Sea-Air-Space: Anduril Introduces Copperhead AUV-Launched Torpedoes

Anduril's Copperhead AUVs on display above the company's booth at Sea-Air-Space. *Photo credit: Brett Davis*

Anduril Industries (Booth 1623) took another step in advancing undersea warfare with the announcement of its Copperhead family of autonomous underwater vehicles (AUVs), including torpedoes, the first to be designed for launch from autonomous systems.

Anduril's Copperhead AUV family currently includes two variants, a 12.75-inch diameter version with a dry weight payload of 100 pounds, and a 21-inch diameter with a dry weight payload of 500 pounds. These can be used for a variety of undersea missions, such as intelligence, surveillance, and reconnaissance, teaming with its Seabed Sentry sensor system,

or locating objects such as a downed aircraft, said Shane Arnott, Anduril's chief engineer, in an April 4 news conference. The Copperheads can carry a variety of sensors, such as sonar, magnetometers and chemical detectors.

Arnott said the Copperhead M version of either the 100 or 500 size is equipped with a warhead to serve as a torpedo. The company's Dive-XL AUV can carry dozens of Copperhead 100-Ms of multiple Copperhead-500Ms, a company release said.

He said the Copperhead M can be produced in much greater quantities and at less cost than traditional torpedoes such as the Mark 48 and Mark 54 currently used by the U.S. Navy. The Copperhead, which can travel at speeds in excess of 30 knots, also can be deployed from a Group 4 or 5 unmanned aerial vehicle.

Arnott said the Copperhead already has been tested in water.

Sea-Air-Space: First P-8A Overhauled by L3Harris to Be Delivered in 2025

A P-8A Poseidon assigned to the “Red Lancers” of Patrol Squadron 10 takes off on a search and rescue mission flight. *Photo credit: U.S. Navy | Mass Communication Specialist First Class Ashley Guire*

The first P-8A Poseidon maritime patrol aircraft to be overhauled by L3Harris (Booth 937) is scheduled to be delivered back to the U.S. Navy this year, a company official said.

L3Harris was awarded an indefinite delivery/indefinite quantity contract in September 2024 from the Naval Air Systems Command (NAVAIR) for depot-level maintenance, overhaul, and repair of the Navy’s fleet of P-8As, which will number 135 upon completion of the service’s planned procurement, said Jason Lambert, president of Intelligence, Surveillance and Reconnaissance at L3Harris. The program is scheduled to continue through September 2029.

“NAVAIR’s No. 1 priority is aircraft availability, and it’s an honor for us at L3Harris to support the Navy to ensure the P-8 aircraft is mission-ready,” Lambert said.

Lambert said the company currently has four P-8As in its workflow, with a capability to induct a minimum of nine aircraft per year, and the potential capability to induct 12 aircraft the first year. The work will be accomplished at the company's facility in Waco, Texas.

He said the contract allows processing foreign P-8 aircraft along with U.S. Navy aircraft.

"The Navy awarded the ID/IQ to both L3Harris and AAR," he said. "AAR previously had this program. The Navy decided to go with a dual source, so the Navy determines the allocation of the aircraft across our two companies.

"L3 has provided decades of modification and sustainment support on the P-3 Orion, the predecessor of the P-8 platform across multiple customers including the U.S. Navy, NOAA, and the [defense] ministries of Brazil, New Zealand, and the Republic of Korea ,and we're very honored to extend our long-lasting support to the U.S. Navy by supporting this next-generation Poseidon fleet," Lambert said.

Sea-Air-Space: New Pit-Stop Approach Can Cut Engine Overhaul from Months to Days, FMD Says

Fairbanks Morse Defense workers overhaul an engine using the “pit stop” method. *Photo credit: Fairbanks Morse Defense*

Imagine if a Navy ship could pull into a pit stop like a race car, get its engine overhauled and be back on the seas in less

than a month. That’s what the team at Beloit, Wisconsin-based Fairbanks Morse Defense (Booth 1537) envisioned years ago, and now it’s a reality.

“Maintenance has traditionally taken way too long and cost too much money,” said Keith Haasl, FMD’s president of service and technology.

Haasl notes that a traditional Navy ship engine overhaul, including disassembly, inspection, repair, and reassembly, can take up to nine months. But FMD’s pit-stop approach can take as little as 26 days for ship service generators and 38 days for main propulsion engines.

Haasl said FMD did its first pit stop in early 2024 on a ship service generator. Since then, FMD has overhauled eight generators and three main propulsion engines on landing ship, dock-class vessels using the new approach.

