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Navy Will Use Prius-Like Hybrid Drive In Future Ships

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Good Feedback, Lockheed Martin Says

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Navy
Will Use Prius-Like Hybrid Drive In Future Ships

The
San Diego-based Makin Island - the hybrid "Prius" of the Navy, as it
is powered by both electricity and diesel fuel - has proved to be a good model
and the Navy plans to use the technology on other ships, such as destroyers.

"We're
very interested in hybrid drive," Secretary of the Navy Ray Mabus told

reporters Monday during a teleconference on Navy energy initiatives, as reported by the Aerospace Daily & Defense Report. "We're looking at retrofitting the ships we have and [putting it on] the new ships we're constructing." Aerospace Daily said the Navy will put the hybrid drive in its future DDG-1000 Zumwalt-class destroyers, a class consisting of just three vessels.

In addition, Navy brass wants to retrofit current DDG-51 Arleigh Burke-class destroyers with the hybrid drive and put it in future Flight III versions of the ship. The Makin Island arrived at its home port of San Diego in September 2009. On its sail from a Mississippi shipyard, the ship saved 900,000 gallons of fuel, worth more than $2 million, because of a first-of-its-kind mating of gas turbine engines and electric motors. The motors are used at low speeds - roughly 75 percent of the time - and the engine kicks in at high speeds. The Makin, an amphibious assault ship meant to carry Marines and launch their jets and helicopters, is expected to make its first regular deployment in the next few months.

(SAN DIEGO UNION-TRIBUNE 24 AUG 11) ... Jeanette Steele

Aegis BMD
Deployment To Europe Yielding Good Feedback, Lockheed Martin Says

The deployment of the USS Monterery (CG-61) earlier this year as part the first phase of establishing missile defense in Europe has already produced information that will allow improvements to the Navy's premier sea-based system, Lockheed Martin [LMT] said yesterday.

Nick Bucci, Lockheed Martin's director of development for the Aegis Ballistic Missile Defense program, told reporters that Monterey's deployment in March has allowed the firm to glean new information about the system's performance in a relatively short period of time. Bucci would not provide details on the exact lessons learned, citing the need to keep them secret.

The Ticonderoga-class cruiser was the first ship to head out to sea under the Obama administration's missile defence policy designed to protect Europe and enhance U.S security from potential ballistic missile threats emerging in the Middle East. The European Phased Adaptive Approach (EPAA) was endorsed by NATO at a November 2010 summit in Lisbon. President Barack Obama announced the policy in 2009, scrapping Bush administration-era plans to base long-range interceptors in Eastern Europe.

A

successful test of the Aegis BMD system in April using a SM-3 Block 1A missile and AN/SPY-1 radar was a critical milestone for EPAA (Defense Daily, April 18). The Aegis BMD system has been among the most advanced of the Missile Defense Agency's (MDA) programs, succeeding in 21 of 25 flight tests with the SM-3 interceptor since 2002. The exercise demonstrated the necessary capabilities to support the sea-based phase of EPAA.

The next phase involves placing the SM-3 Block IB interceptor in Romania in 2015 in what has been called Aegis Ashore. The third phase calls for deploying a more advanced SM-3 Block IIA interceptor in 2018. That would include a second land-based site. The United States and Poland reached an agreement in 2008 for the latter to host the next site. Warsaw ratified that agreement in April. MDA has awarded a combined $127 million contract to Lockheed Martin, Boeing [BA] and Raytheon [RTN] to begin development of the next generation of SM-3 IIB interceptors that could be deployed as early as 2020.

(DEFENSE DAILY 25 AUG 11) ... Mike McCarthy

Meeting A Modular Mission

For LCS Package Programs, Development Continues As Operational Concepts Change

The mission packages under development for littoral combat ships are intended to change over time, shifting as new equipment becomes available or old systems don't work out, and adapting to changing operational concepts. Something like that already has happened with the anti-submarine warfare mission module - the most secretive of the existing LCS packages. What was once a "barrier" system intended to look for submarines in a relatively small area is evolving into a more traditional approach meant to search while in motion.

