HMS Queen Elizabeth's U.K. Crew Finally Meets the F-35B

PATUXENT RIVER, Md. – Members of the flying control and flight deck control teams aboard HMS Queen Elizabeth (R08), flagship of the Royal Navy's new class of aircraft carriers, visited Naval Air Station Patuxent River, Maryland, this week for their first live peek at the F-35B Lightning II, ahead of the jet's first trials aboard the ship this fall, the F-35 Program Executive Office said in a May 22 release.

On May 22, about 20 members of the HMS Queen Elizabeth team witnessed F-35B test aircraft BF-02 and BF-04 taxi, perform two vertical landings apiece, and conduct a couple short takeoffs. The ground reverberated as each aircraft approached the tarmac for its vertical landings led by the F-35 Pax River Integrated Test Force team, hovering for several seconds prior to descending.

The next day, the ship's team took over and, acting as landing signal officers, taxied an F-35B for the first time. Persistent rain limited the team's activities on Thursday prior to their Friday departure back to the United Kingdom.

In terms of getting his personnel familiar with the F-35B, prior to this fall's ship trials off the U.S. eastern seaboard, the trip was a success, said Royal Navy Cmdr. James Blackmore, Commander Air aboard HMS Queen Elizabeth.

"It's the first time they've ever seen the jet or been up and close to it as it's performing its flight maneuvers, so they got to feel the environment of what it's like, the sort of noise, the heat, the sound and the pressure of the aircraft, so that when it comes to deck for the first time, it's not a surprise," Blackmore said.

As HMS Queen Elizabeth's "air boss," Blackmore is in charge of

all aviation activity onboard a ship “that’s been designed specifically for the F-35,” he said.

At roughly 65,000 tons, HMS Queen Elizabeth is much smaller than U.S. Navy carriers, but its flight deck and hangar are about the same size, Blackmore said. He noted the “key difference” between the two nation’s aircraft carriers is the Queen Elizabeth class’ flight deck, which is designed exclusively to handle helicopters and the F-35B, the short takeoff and vertical landing (STOVL) variant of the fifth-generation fighter.

“From the keel up, it’s all been about F-35 from day one,” he added.
For the U.K., the F-35B represents a much-anticipated return to carrier aviation, one that holds particular significance for Blackmore, who piloted the last Harrier flight off the HMS Ark Royal, the U.K.’s last aircraft carrier, in November 2010. Equally fitting, the Ark Royal’s captain at that time, Commodore Jerry Kyd, is now the captain of HMS Queen Elizabeth.

“I was fortunate enough to fly the last ever Harrier launched from a U.K. aircraft carrier in 2010, so if you like, I almost closed down what we used to do,” Blackmore said. “The fact that eight years later, I’m now here opening that back up with the team is really good.”

Blackmore called the F-35B “a step change for the U.K. in how we’re going to conduct business.”

“The fact that it’s F-35 is pivotal, because you’re in the fifth-generation game now with aircraft, which brings stealth, sensor fusion, advanced weapons, and the ability to project aviation and power ashore at your choosing,” he said.

NAVSEA Leadership: High-Velocity Learning Key to Expanding the Advantage

WASHINGTON – The two top leaders of Naval Sea Systems Command (NAVSEA) bookended the first high-velocity learning (HVL) summit to show their commitment to HVL, one of the pillars of the NAVSEA Campaign Plan to Expand the Advantage, the Naval Surface Warfare Center's Carderock Division said in a May 17 release.

Jim Smerchansky, executive director for NAVSEA, opened the HVL summit held at Naval Surface Warfare Center (NSWC), Carderock Division in West Bethesda, Maryland, May 15-16. NAVSEA Commander Vice Adm. Thomas Moore closed the event, which brought representatives of NAVSEA commands together to discuss HVL tools, successes and opportunities.

With similar messages about the importance of high-velocity learning, both men described the need to increase the United States' capabilities over its adversaries. The country is in an era of great power competition, namely with Russia and China, and according to both Smerchansky and Moore, NAVSEA's vision to "expand the advantage" means contributing to the overall effort of the secretary of defense's National Defense Strategy to broaden that capability gap.

"High-velocity learning is about mission accomplishment," Smerchansky said. "Our obligation, our mission to the Navy and the nation is to deliver and provide warfighting systems and ships to the men and women of the country to never allow them to be in a fair fight. Our obligation to our workforce is to

provide meaningful work and the right tools they need to be successful."