“It’s been really successful. The fleet likes it. Our partners at NAVSEA [Naval Sea Systems Command] like it, and we sure like it,” Haasl said. “It’s revolutionized the way the Navy is doing maintenance and how NAVSEA is structuring their Class Maintenance Plans.”

Rethinking Strategy

Basically, FMD’s pit-stop approach involves rethinking the entire engine overhaul strategy.

Historically, ship engines have been overhauled using an “open and inspect” method. “It was really like incremental discovery. You open up the engine on the ship, take the measurements, inspect it, write the report, go to the customer for approval, get the replacement parts, install them, and then reassemble the engine,” Haasl said. “All of this is going on while there’s sanding and painting and welding on the ship, which increases the risk of engine contamination.”

The pit-stop approach begins with technicians bringing a standardized kit of original equipment manufacturer parts, which are replaced onsite no matter what the engine's condition. These parts are included in the kit because they're essential to engine performance.

The parts that are removed from the ship's engine are taken to the FMD facility, where they're refurbished, inspected, and certified in a controlled environment. These parts are then used in the next standardized kit for an engine overhaul on another ship. This helps save time and costs by avoiding supply-chain issues and ensuring replacement parts are always available as needed.

The pit-stop approach also reduces engine overhaul time and costs in other ways.

"We're doing work pier side, so there are no docking costs. The costs of parts are significantly lower because we're remanufacturing parts that might have been replaced with new parts under the old method," Haasl said. "All of those efficiencies we can gain are tremendous."

Sea-Air-Space: Mad Science, Marine Mammal Medicine Highlight 7th STEM Expo

A young attendee at STEM Expo is excited to learn about science. *Photo credit: James Peterson*

Hundreds of energetic students packed into the RiverView Ballroom at the Gaylord National Resort and Convention Center for the seventh year of the STEM Expo to kick off Sea-Air-Space 2025.

The event featured more than three dozen exhibits to help interest students in grades five through 12 to pursue a STEM career. It also threw in a little fun from presentations by Mad Science, which delivers innovative, educational science demonstrations aimed at children, and the National Marine Mammal Foundation, which showcased the Navy's marine mammal program and let students get up close with an inflatable dolphin stand-in.

The STEM Expo drew not only students but high-level attendees from the sea service, including Chief of Naval Research Rear Admiral Kurt J. Rothenhaus.

"ONR is honored to be a part of this STEM event to get the

word out to young folks around the country to think about a career in science, technology, engineering and mathematics," Rothenhaus said. "I'm excited to see the many industry partners out this afternoon as well as our Naval Research Lab, all here to inspire the next generation to help build the future."

The National Marine Mammal Foundation discussed how to keep Navy dolphins healthy. *Photo credit: James Peterson*

HII was the Champion Sponsor for the event and CACI sponsored the science stations.

Hands-on Fun

"In my section, we're over there making a mess. We're trying to teach them some buoyancy" by having students build small boats that carried weight, said HII's William Abraira, a structural engineer at Newport News Shipbuilding, who works on submarine pressure hulls.

"We're trying to explain water displacement to them but fun

gets in the way and it quickly turns into a competition of who can hold the most marbles," he said. "But it's super important, it's one of those basic principles in shipbuilding, and it just gets kids really excited."

Perry Haymon, with HII's Ingalls Shipbuilding, was helping hand out brightly colored plastic "hard hats" to students to emphasize the importance of safety.

"I work in research and development. So, I see the importance of those new things, those new technologies. To see young minds come in and get interested in what we do at the shipyard, as well as all of HII … is very important to us. We enjoy coming and seeing the faces of young people," he said. "There's a lot of energy here, from the people coming in, just getting hard hats, and also seeing the other events that we've got going on, from welding to virtual reality, and also building a boat to see how much weight you can actually carry."

CACI had set up a booth where children could design their own hovercraft from common materials and test them in a wind tunnel. "It's been such a fun experience getting to watch them do it," said Sidney Finkenbinder, a media relations specialist at CACI. "Make one, test it out, see what they can change and make it better. That's what it's all about, getting to learn new things and try out new activities … getting to see their faces

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Sea-Air-Space: Textron Offers

the Tsunami USV Family for Multi-Purpose Navy Use

Tsunami, a small USV, is a joint effort by Textron Systems and Brunswick Corp. *Photo credit: Textron Systems*

Textron Systems (Booth 1827, D1), originator of the Common Unmanned Surface Vehicle (CUSV) in U.S. Navy service, has developed a less expensive USV that could be used for a variety of missions and could even be considered attritable.

