Future Challenges May Involve Rethinking How the U.S. Fights, Speakers Say

Amiral James Kilby, the Vice Chief of Naval Operations, speaks at the luncheon panel on Monday.

The United States is facing a variety of challenges, from Houthi rebels in the Red Sea to the People's Republic of China, but the preferred American way of fighting – massive overmatch – may not be tenable for the future, two panelists said during the luncheon event at the opening day of Sea-Air-Space.

China is investing in its military faster than the U.S. is, and the new U.S. defense budget is a 1% increase in the top line, which amounts to a decrease with inflation, said retired Admiral James "Sandy" Winnefeld, chair of the President's Intelligence Committee.

“Even if we could build the ships that we wanted to build, we would have trouble maintaining them all,” he said. “And then manning is a challenge for us. So, it’s entirely possible that the means that we want to apply to this problem … are not going to be there.”

What the nation may need to do is adopt a “whole of nation approach, not just a military-on-military approach, which involves diplomacy, economics, information, and of course the military,” he said.

Vice Chief of Naval Operations Admiral James Kilby said one way forward is with disruptive technology, the sort being developed by the Disruptive Capabilities Office, the group set up last fall by Secretary of the Navy Carlos Del Toro to more quickly move technology to the field.

He wouldn’t go into specifics of what the office is working on, but it’s intended to look at a broad swatch of technology and see what can be tested and moved rapidly to the warfighter.

“The Disruptive Capabilities Office is meant to look across the whole DoD spectrum and understand what can be brought to bear quickly and to put that together in a test environment, test it, and have some confidence in it before we go after it,” he said.

“… That is different behavior than how we’re used to doing it, and it’s basically capability focused,” he said. It builds on the work of Task Force 59, which deployed maritime unmanned systems, and is aimed at ways to “produce some capability now versus the perfect in future,” he said.

Retention is Good but Workforce Challenges Remain, Service Chiefs Say

Navy CNO Admiral Lisa Franchetti speaks at the opening session of Sea-Air-Space 2024

Retention in the Navy and Marine Corps is going well, but recruitment remains a challenge across the services, including the Maritime Administration, and the services must set priorities in a time of great challenges and tight budgets, sea service chiefs said in the kickoff keynote panel of Sea-Air-Space 2024.

Undersecretary of the Navy Erik Raven, who introduced the panel, asked what is needed to continue U.S. dominance. “We need budgets to support our strategy, with people and readiness coming first,” he said.

He noted the fiscal 2025 Navy budget request involves “some tough choices, putting quality of service and readiness at the top of the priority list means other program must either must make do or take risks.”

But the proposed budget “boldly advances our undersea capabilities for both U.S. and AUKUS demands, solidifies our commitment to 31 amphibious ships, and advances the landing ship medium into production,” he said.

The panelists then took up the issue of budgets and the challenges facing the services. Chief of Naval Operations Admiral Lisa Franchetti said the service has only a .7% increase in its budget in the fiscal 2025 request, forcing it to set priorities.

Number one is the Columbia-class submarine program, next is near-term readiness in “our forces and our people,” and next is working with industry partners to make that happen.

“You can see the demand signal: 88 ships under contract, 66 under construction … we know we need a larger Navy, every study since 2016 has shown that,” she said. “I think the most effective way to work on that right now is invest in our industrial base, invest in the workforce, invest alongside our industry partners in the infrastructure necessary to really set the conditions to speed up the production and the throughput of the ships and submarines that we need to put more players on the field.”

General Chris Mahoney, the assistant commandant of the Marine Corps.

General Chris Mahoney, the assistant commandant of the Marine Corps, said the fiscal ’25 budget funds the LPDs, LHAs and LSMs the service needs, so “for what allows us to be ready, the 25 program right now is looking very strong.”

Admiral Linda Fagan, commandant of the Coast Guard, said “demand for the Coast Guard is deafening and it’s worldwide,” from dealing with the aftermath of the collapsed bridge in Baltimore to working with small nations that need the presence of cutters to help defend their interests.

She noted there is great Coast Guard demand for new ships as well.