"Our ASW Module Number One was very focused on off-board and barrier operations," said Capt. John Ailes, the LCS mission module program manager for Naval Sea Systems Command in Washington. "When we did the analysis, you had a ship going 40-plus knots stopping, putting stuff in the water, having the submarine pass between your sensors. That really didn't pan out very well in the operational context." When it worked, he said, "you could find the submarine if it was in the right place. But the analysis showed that what we really wanted to do was have something in stride."

The original concept included a system of underwater arrays deployed from unmanned surface vehicles and an unmanned submersible craft. It was off-board, connected into networks - and not very maneuverable.

The multi-mission submersible has now been cut from the package, along with the big sonar array, replaced by an existing multifunction array and a new variable-depth sonar.

NAVSEA's Integrated Warfare Systems office had been working with the British Royal Navy to develop software for a continuously active sonar, streamed by a towed array mounted on a ship. The Brits, operating from Type 23 frigates, "have been doing demonstrations at sea with the sonar for about five years," Ailes said.

An advanced development model of the Thales Captas-4 VDS system was delivered to the Navy at Brest, France, on July 25, according to NAVSEA, and should arrive in the U.S. in early September. In place of the Type 2087 sonar used by the Royal Navy, the U.S. version will use the TB-37 multifunction towed array, feeding an enhanced version of the SQQ-89 sonar processing system.

Land-based testing of the system, NAVSEA said, will run through mid-2012, followed by at-sea testing of the system aboard a chartered commercial vessel operating for the LCS Mission Package Support Facility at Port Hueneme, Calif. A VDS competition is planned to follow the test program, Ailes said, with an award planned for 2014.

Along with the MH-60S Seahawk helicopter, the primary components of the ASW module now consist of the VDS, the MFA and Light Weight Tow, a torpedo decoy that expands the operational element of the familiar SLQ-25 Nixie system fitted to many warships.

The Naval Undersea Warfare Center at Newport, R.I., developed a prototype Light Weight Tow system and has conducted at-sea tests, NAVSEA said. The system's operation "requires minimal space, weight and manning," NAVSEA said in a statement, and is intended to be fitted on a variety of ships.
Much work remains to be done to develop the new ASW module; according to Ailes, operational tests aren't scheduled to begin until 2016.

Mine Warfare

Operational testing of the mine warfare module is set to begin in 2013 aboard the second LCS, Independence. The modules are being developed in several stages, or increments, Ailes explained.

Increment 1 is the current mine countermeasures capability, he said. Increment 2 will add COBRA-the

Coastal Battlefield Reconnaissance and Analysis system being developed by Northrop Grumman. The system, integrated with the MQ-8B Fire Scout unmanned helicopter, is intended to find and localize minefields along the shore and in beach surf.

Increment 3, Ailes said, adds a minesweeping system, and a mine countermeasures capability mounted on an unmanned underwater vehicle will appear with Increment 4. Tests continue with the revamped Remote Minehunting Vehicle, a key element in the mine package, intended to tow AQS-20A minehunting sonars. The diesel-powered submersible has suffered from reliability problems but has been operating out of Mayport, Fla., this summer from Independence.

"We feel highly confident, based on the fact that we've identified all the failures we've ever seen," Ailes said. "We strongly believe we're going to be able to get to 75 hours [of continuous operation] and probably exceed it. "We're right on the threshold right now, and it's just going to get better," he added.

Gone from the mine package, however, is the Rapid Airborne Mine Clearance System, a 30mm gun mounted on an H-60 helicopter that was to have blasted underwater mines from the air. The gun itself - the same weapon mounted on the ships as part of the surface warfare package and first developed for use aboard San Antonio-class amphibious transport docks - "worked very well," Ailes said. "But it was going to be very expensive to make the system work," he said.

The system needed to perform complex calculations to account for refraction in the water - the phenomenon that makes something underwater, when viewed from above the surface, seem to be in a different location. "In turbulent water, it became a very complex physics problem to calculate where to aim it," he said. "It was very technically challenging."