Textron is teamed with Brunswick Corp., a small craft manufacturer, to offer Tsunami, family of deployable, small, scalable, gasoline-powered outboard-engine craft, with hull lengths ranging from 14 to 42 feet long. Certain of the models have a payload capacity of 1,000 pounds, ranges between 600 and 1,000 nautical miles, and operable in Sea State 4.

“We are the originator of the common uncrewed surface vehicle, the CUSV, for the Navy which was successfully adapted to

become the Navy's first unmanned surface vehicle program of record and which is being fielded to the littoral combat ship fleet now [for mine countermeasures]," said David A. Phillips, senior vice president, Air, Land & Sea Systems, Textron Systems, in a briefing to reporters. "Surface warfare that doesn't necessarily require the power and the weight necessary in a mine countermeasure system."

Phillips noted several mission sets that an inexpensive unmanned craft could take on, including port security, port surveillance, escort and training.

"We have been in constant collaboration with Navy and commercial customers as to what a system like this might bring them in terms of operational flexibility [and] emerging mission sets," he said. We continue discussion with the Navy – all elements of the Navy to include fleet as well as our particular programs in which we work. And we've been hearing an increased expression of interest in a small, rapidly deployable, unmanned surface vehicle that can support a variety of missions beyond mine countermeasures."

Brunswick, builder of recreational watercraft of such product lines as Boston Whaler, Bayliner and Mercury Marine, has craft adaptable to Textron's vision and has established supply lines.

"Brunswick's portfolio of reliable high-performance vessels – their watercraft, propulsion systems, control systems – and manufacturing capacity and their global footprint along with our mature autonomy technology and systems integration capability was really the perfect combination to allow us to develop an accessible, rapidly deployable, and what I call a modular open systems architecture oriented family of vehicles or systems," Phillips said.

"Brunswick's technologies are already in mass commercial production and globally available. That allows us to reduce

costs, risk, and production time when integrating and ultimately delivering these vessels. Their global footprint and mature resilience supply chain provides our customers with an unmatched support and aftermarket service."

Brunswick "has invested in and developed a built-in drive-by-wire system for us to ramp our higher levels of operationally relevant autonomy that we've developed and delivered to the U.S. Navy and that we've proven through mine countermeasure unmanned surface vehicles and that we fielded operationally with the Navy and demonstrated through exercises like RIMPAC and FLEX," he said.

Phillips said the Tsunami could be fielded rapidly.

"We recognize the need for a ready-now solution that harnesses the capability and capacity of the U.S. industrial base," he said. "That's important at being able to scale and being able to rapidly deploy systems when our customer wants them. … Speed. Speed to market. Speed to contract. Speed to delivery. Leveraging this mature production capability enables rapid production without the costs and risks of developing boutique manufacturing capability and scaling mass production. These watercraft are already in production."

The Tsunami craft is adaptable to swarming tactics, according to Textron.

"We've also done some testing in that realm," Phillips said. "Although I'm not going to go into certain mission scenarios, the swarm is important and controlling multiple systems is important. We've done that for many years with our aircraft systems. We understand swarming of systems. We also understand the complexity associated with that. We have designed this system and we have demonstrated this system to operate multiple watercraft. I won't get into how many."

The low cost of the Tsunami is key to the craft being attritable, Phillips said.

Asked by *Seapower* if the USVs used by Ukraine against the Russian navy were part of the inspiration for the Tsunami, Phillips replied that “it certainly informed us of that emergent need. … I am not presupposing what one of our customers might use our system for.”

SECNAV Phelan to Keynote 2025 Sea-Air-Space Breakfast

Newly confirmed Secretary of the Navy John C. Phelan will deliver a keynote address at Sea-Air-Space 2025 on Wednesday, April 9, at 7:30 a.m., marking one of his first public appearances since taking office.

Phelan, who was confirmed by the U.S. Senate on March 24 to serve as the 79th Secretary of the Navy, is expected to outline his top priorities for the Department of the Navy during the largest maritime exposition in the United States. His remarks will provide insight into his vision for strengthening the Navy and Marine Corps at a time of increasing global competition and threats.

Among the topics Phelan is expected to address are revitalizing U.S. shipbuilding, reinforcing a warfighting-focused culture, and improving recruitment to bring in the next generation of naval leaders. He has also previously said he plans to push for greater investment in uncrewed systems and enabling technologies, including autonomy, mission systems, and advanced communications capabilities.