“We, too, are in the largest acquisition that we’ve had since

World War II. We compete for the same industrial base space, both new construction and repair with the Navy. And it’s critical for the nation that we’ve got that kind of reliable access and commitment to the new ship capacity and then repair capacity and maintenance capacity for the ships that are operating.”

The Maritime Administration, too, is building new ships, albeit on a much smaller scale, said MARAD Administrator Ann Phillips. Its new builds, five new training ships, are for the Merchant Marine academies.

Admiral Linda Fagan, commandant of the U.S. Coast Guard.

“We thank Congress for the funding to be able to build these vessels, but when you have a 100% design, when you have firm

fixed-price contracts, when you have by law a very small change order budget, and you have commercial best practices being applied, you are able to move through this vessel construction and vessel procurement," Phillips said. "We're on budget. We're nearly on time."

Retention and Recruitment

Of course, having ships is one thing, but the services must be able to crew them and maintain them, which are challenges of their own.

"I'm happy to say that retention is very good in the Navy right now in almost all of our fields. And so, to me, that's a signal that people are really committed to our mission," Franchetti said.

The service is "very focused" on recruiting, she said. "We can have all the best platforms in the world, but if we don't have the warfighters that can deploy them, we're not going to be an effective Navy," she said. "So, we're focused hard on recruiting," including by elevating the head of Navy recruiting to a two-star admiral.

The Navy is also "expanding the pool of folks that can join our Navy team," including by boosting the age of enlistment to 42. "If anybody out there is not turned 42 yet, there should be some recruiters around who are going to sign you up," she said. "And if your kid is above 18, you and your kid can be enlisted simultaneously."

The Coast Guard has had a shortfall as well, Fagan said, but has "kind of recovered" and is looking to recruit more effectively as well, including by boosting its recruiting capacity by nearly 25% and going after young people where they are, including standing up junior ROTC programs and even going on Twitch.

"It's an online collaborative gaming site, which,

surprisingly, there were a lot of 20-year-olds," she joked. "There's the target audience."

Mahoney said retention numbers in the Marine Corps are "very, very good. We've made mission, we will make mission this year. You heard here first, our attention numbers are good and getting better, but it's not a condition of stasis. You don't declare victory and walk on to the next issue."

The Marines must look at the factors that make and keep young men and women Marines, "and that equates to their conditions of the barracks, access to healthcare, access to childcare, good childcare, good gyms. And you've got to bring in new ideas to continually, not sit there and declare victory once again, but to make sure that you are addressing needs that they have," Mahoney said.

Lockheed Martin Advances Aegis Weapon System Coordination with Two Missile Systems

Lockheed Martin (Booth 1001) recently completed a successful Flight Test Aegis Weapon System-32 using the combat system to intercept a medium-range ballistic missile target using the Standard Missile-6 Dual II software upgrade.

The test, supported by the Missile Defense Agency, U.S. Navy, and Lockheed Martin, tested a real-world scenario and proved the versatility and strength of the Aegis Combat System, showing the latest weapon system configuration can defeat this class of threat working with the SM-6.

“We rapidly advance and integrate our technologies to ensure the U.S. Navy has the capabilities its Sailors need to meet their toughest missions today and tomorrow,” said Amr Hussein, vice president and general manager of multi-domain combat solutions at Lockheed Martin Rotary and Mission Systems. “This flight test utilized the latest updates to Aegis Baseline 9, which improves tracking, identification and intercept capabilities to solve for evolving, complex threats.”

Lockheed Martin is the Combat System Engineering Agent (CSEA),

responsible for the design, development, integration and test of the weapon system that successfully planned, searched, tracked, and conducted the engagement of the target, including launching and guiding the SM-6 intercept.

In response to written questions from Seapower, the company said the effort tested its latest designs as it continue to evolve and improve the system to defeat ever evolving and challenging threats.

The company has already integrated more than 60 into the Aegist Combat System, including a range of effectors and sensors, both domestically and for six international allies.

PAC Test

The company also investing in technology enhancements to integrate PAC-3 Missile Segment Enhancement (MSE) into the MK 41 Vertical Launching System to support employment with the Aegis Weapon System.

