Smooth Sailing for the Columbia Class?: Navy Working to Keep Sub on Track for 2028 Delivery

An artist rendering of the future Columbia-class ballistic missile submarine. The 12 submarines of the Columbia class are a shipbuilding priority and will replace the Ohio-class subs, which are reaching maximum extended service life. U.S. Navy illustration

At well north of $100 billion for 12 vessels, the Columbia-class ballistic-missile submarine will be the most expensive new undertaking for the U.S Navy since the Gerald R. Ford-class aircraft carrier program. And everyone is hoping development and production goes a lot smoother for the new sub than the Ford class of carriers.

The Navy is trying to replace its aging fleet of 14 Ohio-class ballistic-missile subs, which carry nuclear-tipped Trident missiles and serve as the nation's sea-based strategic deterrent. The sheer per-vessel cost of the Columbia class prompts one to draw comparisons to the $13-billion-per-ship Ford program – and that's reason for concern considering the struggles throughout the carrier's development.

Check out the digital edition of October's *Seapower* magazine here.

Cost increases and schedule delays were a hallmark of the program during design, development and production, and the class still has its share of challenges. USNI reported earlier this year that the Ford had to spend months in dry dock to deal with problems with the ship's nuclear power plant, and another report indicated that most of the carrier's Advanced

Weapons Elevators (AWEs) were not operational.

However, Columbia and Ford are certainly two very different programs, and the Navy believes it has a handle on the new sub.

Naval Sea Systems Command spokesman Bill Couch told *Seapower* in an e-mail that the Columbia-class program is working hard to tackle challenges early and make sure the sub stays on schedule.

“The Columbia Class Submarine Program is executing schedule risk and cost-reduction activities (e.g., advance construction, continuous production of missile tubes) and closely manages technology development and engineering/integration efforts,” he said. “Additionally, the shipbuilder [General Dynamics Electric Boat] is executing a plan to meet the highest design maturity target for any shipbuilding program [83%] at construction start.”

The Ohio-class ballistic-missile submarine USS Maryland returns to homeport at Naval Submarine Base Kings Bay, Georgia, following a patrol. U.S. Navy/Mass Communication Specialist 1st Class Ashley Berumen

The program has run into some issues early. Officials discovered a problem last year with the submarine missile tube welds that reportedly cost $27 million and a year of work to fix.

However, the Navy says that issue isn’t affecting the schedule.

“General Dynamics Electric Boat [GDEB] and the Navy continue to work together to manage schedule impacts caused by the missile tube welding defects, with currently no impact to lead ship delivery schedule,” Couch said. “Margin remaining to the missile compartment due to the missile tube deliveries is under review.”

He added that Columbia-class deliveries are still aligned with the retirements of Ohio-class submarines to ensure the nation's strategic deterrence requirements are met.

Additionally, he said a potential fiscal 2020 continuing resolution is unlikely to affect the program.

The program hit a big milestone earlier this year, with Huntington Ingalls Industries hosting a ceremony at its Newport News Shipbuilding division – which is working with GDEB on the program – on May 23 to celebrate cutting the first steel for the program.

"The first cut of steel is a major construction milestone that signifies our shipyard and submarine industrial base are ready to move forward with production," Jason Ward, Newport News' vice president for Columbia-class construction, said in a statement.

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"We have worked to engage the submarine industrial base and leveraged lessons learned from the successful Virginia-class program to building the Columbia-class submarines in the most efficient and affordable manner to provide the best value to the Navy."

On March 6, the Navy announced that it had established Program Executive Office Columbia (PEO CLB) to focus entirely on the "Navy's No. 1 acquisition priority," according to a Navy statement.

"This is the Navy's most important program and establishing a new PEO today will meet tomorrow's challenges head-on," James Geurts, assistant secretary of the Navy for acquisition,

research and development, said in the statement. “The evolution from initial funding to construction, development and testing to serial production of 12 SSBNs will be crucial to meeting the National Defense Strategy and building the Navy the nation needs. PEO Columbia will work directly with resource sponsors, stakeholders, foreign partners, shipbuilders and suppliers to meet national priorities and deliver and sustain lethal capacity our warfighters need.”

Bryan Clark, a senior fellow at the Center for Strategic and Budgetary Assessments, said that there are reasons to be optimistic about the Columbia-class program despite the challenges of the Ford class.

For one thing, the Ford-class program had a lot more new technologies creating compounding risk, as opposed to the Columbia program, he said. He noted that there were some new technologies to watch, such as an all-electric propulsion plant and a new kind of propulsor assembly.

However, the Navy has done some advance work on that technology to reduce risk, Clark said.

“On the propulsion plant, the Navy built a land-based prototype to get the technical risk burned down,” he said. “The Navy spent quite a bit of time trying to tackle [the technical risk] by prototyping and demonstrating. But you can never completely eliminate the risk. They lost some time and margin because of technical challenges not fully tackled.”

And while the program has margin built in, the recent problems — particularly with the missile tubes — risk eliminating that margin early and creating no room for error with still many years left until the first sub is scheduled for delivery in 2028.

The good news is that the Navy may be through the hard part, Clark said.

“On the manufacturing side, I think there’s just having to do some rework and some more effort to test and inspect things before they get pushed out to the construction yard, which will introduce a little bit of schedule delay – but it is somewhat bounded,” he said. “I think compared to the Ford, the risks with Columbia are smaller in number, more bounded, and relatively understood.”