Each of the speakers took questions from the audience, many of which were concerning the loss of knowledge that is expected as the more experienced employees retire.

In response to one such question, Smerchansky said instead of thinking of it as a transfer of knowledge to the next generation, people should consider a transfer of experience, meaning the more senior employees need to start turning their work over to the junior employees, allowing them to gain the experience necessary to work through problems.

"High-velocity learning can go right to the heart of that," Smerchansky said. "This is the generation coming up that has to be able to look right; they have to count on the 75,000 people (within NAVSEA) to be part of their network to help them be successful."

The idea of high-velocity learning originated from the book, "The High-Velocity Edge," by Steven Spear. Chief of Naval Operations Adm. John Richardson adopted HVL as something every level of the organization should be achieving, as laid out in his plan "A Design for Maintaining Maritime Superiority."

High-velocity learning can be explained with the four "S's:" see, swarm/solve, share and sustain. Within this framework, decision making can be pushed to the lowest levels of the organizations, thereby empowering employees to gain the experience Smerchansky said they need.

During the summit, which included remarks by Rear Adm. Doug Small, Program Executive Office, Integrated Warfare Systems, the attendees were able to experience their own "swarm." NAVSEA's PMS 391 (Team Subs) identified three challenges they have, specifically in modernization, acquisition and maintenance.

“We use these philosophies in hopes of becoming a true learning organization,” said Jana Patterson, a senior acquisition product engineer for Team Subs. “We are trying to figure out how to not only increase the throughput of modernization, but to improve upon our maintenance situation, the processes already in place.”

Patterson said the knowledge is at the waterfront with the people actually turning wrenches or ordering parts, and the people in service support, like her, need to hear from them.

“We are looking for ideas on how to empower that level of personnel out at the shipyards, whether they be private or government, to identify issues,” Patterson said.

The attendees split into three groups and spent about 45 minutes brainstorming the issues presented by Team Subs, working towards possible solutions, which is precisely what “swarming” is. They then came back together to share their results. Even though most of the people in the groups did not work in the submarine world, it was their own experiences that led to the possible solutions.

Patterson came away with several ideas, which she said she will take back to her work environment and see if there are opportunities to incorporate some of the possible solutions.

The idea of HVL is not only improving processes by seeing the problems and swarming them for solutions, but it’s also about sharing across the enterprise so the workforce is working smarter and continuing to expand the advantage.

“If you can’t spend a little bit of time doing strategic planning, high-velocity planning on what the future workforce needs to look like, then we are kind of doomed to do what we’ve been doing over and over again,” said Don McCormack, executive director for NSWC and Naval Undersea Warfare Center.

One of the common themes at the summit was communication as a

barrier to high-velocity learning.

“The biggest challenge I have every day is effectively communicating to a workforce of 75,000 people,” Moore said, acknowledging that sharing is going to naturally be the hardest part about HVL. “But if we really want to be a high-velocity learning organization, we have to be able to communicate and get it down to where it’s culturally important for us to be working on this; it has to become second nature.”

Moore said he expects the attendees of the HVL summit to become the change agents, relying on them to force the culture to change.

“The two things on the Campaign Plan that require the most work and that we’ve made the least amount of progress on, they are both ideas that are culture issues, a culture of high-velocity learning and a culture of affordability,” Moore said. “Why are those things the hardest? Because culture in an organization is the absolute hardest thing to change, without a doubt.”

Moore challenged the summit attendees to take the principles of high-velocity learning to the next level and find a way to get them ingrained into the culture, so that everybody is thinking about HVL.

“The high-velocity learning piece is probably the most key element to eventually getting to the vision to expanding the advantage,” Moore said.

Navy Completes Lightweight Torpedo Defense Mission Module Testing

WASHINGTON – The Littoral Combat Ship (LCS) Mission Modules (MM) program announced the successful completion of two days of at-sea testing of the AN/SLQ-61 Lightweight Tow (LWT) Torpedo Defense Mission Module (TDMM), May 2.

Similar to the AN/SLQ-25 "Nixie" system currently installed in the fleet, the LWT is a modular, digitally controlled, soft-kill countermeasure decoy system. It employs an underwater acoustic projector deployed from the ship's stern on a tow cable to defend ships against wake-homing, acoustic homing and wire-guided enemy torpedoes. The LWT system is significantly lighter in weight than the current "Nixie" system and has a different tow profile, making it ideally suited for small combatant warships operating in littoral environments.