This integration would deliver a hardened defense to maritime fleets using an existing, well-tested interceptor to defends against threats including tactical ballistic missiles, cruise missiles and aircraft.

The company plans to participate in a live-fire event this year, although events are still largely under wraps. Last year, the company participated in an S-Band radio test which simulated the radio that Standard Missiles and others use to get midcourse guidance.

“That was a successful test, so all of the major lab-based, shore-based tests without doing a live fire have been successfully completed,” Tom Copeman, vice president of naval systems and strategy for Lockheed Missiles and Fire Control, told Seapower in an interview. “… All prepping for a live-fire event which is scheduled for 2024.”

The Aegis Combat System has a long and successful record, and the PAC-3 has a lengthy pedigree as well, “so we’re confident that the marriage of these two very, very mature systems will yield a much-improved capability for the United States Navy if they choose to move forward with it,” Copeman said.

The number of Aegis Weapon Systems and PAC-3 missiles could lead to a somewhat widespread use in the fleet should the Navy choose to go that route, and Copeman said “we’ll continue to internally invest to keep the project moving, so if they do decide to go, it could be fairly rapidly implemented if the Navy says they want to do it.”

“Think about the capacity that will enable, which is really a huge capability that we can give the U.S. Navy,” Hussein said.

Naval Supply Systems Command introduces Naval Sustainment System- Supply 2.0

The guided-missile destroyer USS Arleigh Burke (DDG 51) transits through the Mediterranean Sea in 2023. NSS-Supply is helping meet fleet readiness goals using an agile framework driven by data analytics. CREDIT: U.S. Navy | Mass Communication Specialist 2nd Class Omar Rubi

By Kirk Engler and Melissa Olson

Naval Sustainment System-Supply (NSS-Supply) 2.0 is focused on delivering fleet outcomes and supply's contribution to fleet readiness, whereas NSS-Supply's original focus was to capture supply chain value.

Navy fleet readiness goals fall into three categories: Subsurface, Surface, and Aviation, allowing NAVSUP to focus on supply's contribution to meeting fleet readiness goals.

How? NSS-Supply uses the "Agile" framework driven by data analytics. NSS-Supply is currently analyzing data to see what supplies are keeping the Surface Warfare community from reaching their North Star readiness target of 75 mission capable ships. A good example is the targeting of on-board sparing for systems that have outdated spares modeling.

Getting the right mix of spares on board increases readiness and improves endurance.

Simply stated, NSS-Supply 2.0 moves away from a monetized-value calculation to a readiness calculation directly linked to fleet readiness goals.

NSS-Supply is built on the CNO's priorities of warfighting, warfighters, and the foundation that supports them. The essential element is the Agile approach which quickly assesses problem areas and rapidly deploys innovation into the E2E supply chain using the Get Real, Get Better mindset to deep-dive supply chain issues that accelerate the Navy's warfighting advantage.

Initiatives are built from the Chief of Naval Operations, Navigation Plan Implementation Framework (NIF) priorities and objectives. Additionally, Performance-to-Plan (P2P) is inculcated in the NSS-Supply culture to drive baseline Get Real readiness performance and NSS-Supply is the Get Better engine that allows accountable commanders to implement world-class readiness solutions across the Navy's E2E supply chain.

NSS-Supply has undertaken 33 initiatives since 2021. The following examples provide a few highlights:

- Achieved average RTAT reduction of 40% in aviation and 30% in maritime repairs.
- Established first Regional Maintenance Center reoccurring repair agreements to repair 104 parts for wholesale stocking.
- Increased nuclear submarine capabilities through improved spares pool health and enhanced policies to increase critical submarine parts inventories.
- Engaged key suppliers to improve contract performance, expanded contract strategies, and improved inventory performance.

- Built and implemented E2E Naval Shipyard Supply Chain Management tool to significantly improve submarine material support.

NSS-Supply continues to tackle supply chain initiatives directly supporting the warfighter as a multi-year journey to transform the end-to-end supply chain and provide the sustainment outcome the fleet needs that responds to the VCNO directive that designated the Commander, Naval Supply Systems Command as the Navy's E2E Navy Supply Chain Integrator.