Phelan's keynote is expected to be one of the most anticipated sessions of the conference. Attendees will have a rare early opportunity to hear directly from the new SECNAV as he outlines his priorities for the Navy and Marine Corps. The April 9 Sea-Air-Space Breakfast is a ticketed event and requires an additional fee to attend. Tickets purchased in advance are available for $105, with onsite tickets priced at $115.

To register, please click here.

DON Authorizes Attendance at Sea-Air-Space 2025 for

Military, Civilian Personnel

FOR IMMEDIATE RELEASE
March 25, 2025

ARLINGTON, Va. – Travel for the Navy League's Sea-Air-Space Symposium has been authorized for all Department of Navy military speakers, moderators, and panelists, and attendance at the event has been approved for all National Capital Region (local) Navy federal civilian employees and uniformed military personnel.

A memo released by acting Under Secretary of the Navy Terrence Emmert, dated 20 March 2025, says, "I approve the Department of the Navy's attendance at the Navy League's Sea-Air-Space Symposium, 6-9 April 2025, at National Harbor, Maryland."

Sea-Air-Space, the nation's largest maritime national security symposium, is critical, as it "provides a platform for the professional development of Department of the Navy personnel

on the latest developments in naval warfare, as well as an opportunity for Navy engagement with representatives from a broad cross-section of government, industry, academia, and the international community." (GENADMIN released 24 MARCH 2025).

The Navy League of the United States, the host for Sea-Air-Space, is offering federal active-duty and civilian employees admission and transportation to the event, as well as one complimentary meal event. The Navy League also offers them discounted parking and meals for purchase at a discounted rate. Local bus services to and from the Gaylord National Harbor is also available for all federal civilian employees and uniformed military. Please see website, www.seaairspace.org for further details. Attendees not opting for these services are responsible for their own commuting costs to the event.

Newly confirmed 79th Secretary of the Navy, the Honorable John C. Phelan, will address Sea-Air-Space attendees on his priorities for the Department, including ways to revitalize U.S. shipbuilding, strengthen warfighting culture, and recruit America's best and brightest. Top speakers also include acting Commandant of the United States Coast Guard Admiral Kevin Lunday, Acting Chief of Naval Operations Admiral Jim Kilby, and Commandant of the Marine Corps General Eric Smith.

To register for Sea-Air-Space, click here.

HASC Members Prepare to Dive into Navy Budget

Members of the House Armed Services Committee seem prepared to overturn some Navy decisions as outlined in the fiscal 2025 budget request, including retiring some ships early and funding only one Virginia-class submarine.

“What has happened is, as the top line is increased, the game has become, ‘we’ll add a bunch of the stuff that we know Congress won’t add, and we’ll take out stuff that we know Congress is going to put back in.’ And that will be a net gain. That game has to stop,” said Rep. Wittman (R-Virginia), chair of the House Subcommittee on Tactical Air and Land Forces.

As for the Virginia-class sub, Wittman said the Navy position that the program is behind anyway and the shipbuilders can’t keep up doesn’t make sense.

“It really is about demand signal and, and you can’t have it both ways. You can’t say, well, the reason we are reducing the submarine request is because we don’t think the industrial base can do it. That’s wrong,” he said. “The industrial base can do it if you send them the demand signal. We’re at about 1.6, I think, submarines today annually, we need to be at 2.3. The way we get there is to send the proper demand signal.”

Rep. Joe Courtney (D-Connecticut), the ranking member on the Subcommittee on Seapower and Projection Forces, said a defense industry report issued in December highlighted the need for procurement stability.

“Procurement stability was the watchword throughout that report,” he said. “And, we’re sacrificing that. I mean, literally, within weeks” of the report.

Naval aviation is also an issue, as the Navy has an air attack shortfall, noted moderator Bryan Clark, a senior fellow at the Hudson Institute.

“There are some, thanks to Congress, some Super Hornets being procured in this year’s appropriations,” he said. “But there doesn’t seem to be a clear path ahead for the carrier air wing.”

This drew an animated response from Wittman, who said there doesn’t seem to be a sense of urgency about the situation.

“The challenge now is to make sure we get enough F-35s in production to be able to sustain these carrier wings,” and to make sure there’s not a “valley” as the Super Hornets retire, “where now all of a sudden you have aircraft carriers sitting at the dock because there’s no aircraft on board. That means we have to get those lines to intersect. That’s more of a challenge than what a lot of folks think because the tactical air component of that is about maintaining production.”