"This test was highly successful and demonstrated that this technology, which provides critical torpedo defense capability for the LCS class of ships, is ready for integration aboard an LCS," said Capt. Theodore Zobel, LCS Mission Modules program manager.

The test event was the final at-sea test on a commercial vessel. The program is incorporating lessons learned from this event as it prepares for TDMM integration and formal developmental and operational tests aboard an LCS. The torpedo defense capability the TDMM provides is envisioned for eventual deployment on all LCS ships, and potentially other small combatants.

Program Executive Office Unmanned and Small Combatants (PEO USC) provides a single program executive responsible for acquiring and sustaining the littoral combat ship class and

mission capabilities; the future frigate; the multi-mission surface combatant – an LCS variant for international customers; mine, anti-submarine and surface warfare systems; and unmanned maritime systems.

Aircraft Carrier John F. Kennedy Reaches 75 Percent Structural Completion

NEWPORT NEWS, Va. – The nuclear-powered aircraft carrier John F. Kennedy (CVN 79) is 75 percent structurally complete following the recent installation of the forward area of the ship's main deck, Huntington Ingalls Industries announced in an April 30 release.

Kennedy, the second ship in the Gerald R. Ford class of carriers, has been taking shape at the company's Newport News Shipbuilding division since the ship's keel was laid in August 2015. The ship is being built using modular construction, a process where smaller sections of the ship are welded together to form a structural unit, known as a superlift. The superlift is then outfitted with piping, electrical equipment, cable, ventilation and joiner work, and is lifted from the assembly area into the dry dock.

The 750-metric-ton forward section of the main deck includes the machinery spaces located over the ship's forward diesel generators. Also installed was the first piece of the aircraft carrier flight deck, which includes command and control, pilot ready rooms and additional support spaces, a jet blast deflector and components of the advanced arresting gear system.

With the recent superlifts, 341 of the total 447 sections are currently in place. Kennedy stands about 100 feet in height in the dry dock with only the island and main mast remaining to bring the ship to its full height of 252 feet.

A third key milestone also was achieved recently when the first two generators supporting the electromagnetic aircraft launch system were installed.

“We are very proud of the progress we are making on the Kennedy,” said Lucas Hicks, Newport News’ vice president, CVN 79 program. “The ship now is 75 percent structurally erected and more than 40 percent complete. Many of the improvements we have made over the construction of CVN 78, including increased pre-outfitting and performing more complex assemblies in our shops, will allow us to launch the ship three months earlier than planned.”

Kennedy is scheduled to be christened in the fourth quarter of 2019 and delivered to the U.S. Navy in 2022.

NRL Testing New Structural Acoustic Sonar for AUV Mine Hunter

NATIONAL HARBOR, Md. – The Navy is pushing out new autonomous underwater vehicles (AUVs) that utilize low-frequency wavelengths to identify objects deep underwater. The Office of Naval Research (ONR) and the Naval Research Laboratory (NRL) presented data at their Sea-Air-Space booth April 11 showing how this method makes it easier for ships to see mines below the sea bottom.

Zachary Walters, researcher at NRL, noted that every object has a unique acoustic fingerprint, and with the new method, structural acoustic (SA) sonar, AUVs can determine what each individual object is.

The low-frequency wavelengths used in SA also offer the chance to “punch into the deeper sediment” in the ocean, Walters said.

Of course, there are infinite number of objects potentially hidden in the sea, so NRL is focusing more on target recognition rather than identifying every bit of clutter.

“We do know what our targets that we are interested in look like, either through laboratory measurements, at-sea measurements or through forward numerical modeling,” Walters explained. “And, so, we use those … to build up a library of objects that we are interested in, and we pass this on, along with the data we measure at sea, to our automated classifiers.”

According to Waters, SA is currently being transitioned out to the field for testing with Knifefish, a mine-hunting AUV. As it gathers more research, NRL hopes to “extend to much larger ranges and higher area of coverage,” which will be transitioned to Knighfish in later updates.

The NRL’s ultimate goal for SA is to create AUVs that run fully autonomous operations. Walters believes that effort will rely on the continued cooperation of ONR and NRL.

Sea Services Feel More Prepared After Complicated 2017 Hurricane Season

NATIONAL HARBOR, Md. – What has been described as a complicated hurricane season brought new challenges for the maritime forces in 2017. With hurricanes hitting Texas and Florida in back-to-back months, it was the first year on record that two category four storms made landfall in mainland United States.