CDR Kirk Engler is director of Naval Sustainment System – Supply, Naval Supply Systems Command and Melissa Olson is deputy director.

L3Harris Moves Ahead with Disruptive Capabilities

L3Harris successfully launched a recovered a Iver4 UUV from a submarine. Photo Credit: L3Harris

L3Harris (Booth 1037) hopes to use its expertise in autonomy software, uncrewed surface vessels and uncrewed underwater systems to help the Navy counter the looming threat of China and get more systems into service.

The company has a lot of interest in what Jon Rambeau, president of L3Harris' Integrated Mission Systems segment, called "disruptive capabilities," which includes moving airborne ISR capabilities from military aircraft to business jets and focusing on passive sensing and targeting for autonomous surface and subsurface vehicles.

"In the maritime domain … [we do] a lot of work around autonomous surface and subsurface vessels, and also a focus on passive sensing and targeting for the surface to allow the manned fleet to operate without having to light up their radars so often," Rambeau told Seapower in an interview. "We think that's a capability that can be deployed very rapidly, it's very mature and it's also very low cost."

The company also recently successfully deployed and recovered an uncrewed underwater vessel from a submarine's torpedo tube, using one of its Iver4 vehicles.

"We were the first company to be able to demonstrate the capability to retrieve a UUV through a submarine torpedo tube while it was underway," Rambeau said. "A pretty big accomplishment. Others had tried and failed and we were able to be successful on our first try, which was pretty impressive and not only that, but twice in one day, so pretty neat. That team just won our corporation's top technology innovation award this year across the entire company."

Replicator

The U.S. Department of Defense last year announced the Replicator program, a still largely undefined effort to launch

thousands of attritable, autonomous aerial and surface systems to help counter China's growing fleet.

"That's something we're very interested in being a part of," Rambeau said. "I think some of those decisions are still being made about who and how we'll participate, but we know there's an initiative, obviously, to drive the large-scale deployment of unmanned systems, and we think the work we do is right in the heart of that. We've deployed hundreds of small, undersea vessels, we've deployed hundreds of small surface vessels over a number of years, some in the commercial side, some in the military side of our business, and that's where a lot of our concentration has been, small and medium vessels for subsurface and surface operations, and a lot of work particularly around the autonomy capability."

L3Harris has an in-house autonomy development team, a capability Rambeau said is very mature, and had two autonomous ships deployed under an urgent operational needs statement with Task Force 59 out of Bahrain, which has been demonstrating uncrewed surface vessel capabilities. The submarine-launched UUV effort also stemmed from an urgent needs requirement.

"One of the areas that we continue to focus on is that we know the customer pull is there for these, I would say disruptive capabilities, we have the technology well matured," Rambeau said. "I think the question is, how do we quickly get from proof of concept to prototyping to production as fast as possible? Initiatives like Replicator are designed to try to move that along, and we're hopeful that there will be opportunities for us to be part of that."

Passive Sensing

Some of the passive sensing and targeting capabilities the company has developed for uncrewed systems can also be deployed on manned vessels, and L3Harris is planning to do

some prototyping work with the Navy on that later this year.

“We’re still working through the details of how and where and when that will take place,” Rambeau said, “but we are looking to prove out the ability to sense and target an adversary without having to use a radar onboard a ship at all. That is our hope.”

Rambeau said he is seeing growing interest from the military in manned-unmanned teaming, a concept that has been around for years but which could gain new potency under a Replicator-type effort.

“I won’t speak for the Navy, but from my point of view I think that being able to link a small group of unmanned surface vessels with the manned fleet and allow those to be companions to get out ahead a little bit, do some reconnaissance, feed information back, there certainly are a lot of opportunities to employ the vessels in that way,” he said.

“… With the ability now to launch and recover an unmanned vessel from a submarine, that really gives an opportunity to extend the reach of the submarine fleet and also to provide greater survivability, because they may not have to go into harm’s way as deeply to gather data if they have an appendage that can be set free and then recovered back with some information. Minehunting, that sort of thing.”

