does not deliver on time, Drakeley said, noting "We don't have that luxury."

"It's very important we get the Columbia out by 2031 as the Ohios retire," he said, because "we've extended the Ohios [service life] from 30 to 42 years."

Navy officials have said that they cannot guarantee that the oldest of the Ohio boomers would be able to submerge for a strategic patrol after 2031.

Earlier in the day, Adm. Frank Caldwell, director of Naval Nuclear Propulsion, showed the importance of the Columbia program by noting the ballistic-missile submarines were "the only survivable component" of the nuclear deterrent triad and

would carry 70 percent of the warheads allowed by the New Start treaty with Russia.

Capt. Jonathan Rucker, program manager for Columbia, said they were "in full swing" with detailed design and advanced procurement underway and would be ready to start construction in 2021. In addition to focusing on keeping on schedule, Rucker said, "to ensure the Navy gets 355 ships … we need to get Columbia down to an affordable program cost."

To do that, he said, "my staff is working on how to get to 'no,' which means don't change requirements."

To get a head start on Columbia construction, the program started production of the common missile compartments, which also will be used in the Royal British Navy's Dreadnaught ballistic missile submarines.

But last summer, inspectors discovered "this missile tube debacle," he said, referring to a large number of substandard welds. The program office is working with industry to address the flawed welding and to impose a more stringent oversight regime, but correcting the flaws has taken 10 months from the schedule.

Capt. Christopher J. Hanson, program manager for the Virginia submarines, noted that they were now steadily producing two boats a year, were building the first of the Virginia Payload Modules, which will increase the boats' strike capabilities, and were working on designs for improved future versions.

And Drakeley noted that "Congress has put into law" the requirement to negotiate with industry on increasing the construction rate to three a year, which might happen by 2022 or '23.

Meanwhile, they are working on ways to refuel the nuclear reactors on five of the older Los Angeles-class attack boats to extend their service lives as part of an effort to expand

the sub fleet from 48 to 60 to meet the demands from regional combatant commanders.

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# Strategy Drives Undersea Warfare Programs

ARLINGTON, Va. – The Navy is working on greater integration of all aspects of undersea warfare, including strategic deterrence, attack submarines, unmanned undersea vehicles, seabed infrastructure and the surface and air anti-submarine assets, to ensure its investments and tactics all will contribute to a possible fight, the director of Undersea Warfare said Nov. 8.

“We are, no kidding, having the strategy drive the programs … to make sure we’re not buying things we don’t need to win the war,” Rear Adm. John Tammen told the Navy Submarine League’s annual symposium. The directions from the National Defense and National Security strategies are guiding an Integrated undersea investment strategy, he said.

A crucial focus of those investments is the modernization of the sea-based strategic deterrence with the Columbia ballistic-missile submarine to replace the current Ohio-class boomers.

“There really is no margin for Columbia,” to be on patrol by 2031, Tammen said, repeating a message heard earlier in the day from Vice Adm. Johnny Wolfe, director of Strategic Systems Programs. The ballistic-missile subs are “the only survivable component” of the strategic deterrence triad and provide 70 percent of the nuclear deterrent warheads, he said.

Keeping Columbia on schedule is critical because the Navy is extending the service life of the Ohios out to 42 years and "we've never taken a submarine out to 42 years." To ensure the Ohio-class boats can remain operational for 42 years, the Navy stood up a study that will use the four early Ohios now serving as guided-missile subs as a test, he said.

They also will continue to modernize the Ohios to keep them relevant out to 42 years, Tammen said, using technology going into the new models of Virginia-class attack subs.

Tammen also discussed the little-known fact that the new Nuclear Posture Review said the sea-based strategic deterrence program would have "at least 12 Columbia" boats. It has been widely understood that the program called for only 12 of the new boomers.

Without going into any details, Tammen said "we're going to keep the Columbia [production] line hot after the 12th boat, so if we need to build more than 12, we can."