On top of that, islands such the Virgin Islands and Puerto Rico were hit hard by Hurricane Maria, causing massive wind damage and power outages.

While taxing at first, sea service leaders at the Hurricane Update Panel at the Sea-Air-Space Exposition April 11, said they were pleased with their combined efforts to help the affected areas during the time of crisis and feel more prepared for the expected above-average 2018 hurricane season.

The panelists collectively had years of storm relief experience but even that wasn't enough to fully prepare for the four major hurricanes in 2017.

Maj. Gen. Pat Murphy, director of the National Guard Bureau Joint Staff, led the National Guard's response efforts for Hurricane Sandy when it hit the Northeast in 2012. But not even Sandy could compare to Hurricane Harvey, Irma and Maria individually, let alone collectively.

"Hurricane Sandy was originally referred to as 'Super Storm Sandy,'" Murphy joked, "but since the summer of 2017, I've not heard it called 'super' anymore. Because it really paled in comparison to what happened in 2017. I would categorize Sandy as a different type of event and not to the magnitude of the

past summer’s events.”

Handling the historic meteorological events quickly became a joint command effort once Hurricane Irma and Maria left, according to Rear Adm. Jeffery Hughes, former commander, Expeditionary Strike Group.

“Relationships are absolutely critical,” Hughes said. “At no point in my near 30-year career have I ever placed a higher premium on relationships, because it drives that unity of effort.”

Hughes also was reassured that they had full control on when and where they were allowed to respond.

“At no point did I ever not have the authorities to allow me to respond immediately,” he said. “At no point was I waiting to say, ‘I would really like to do something, but I’m waiting to be told that I could.’ We had the authorities in place, and we had the unity of effort throughout the entire response team, from the federal and territorial level, to allow us to go in and save lives.”

However, the response effort didn’t go as smoothly as anticipated, at first. Most of the relief-related issues stemmed from Hurricane Maria’s damage to the Virgin Islands and Puerto Rico. The sea services successfully sent the needed resources to the islands, but the lack of power and the situation of the islands slowed down the distribution process.

Of course, lack of power wasn’t the only challenge for the relief effort. Murphy later pointed out the limited capability of Puerto Rico’s resources also made delivering equipment in a timely fashion difficult.

VR Training Making Major Strides, Still Room to Improve

NATIONAL HARBOR, Md. – The future of virtual reality (VR) and augmented reality (AR) in terms of training and new innovations is still an ongoing process, experts from the Navy, Marine Corps, industry and academic fields said during the Innovation in Training Through Video Games Panel at the Sea-Air-Space Exposition April 10.

While these fields are making great strides incorporating and expanding VR capabilities, costs and connectivity still prove to be "big constraints."

Lucien Parsons, director of the Mixed/Augmented/Virtual Reality Innovation Center and professor at the University of Maryland, curbed panel attendees' expectations when it comes to fully incorporating VR and AR training. Dubbed the "Debby Downer" by moderator Cmdr. James Phillips, Parsons pointed out the costs for fragile, user-unfriendly technology is still as high as a million dollars. Granted, that's quite the drop from $300 million nearly 30 years ago, according to Parsons.

"I've worked on a game that costs $100,000 to make, and I worked on a game that almost cost a $100 million," Parsons said, applying his real-life experiences. "What you're aiming for makes a very big difference in what your budget is."

For the military, the "game" they are aiming for is a simulation that is "reliable, realistic and reusable," according to the three service officials on the panel.

Col. J. Bollock, director of the Training and Doctrine Command and capability manager, Integrated Training Environment, outlined the Army's future solution for VR training, synthetic

training environment (STE). Unlike the current model, STE will fully incorporate live, VR and AR training.

“The STE will provide immersive and intuitive capabilities that keep pace with a changing operational environment,” an accompanying video brought by Bollock stated. “Giving commander’s the ability to overcome today’s limitations and take on the challenges of tomorrow.”

“In focusing on training simulations, we can really enhance human training and performance,” said Dr. Kendy Vierling of the Marine Corps Training & Education Command’s Future Learning Group.

Parsons concluded his remarks by assuring that successful VR integration is very possible, but only if designers focus on designs and usability, avoid building a “multiverse” and never underestimate the serious concerns of security.