Insitu Going Strong at 30, Focusing on Maritime

Operations

Insitu’s FLARES system carries an Integrator SUAS aloft to launch it. Photo Credit: Insitu
By Richard R. Burgess, Senior Editor

NATIONAL HARBOR, Md. — Insitu, one of the most experienced companies in the small unmanned aerial systems (SUAS) market, will mark 30 years of operations in May.

The company (in parent company Boeing’s Booth 1337), noted for its ISR (intelligence, surveillance, and reconnaissance) services and sales of modular SUAS such as ScanEagle and Integrator, especially for U.S. and allied operations in Afghanistan, is emphasizing maritime deployment of its SUAS with the shift of U.S. focus to the Indo-Pacific region, Diane Rose, president and CEO of Insitu, said in an interview with Seapower.

The Integrator UAS gets VTOL capability using the FLARES system. Photo Credit: Insitu

Insitu's SUAS have flown 175,000 sorties, accumulating 1.5 million flight hours, including 70,000 hours of maritime operations, Rose said. The SUAS are operated by or for 40 customers – to include 20 navies and coast guards – in 35 countries. The SUAS have been operated from 28 classes of naval vessels.

Insitu's SUAS have been provided to Ukraine via Foreign Military Sales and have been "very successful in that space," she said, and Insitu will "continue to support that effort."

Insitu continues to manufacture air vehicles and provide spare parts, system upgrades, and training to users. Modular sensors, provided by partner companies, can be swapped in the field to flexibly meet mission requirements.

"Our architecture allows us to integrate very quickly third-party sensors and payloads," Rose said. "With the customer's interests and missions in mind, we have a unique capability to

offer solutions that support whatever the customer's needs may be."

Rose said there was a downtick in ISR services at land-based sites for the United States military since the end of the war in Afghanistan, but an uptick in international interest in Insitu's products and services, especially focused on the maritime domain in the Indo-Pacific region, with an associated evolution in technology to satisfy emerging and changing customer needs.

The U.S. Navy and Coast Guard continue to use Insitu's ISR services. The Navy also has procured Insitu SUAS. Navy units continue to use the RQ-21A Blackjack version of the Integrator, while Navy Special Warfare units use the RQ-27B version of the ScanEagle.

"Maritime operations are hard, and this is what 30 years of experience gives us," Rose said. "Shipboard movement, shipboard radars and antennas, the EMI [electro-magnetic interference] environment, the harsh weather conditions, global logistics – how do you re-supply your systems, how do you meet the ships at the various ports?

"There's a lot to supporting maritime operations, and I think that's really why you see the success of our systems' enduring," she said, speaking of the long service of ScanEagle in the ever-evolving field of uncrewed aerial systems.

For customers who procure Insitu SUAS, the company provides training on how to operate the systems and also operates a 24/7 Operations Action Center, which provides customers engineering support and responses to trouble reports.

This year at the Navy League's Sea-Air-Space (SAS) Expo, Insitu will be highlighting its vertical takeoff capability in the FLARES (Flying Launch and Recovery System (FLARES) octocopter, which it introduced at the 2023 SAS. FLARES can carry an Integrator UAS aloft 500 feet and launch it on its

mission, enabling the Integrator to maintain its range, endurance, and payload capacity. The octocopter alleviates the need for a launch rail, reducing the footprint of the system and making shipboard and expeditionary operation easier. The recovery method remains the same.

Rose said Insitu has one customer so far for FLARES that carries a ScanEagle aloft.

At Sea-Air-Space, Insitu will highlight its FLARES systems, which provides VTOL capability to fixed-wing UAS Photo Credit: Insitu

She said the 570-employee company is interested in growing its technical talent but emphasizes lean and efficient operations in a highly competitive industry.

Insitu continues to press forward to address battlespace challenges, including SUAS operations in a GPS-denied environment and with kinetics. The company has conducted inert-drop flight tests from Group2/3 SUAS.

Gaming to Win and Learn at Sea Air Space

The Center for Maritime Strategy “Gaming to Win” event is in its second year at Sea Air Space and offers a little for everyone within the wider wargaming community.