The aircraft also need technical refresh three, an upgraded software capability that contractor Lockheed Martin warned will be delayed.

“I mean, there needs to be an all hands on deck mentality to go, no, that’s not acceptable. We need these aircraft and now we’re going to have hundreds of aircraft sitting on the tarmac waiting to get a software upgrade, right?”

Wittman continued, “F-35 is it, right? That’s all we have, right? Let’s get our fanny in gear and get this thing going and get it on the decks of the aircraft carriers, get it in the hands of our pilots in the Air Force. Get our fanny in gear. I mean, this is it. I hate to get fired up about it, but I’m fired up about it because this is the future of tactile air for this nation. Get our fanny in gear,” he said, slapping the arms of his chair for emphasis.

Workforce Woes

The panel, which included Reps. Donald Norcross (D-New Jersey), Jen Kiggans (R-Virginia) and Ronny Jackson (R-Texas), also discussed the workforce issues plaguing the defense industry.

Kiggans, a former Navy helicopter pilot, said she sat on a HASC task force looking at recruitment and retention and what rose to the top were several issues: Compensation, housing and child care.

“That 5.2% pay raise that we just gave our servicemen and women in the appropriations bills that were passed a couple weeks ago, that’s a good starting place, but there’s still more work to do,” Kiggans said.

As for housing, she said college dorms are better than the places junior enlisted Sailors and Marines are asked to live. “We have to do better for our junior Soldiers, Sailors and Airmen and Marines to be able to expect them to want to do the job that we ask,” she said.

On the pay issue, Wittman said, “this 5.2% increase this year was great, but remember, the lower you are on the salary scale, the percentage is not as quite as much in your paycheck. Take for example, if you come into our services, if you are a private in the Army, the Marine Corps, third-class Seamen, third-class Airman, your starting salary is $23,000 a year. That’s 11 dollars and 50 cents an hour asking you to do

the most dangerous work of the nation, putting your life on the line. And guess what? You go to Chick-fil-A and serve chicken sandwiches and make more money in a much, much less challenging or dangerous environment. We have got to fix the junior enlisted salary differential.”

Government, Industry Must Meet in ‘Common Place of Excellence,’ Del Toro Says

Industry and government alike must modernize their processes and up their game to overcome shipbuilding challenges, Secretary of the Navy Carlos Del Toro said April 9 at the lunch session at Sea-Air-Space, including by working with shipbuilding partners overseas.

Del Toro began the speech with a bit of levity, bringing the U.S. Marine Corps mascot Chesty the bulldog onto the stage, before describing the challenges that face the nation, from Houthi rebel attacks in the Red Sea to the state of the nation's shipbuilding facilities and workforce.

"You have to understand, we, the nation, abandoned the shipbuilding industry and making the necessary investments in around the early 1980s," Del Toro said. "Because we thought that somehow the private sector would just take care of itself. And some ways it did. China moved in with cheap labor and labor practices that weren't fair. In fact, the United States is considering suing China for some of those unfair practices."

Incentives weren't made, and after the Cold War the nation lost many of it shipbuilders, he said, adding, "thank God" the nation still has the shipbuilders it does.

"But the fact is, we need more capacity if we want to a grow a Navy fleet. Let me be clear, we need a bigger Navy fleet to meet the challenges of the future. We need to have the industry to be able to grow that capacity. So, this is a whole of government discussion that we've initiated in the Navy across the government and there's a lot of interest that's growing in many different places throughout government. And I think that you'll see this actually continue," he said.

Del Toro cited a recent visit to South Korea, where he saw what could be the future.

"Right now, we build the most capable warships in the world in shipyards that are sometimes decades behind the global technological standard. This is an inefficient approach requiring far too much time and taxpayer dollars. And it's certainly an approach that is only inadequate to pace our 21st century competitors," he said.

Japan and Korea, he noted, build high-quality ships "for a

fraction of the cost that we do. When my team and I went to South Korea, we were floored at the level of digitization and real-time monitoring of shipbuilding progress with readily available information down to the individual pieces of stock materials. Their top executives can tell us to the day when ships would actually be delivered," he said.

"It's an ethos of commitment to constant improvement that is the foundation of their reputation, consistently delivering on time and on budget, even during COVID. The daunting challenges that we face are also an opportunity, a great opportunity to partner with a greater number of shipbuilders here in the U.S. and with our closest allies abroad. We have an opportunity to attract the most advanced shipbuilders in the world to work with our first-rate ship builders of the world … and invest in commercial shipyards here at home," Del Toro said. "This will allow us to modernize and expand our shipbuilding industrial capacity, creating good paying new-collar American jobs that come with a healthier and more competitive shipbuilding workforce."