A towed countermeasure system, based on the Navy's airborne mine neutralization system used on helicopters, is being evaluated for inclusion in the LCS mine package, Ailes said, with a decision expected late this year or early in 2012. "The cost would be significantly less than what we would need to make RAMICS work," he said, and could be produced in the same amount of time.

But the mine-killing round developed for RAMICS might still be useful, Ailes said. "The round has a significantly higher capability against small, fast targets on the water, such as Jet Skis and small boats. It's wave-piercing, so it cuts through waves. It's much more effective." The two 30mm guns in the surface warfare package will be used for at-sea tests of the round, Ailes said. Work continues to smooth the software for the guns to operate with the LCS's network.

Integration tests of the Unmanned Influence Sweep System towed minesweeping system were conducted in June at the Naval Surface Warfare Center at Panama City, Fla., and have continued into the summer. The tests included the first use of a prototype Sweep Power Subsystem, NAVSEA said, combining magnetic and acoustic sweep systems similar to the Mk 104 acoustic and Mk 105 magnetic sleds towed by mine-hunting helicopters.

"The faster it goes, the faster it sweeps," Ailes said, citing tests using an unmanned surface craft operating at 20 to 25 knots. "Historically, those aren't minesweeping speeds, but our analysis shows it's very effective. The current ships we have don't sweep that fast, but the helicopter sweeps go at about that [speed]."

An earlier plan to use an unmanned surface vehicle with the anti-submarine package has been dropped, and the choice of a USV to operate with the mine warfare package has yet to be made, Ailes said. Although some of the USVs so far have been effective, they've also been too big or too heavy, he said.

Ailes pointed to the flexibility of the LCS design when one system is replaced with another. An April 2010 Army decision to cancel development of the Non-Line-Of-Sight missile left the LCS surface warfare mission package without a surface-to-surface missile. In July, the Navy approved the Raytheon-developed Griffin missile to replace it.

Because no missile-launching equipment is welded to the ship, Ailes said, the swap will be relatively easy, "with really no impact to the sea frame at all. In other ship classes, that would have been a very significant impact." Outside the LCS program, the Navy has approved development of a new launcher for the Griffin to be used onboard coastal patrol ships.

Handling The Load

The two LCS designs have completely different handling systems to move around mission package elements. Trials have "gone extremely well on both sea frames," Ailes said. He cited a November test with the first LCS, Freedom, at Port Hueneme, where a surface module was removed and a mine package loaded on.

"We demonstrated it all fits, that it plugs into the [ship's] combat system," he said. "The requirement was to do it in 96 hours, and we significantly beat that. And, over time, we'll refine it."

A simulated mine module was taken off and put back on Independence, Ailes said. "We had one integration issue with plugging into the local area network, but we've fixed that," he added. "Other than that, it was pretty much perfect. "We feel highly confident on LCS 2 that the MCM mission package is integrated, that it fits, that we understand how to move things around."

(NAVY TIMES 29 AUG 11) ... Christopher P. Cavas

Construction Begins On The USS Milwaukee

A Lockheed Martin team has begun construction on the nation's fifth Littoral Combat Ship (LCS) at Marinette Marine Corp. The team plans to deliver LCS 5, the future USS Milwaukee, to the U.S. Navy in 2014.

The industry team recently received approval for full production of LCS 5 after finishing a successful review with the U.S. Navy that demonstrated the team's ability to begin construction based on production readiness criteria including design completion, staffing and material readiness.

LCS 5 is the first of 10 Freedom-variant ships awarded to Lockheed Martin by the Navy in December 2010. Marinette Marine Corp., a Fincantieri company, will construct the 10 ships in Marinette, Wis., and naval architect Gibbs & Cox will provide engineering and design support. The industry team's supplier base includes more than 700 companies in 43 states, and the program could generate as many as 16,000 jobs nationwide at its peak in 2014.

"We have successfully worked our way down the learning curve on the Freedom variant, allowing us to establish and meet cost and schedule goals as demonstrated on LCS 3," said Joe North, vice president of littoral ship systems at Lockheed Martin's Mission Systems & Sensors business. "We expect to continue to improve on our performance with LCS 5 and beyond."

(MILWAUKEE SMALL BUSINESS TIMES 22 AUG 11)