It features the presidents of the Naval Postgraduate and Naval War College and directors of wargaming from NWC and the Marine Corps University Krulak Center. It also highlights top-flight wargames and their designers who will invite participants to play along, and then be part of a panel on the design and use of games.

The first panel on wargaming will Tuesday, April 9 from 2:45 to 3:45 p.m., followed by an interactive wargaming demonstration from 3:45 to 5:00 p.m. and a second panel from 5:00 to 5:45 p.m., all in the Cherry Blossom Ballroom.

Discussion at last year’s inaugural wargaming eventDiscussion at last year’s inaugural wargaming event. Photo Credit: Dan Goodrich

While the panel is called “Gaming to Win,” that is really not what wargames actually do for military commanders and civilian leaders. They perform a vital role in testing assumptions that commanders might possess, as well as offering them the opportunity to explore multiple “what if” scenarios. The late Peter Perla, a famous wargamer, described them as “a dynamic representation of conflict or competition, in a synthetic environment in which people make decisions and respond to the consequences of those decisions.” Wargames do not answer the question of which side will win, or what weapon system(s) are most effective in war. War games build confidence or raise doubts in existing plans. They are a useful tool in evaluating plans but come with limitations that are not always apparent.

Limitations on Wargaming

Some wargame results are interpreted as the “sure path to victory,” or the “inevitable road to defeat” depending on who

reads the results and how they interpret them. Wargame results are sometimes seen as either confirming the rise of a specific weapon system or the condemnation of another to obsolescence. These are false interpretations of game results. First, wargames are only as "good" as their input data. That not only includes order of battle being correct, but also, when available, aspects of gaming that the Naval War College calls "the intangible aspects of military planning." How "ready is any one opponent ship, aircraft, or submarine in terms of material readiness? Can that platform perform its intended mission as designed?

The board at last year's wargaming event. Photo Credit: Dan Goodrich

What looks good on paper is not always what it appears. The Russian missile cruiser Moskva was generally rated by Cold War and 1990s-era wargames as able to sustain at least four hits from a medium-sized cruise missile like the U.S. Harpoon weapon and remain afloat. In the real world, the Moskva was sunk by two such weapons, with some reports suggesting the

Russian crew immediately abandoned the stricken vessel and did not undertake damage control actions to save her.

Another intangible aspect of wargame design and conduct is the leadership and conduct of the Red Cell, the team of experts who simulate what the opposing forces do. This has in some cases been a past challenge. From the late 1940s to the late 1970s, U.S. Navy leaders believed the growing force of Soviet submarines had only one main purpose, and that was to attack NATO resupply routes from North America to Europe. Russian leaders like fleet commander Admiral Sergei Gorshkov proclaimed the Soviet navy would confront Western navies on the high seas. The large German submarine fleets of World Wars I and II were designed to break Allied supply routes across the Atlantic. Why else would the Soviets build such a force? Intelligence gathered from wiretaps on Soviet undersea communications cables in fact revealed the Soviet navy's main purpose for its submarines was defense of its ballistic missile submarine force and the protection of the Soviet Union from nuclear attack by Western naval forces. Soviet doctrine said the war would be over before the West could even consider reinforcing NATO by sea.

Getting all of these aspects of wargaming as accurate as possible from the start is essential to setting the stage for game results that can be used by commanders to evaluate plans and the systems to execute them in both peace and war. Wargaming is pursued with victory as the goal, but if it is not sourced with accurate information, it can be a futile exercise.

HII Responds to Post-COVID World with Flexibility, Supply Chain Support

Sailors man the rails during the commissioning ceremony for the Arleigh Burke-class Flight III guided-missile destroyer USS Jack H Lucas (DDG 125) in Tampa, Florida Oct. 7, 2023.
CREDIT: Department of Defense | EJ Hersom

Shipbuilder HII (Booth 1323) has embarked on a range of efforts to improve its workforce, bolster the supply chain and boost its capital investments, HII President and CEO Chris Kastner said in a briefing on the eve of Sea-Air-Space 2024.