The limit on 12 Columbias is generally based on the number of nuclear warheads and delivery vehicles allowed under the New Start arms control treaty with Russia.

Tammen put considerable focus on the efforts to develop a family of unmanned undersea vehicles noting that they have consolidated unmanned underwater vehicle (UUV) programs into his N-97 office, while closely cooperating with Expeditionary Warfare (N-95), which plans to use unmanned underwater systems in its mine warfare missions.

"Every day we have conversations on how we can move faster with UUVs," he said.

In apparent response to some criticism of the slower development of UUVs, compared the aerial or ground unmanned systems, Tammen said, "unmanned undersea vehicles are truly autonomous. There is no joystick [controller] and no lawyer

standing behind the joystick." And they "have to ensure we can get the data off of them, to make them relevant."

Although the primary purpose of producing the Virginia Payload Modules was to increase the Tomahawk strike capabilities of the attack subs, Tammen said the modules also could launch smaller UUVs. And the Navy is looking at other weapons that could go into the modules as part of the increased focus on tactical warfare capabilities.

Looking ahead, Tammen said his office was working on designs for block 5, 6 and 7 Virginia-class subs, but after that "we get to a new SSN," which will "put fast back into fast attack. Fast with stealth."

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# Navy to Christen Expeditionary Fast Transport Puerto Rico

ARLINGTON, Va. – The Navy will christen its newest Expeditionary Fast Transport, the future USNS Puerto Rico (T-EPF 11), during a ceremony Nov. 10 at the Austal USA shipyard in Mobile, Alabama, the Defense Department said in a release.

The principal speaker is congresswoman Jenniffer González-Colón, resident commissioner of Puerto Rico. Supreme Court Justice Sonia Sotomayor will serve as the ship's sponsor. In a time-honored Navy tradition, she will christen the ship by breaking a bottle of sparkling wine across the bow.

"This ship honors the Commonwealth of Puerto Rico and the contributions Puerto Ricans have made to our nation and Navy

and Marine Corps team," said Navy Secretary Richard V. Spencer. "USNS Puerto Rico will provide our commanders high-speed sealift mobility and agility and I am thankful for this ship, her crew, and our industrial force teammates whose service makes this great ship possible."

The future USNS Puerto Rico will be the first active ship in naval service to honor the island in the West Indies east of Hispaniola. An Alaska-class cruiser named Puerto Rico was authorized July 19, 1940, but construction was canceled June 24, 1943.

With an all-aluminum shallow-draft hull, the EPF is a commercial-based catamaran capable of intra-theater personnel and cargo lift providing combatant commanders high-speed sealift mobility with inherent cargo handling capability and agility to achieve positional advantage over operational distances.

EPF-class ships are designed to transport 600 short tons of military cargo 1,200 nautical miles at an average speed of 35 knots. The ship is capable of operating in shallow-draft ports and waterways, interfacing with roll-on/roll-off discharge facilities, and on/off-loading a combat-loaded Abrams main battle tank (M1A2).

The EPF includes a flight deck for helicopter operations and an off-load ramp that will allow vehicles to quickly drive off the ship. EPF's shallow draft (under 15 feet) further enhances littoral operations and port access.

The EPF program delivered its ninth ship late last year, USNS City of Bismarck (T-EPF 9), with delivery of USNS Burlington (EPF 10) planned for mid-November. Puerto Rico and Newport (EPF 12) are currently under construction at Austal's shipyard.

# Navy Submarine Warfare Director: Navy to Keep Columbia SSBN Line 'Hot' After 12th Boat

ARLINGTON, Va. – The Navy plans to keep the production line of the Columbia-class nuclear-powered ballistic-missile submarine (SSBN) ready for new submarine production, the Navy's director for submarine warfare said.

"What we are going to do is we're going to keep the Columbia line hot," Rear Adm. John Tammen, said Nov. 8 at the Naval Submarine League's annual symposium. "That gives us the option, if STRATCOM [U.S. Strategic Command] says we need more than 12, well then we can produce more than 12."