The company saw as far back as 2015 there would be significant demand for ships, but couldn't anticipate a worldwide pandemic that affected supply chains and the workforce, followed by rampant inflation, Kastner said.

"There's really unprecedented demand in shipbuilding right now

that we saw coming, and it has arrived," he said. "With Navy leadership … the industry has been getting after this since COVID started."

The company and its subsidiaries have been outsourcing some of the work they used to do, which helps bolster the supply chain, Kastner said. Since 2020, HII has helped create more than 200 new suppliers and outsourced 3.6 million hours of work.

It has also spent $450 million on workforce training and is providing new technology tools at its workforce, including artificial intelligence to help make its practices more efficient. "If we can use AI to improve our processes, we're going to do that," Kastner said.

Issues with shipbuilding came to the fore just this past week, as the preliminary results of a Navy shipbuilding study showed major programs are years behind schedule, including the first Columbia-class submarine and the future USS Enterprise aircraft carrier.

Advanced procurement is critical to avoiding such issues, Kastner said, one reason the shipbuilder has been pushing for a two-carrier buy for CVNs 82 and 83, similar with what was done for the future Enterprise (CVN 80) and Doris Miller (CVN 81), which were procured as a two-ship buy.

"We would like to get started in [20]26, potentially in 25 on the critical suppliers, in regard to 82," Kastner said. "There's no doubt that a two-ship buy with 80 and 81 really reduced the risk of 81. The risk we had on 80 was alleviated with 81."

As for the future USS District of Columbia, the first boat in the Columbia class, Kastner said it has a "very robust" risk management effort, "but you're going to have first-in-class issues. And couple that with a lot of green labor, that can yield to workmanship issues, and efficiency issues, and you

get potential schedule issues. It’s a first-of-class ship, and you’re rebuilding a workforce coming out of COVID.”

He noted that two shipbuilding programs involving HII are doing well, the LPD amphibious transport dock and DDG Flight III.

“What are the characteristics of those programs? Stable designs – and when the design changed it was very thoughtfully implemented, I’m talking about DDG Flight III – on time advanced procurement. Consistent workflow. All of those … and a really good core group of shipbuilders,” Kastner said.

Workforce Adjustments

“It’s a fact of life that you have a less experienced workforce than you had before, across the board. There’s significant loss of skill after covid. That’s been broadly understood, and it’s been a cross section of our talent base,” Kastner said.

That’s where HII is trying new things, including providing more flexibility for shipbuilders when they come in, including more time off early in the process. The company also has more programs to help their new hires enter the shipbuilding workforce.

“We used to just train them and send them out to a crew. Now, we train them, we bring their foreman in the training center and we put them out as a team. So, they have a framework and a cultural that they’re developing with their team, so they feel like they’re not alone when they go out into the shipyard,” he said.

HII is also recruiting from areas where people are likely to stay, according to data analytics. It is also using targeting incentives, where good performance and attendance lead to a boost in pay.

STEM Expo Brightens National Harbor with Exciting Science Demonstrations

The STEM Expo brought 5th through 12th grade students face to face with exciting science concepts on Sunday, April 7, filling the Cherry Blossom ballroom with laughter and gasps of wonder.

The event featured interactive workshops, hands-on demonstrations, STEM career information and just plain fun, including the famous nitrogen ice cream booth and a visit from Slapshot, the feathered mascot for the Washington Capitals hockey team.

While the event was fun, there was a serious purpose behind it, according to representatives from HII, the shipbuilder that was the Champion Sponsor for the event, alongside sponsors CACI and Booz Allen.

VR and 3D Printing

HII gave attendees a slice of real-life modern shipbuilding, demonstrating the use of virtual reality for ship inspections and welding and also showcasing 3D printing, or additive manufacturing, which is being used to create some components in the real world.

“It’s a safe space to fail, is what it really is. They learn these objectives here and don’t have any real-world consequences like injuries or anything,” said Grant Ronquillo, a software engineer at HII’s Newport News Shipbuilding.

It’s also the kind of training these students could expect to get if they pursued a career in shipbuilding.

“We’re working with our training programs to get this implemented as part of the standard training within Newport News Shipbuilding and across HII,” Ronquillo said, while behind him a STEM Expo visitor made her way through a simulated 3D room.

Visitors to HII’s booth were also shown a virtual welding booth and a 3D printer. The VR welding demonstration allowed students to take a turn, receive instruction on how to do better, and then try again, said Brian Treat, the lead general foreman at Newport News Shipbuilding.

“They think it’s the real thing,” he said, but it removes all the risk. “What’s key here is removing all the risk of real-life welding, allowing them to feature the same attributes and talk through it before somebody would go do it in real life.” Again, it’s how welders are actually being trained.

The additive manufacturing is another technology that some kids are already familiar with, said Perry Haymon, the chief technology engineer at HII's Ingalls Shipbuilding.

"We brought this today to demonstrate to the kids how 3D parts are printed," Haymon said. It's a technology that's making its way into shipyards.

"We do polymer as well as metallic," he said. "It's a great technology, it's a good thing to get into, for the kids to learn, because they like to draw, they like to create, so by doing solid models, now they can actually take that and put it into a printer and actually see what they've created."

Engaging Students

STEM is important because "it's such a broad field and it can be used in so many ways," said Notashia Thomas, a program manager at STEM sponsor CACI.

"When students come to this particular expo, they are exposed to just a myriad of options, and I think it really excites them. I absolutely see the children getting engaged. At our table we've been doing design principles. They try a design, they try it again, they try it again until they see it work, and that's what STEM is all about; the problem solving, the persistence that's involved. It's just great to see them engaged."

The Navy sees the value of STEM as well, contributing several displays and demonstrations for the expo, including in robotics and medicine.

"What is the value of STEM? The importance of STEM in the Navy cannot be overstated," said Commander Shannyn Fowler, commanding officer of Navy Talent Acquisition Group Richmond. "It's the backbone of how we operate, in terms of our engineering programs, in terms of our aviation programs, information technology, cyber warfare, explosive ordnance

disposal, and so many more. It’s what keeps our Navy afloat, it’s what keeps our aircraft in the sky, and it’s what keeps our enemies afraid of us.”

Fowler said she was pleasantly surprised by the enthusiasm she saw in the students coming through the expo.

“The enthusiasm is beyond measure,” Fowler said. “The excitement of young people between the ages of 5th grade and 12th grade and in STEM programs is beyond my expectation walking in on this.”

NAVAIR Sees AI as Future of Air Wing

NATIONAL HARBOR, Md. – In a well-attended presentation by Naval Air Systems Command (NAVAIR) on April 3 at Sea-Air-Space 2023, RDML Stephen Tedford, program executive officer for Unmanned Aviation and Strike Weapons (PEO (U&W)) explained the need for trust in autonomous systems while providing an overview of the Navy's unmanned aircraft, weapons, and target systems.

"If we have trust in autonomy, we can then make the move to truly artificial intelligence and in the future of the air wing," Tedford said.

He encouraged a real-world perspective when thinking about autonomous systems, remarking that, "I know many of you here that are in suits now are retired military. Many of you […] flew jets. At some point all of you were up and trying to find the tanker late at night, trying to get on the back side of the hose to get home. We learned that lesson over Afghanistan."

"How can you make in-flight refueling autonomous possible?" Tedford queried. "What if a pilot just has to get close enough and then let the system take over for itself. And make it more reliable, make it consistent and make it easier," he continued.

Open architecture may be the key.

"We always want open architecture systems," Tedford said. "We need them for flexibility in our systems. Just like applications on your phone that you can add and get rid of. We need to be able to do that with our mission systems in the unmanned environment as well."

Tedford also focused on the people behind the tech and stressed that autonomous systems and artificial intelligence don't operate in a bubble. Fundamentally, an unmanned system is still a human system.

“We know that unmanned really isn’t actually unmanned,” said Tedford. “There’s a huge support staff that’s involved in getting an aircraft in the air and conducting the mission. What we’re talking about […] having direct connectivity between our unmanned platforms and a manned platforms where the unmanned becomes an extension of the manned mission.”