Keeping the line open also may aid in a smoother transition to the Navy's next submarines, possibly large mother ships for unmanned underwater vehicles and other types mission systems.

"If STRATCOM doesn't need more than 12, then we're looking at what we call the Large-Volume Host Platform, where we'll take that center section – we haven't nailed down the concept – but there will be the ability to host vehicles on board inside that center section," Tammen said.

Also speaking at the symposium, Vice Adm. Johnny Wolfe, director of Strategic Systems Programs, noted that the Defense Department's Nuclear Posture Review calls for a minimum of 12 Columbia-class SSBNs, not a hard limitation of 12 boats.

The design of the lead boat of the new class, Columbia, is 83

percent complete. Construction is scheduled to begin next year. The boat is scheduled for its first patrol in 2031.

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# Next Sub-Launched Ballistic Missile 'Won't Be Completely New'

ARLINGTON, Va. – The Navy's next-generation submarine-launched missile (SLBM) will not be a completely new design but will incorporate some of the current Trident D5 Life-Extension (D5LE) version systems.

The follow-on missile is currently known as the Trident D5LE2, according to Vice Adm. Johnny Wolfe, director of Strategic Systems Programs (SSP).

"What Ohio [-class SSBN] has today [D5LE] is what Columbia will initially have until we get the Life-Extension 2," Wolfe said Nov. 8 at the Naval Submarine League's annual symposium.

To lower technical and schedule risk in the Columbia-class ballistic-missile submarine program, the Navy decided to arm the boats initially with the existing Trident D5LE missile rather than develop an entirely new missile concurrent with the development of the submarine. At some point in the service life of the Columbia class, the boats will receive the D5LE2.

Wolfe said the SSP will begin trade studies in 2020 to "define an SLBM that can deploy throughout the life of Columbia," which is slated to serve to 2084. The studies will determine which D5LE components can be continued in the next missile and which will need to be modernized or replaced for D5LE2.

The D5LE2 “won’t look like the D5 that we’ve got today, it won’t be completely new, it will be somewhere in the middle,” he said.

“If you look at the decisions that we made on Columbia, as we went down to 16 [launch] tubes [from 24 on the Ohio class], part of that decision was made because there was an assumption that the reliability of this weapon system way out in the 2070s and 2080s will be just as reliable and supportable as it is today with the current Trident,” he said.

Wolfe pointed out that the Trident missile inventory will decline to a point where new production will be needed. Part of the challenge is to sustain the industrial base to build, for example, rocket motors, so that the expertise is not lost during procurement troughs and would not have to be reconstituted.

“Our challenge is that whatever we do next has, at a minimum, the reliability, accuracy and supportability that we’ve got today,” he said.

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# Sparton, Leidos Team on Mk5 Acoustic Device Countermeasure

DELEON SPRINGS, Fla. – Sparton Corp. has teamed with Leidos Maritime Systems to support the Acoustic Device Countermeasure (ADC) Mk5 program, Sparton said in a Nov. 6 release.

The Mk5 is a next-generation countermeasure intended to replace the ADC Mk3. The ADC Mk5 is a 3-inch diameter

expendable device that is submarine launched from internal signal ejectors and is part of a submarine’s defense against acoustic-homing torpedoes.

On Sept. 13, the U.S. Navy announced Leidos had been awarded the contract (valued up to $36.1 million) under a competitive solicitation. Sparton will contribute to the contract’s scope of work, which includes the design, development, fabrication, integration, testing and low-rate initial production of the U.S. Navy’s Mk5 program. Sparton will also provide manufacturing services to support system fabrication.

“Sparton is excited to leverage our knowledge of maritime acoustic communication systems, packaging, and deployment systems for this new opportunity”, said Jim Lackemacher, group vice president of the Engineered Components & Products Segment. “Sparton looks forward to collaborating with Leidos to bring this vital capability to the fleet.”