Previous decades of investment are what have enabled the Navy to fight off the Houthi rebels as effectively as it has, Del Toro said.

"Ladies and gentlemen, sometimes I think the American people think that this is somehow commonplace to do this, as our CNO said the other day. There is absolutely nothing commonplace about this. Our United States Navy has been attacked. We have conducted strikes like we haven't seen in many ways since World War II."

He said investments in training have led to the successful engagements, along with the investments in the Aegis Combat System and the SPY-1 radar

"Those investments are the reason why our Sailors and Marines have been able to combat thethis with proficiency that they

have demonstrated to win the fight of the future," he said.

The services must make similar investments today in robotics and other technologies. Del Toro noted the service has newly introduced the robotics warfare specialist rating. The RW "will be the subject matter expert for computer vision, mission, autonomy, navigation, autonomy, data systems, artificial intelligence and machine learning," he said, calling it a "significant milestone in our journey towards achieving a truly hybrid fleet."

And, he said again, the nation needs to investment in shipbuilding.

"The findings of the 45-day comprehensive shipbuilding review have underscored too many of our industrial partners are behind schedule and over budget on our highest priority programs. Let's be clear, I want American industry to thrive, as a business owner for almost two decades. I understand your perspective. I'm pushing our shipbuilding industry to invest in itself to get better, be technological leaders and to once again deliver platforms on time and on budget. We must deliver for the American people because it's our line of work. We don't get to make excuses," he said.

"Of course, there's work for us to do on our end and the government as well. I'm determined to address the longstanding challenges in our procurement processes that cause industry heartburn as they tried to do business with us. And there are many that we have to work through. I expect our leaders in the government to foster culture of excellence and accountability across our own acquisition workforce.

"The point is this," Del Toro said. "Just as our country needs you and industry to be at the top of your game, I'm determined to ensure that we and the Department of the Navy are also on the top of our game. We must meet industry in a common place of excellence."

Additive Manufacturing, Small Business Collaboration Highlight First Day of Sea-Air-Space 2024

By NAVAIR

Naval Air Systems Command (NAVAIR) kicked off the 2024 Sea-Air-Space Expo on Monday with panel discussions on manned/unmanned and weapon systems advancements, additive manufacturing success stories and collaborative opportunities for small businesses to join with NAVAIR to aid the warfighter.

The first panel was led by Rear Admiral Stephen Tedford, executive officer of the Program Executive Office for Unmanned Aviation and Strike Weapons (see Tuesday's Show Daily for a story on his presentation).

Theodore Gronda, program manager for the NAVAIR Additive Manufacturing (AM) Team, began his panel discussion by highlighting that the AM team was established in order to create parts in small quantities, when needed, to get a grounded aircraft back in service in a faster time than relying on industry partners for supply chain gaps. Additive Manufacturing is the ability to "print" an object based on information fed into a device, much like a 3D printer.

Gronda said NAVAIR began supporting AM developments by separating them into three tiers. Tier 1 AM printers focus on "Commodity Polymers," and is responsible for creating non-critical, smaller items such as knobs, clips and caps. Tier 2

AM printers focus on “Industrial Polymers,” including non-critical and critical parts such as tools, covers, brackets and mounts. Tier 3 AM printers are “Industrial Metal” and create non-critical and critical metal parts including valve bodies, gearboxes, fuel and engine components and manifolds.

One of the newer capabilities Gronda announced was the addition of a “Solid State” cold spray technology, which uses a metal powder to spray and build up or repair a designated item.

Currently, there are 96 AM devices deployed to 33 sites, including deployed aircraft carriers.

A recent victory for the AM team’s capabilities was when they received word that a ship’s optical landing system had failed. There were aircraft aboard the ship that depended upon that critical landing system and were unable to fly. The ship contacted the AM team and they got to work, learning that the damaged part was simply a coupler, no bigger than four quarters. Within 12 hours, the team was able to redesign the coupler, test it, receive approval, and send the coupler data electronically to the ship where it was then printed. As they were about to install the part, the ship received orders to deploy and the repair was put on hold for a few hours to enable the ship to transit to its destination. Once it arrived, the coupler was installed, and aircraft from that ship were deployed to intercept UASs that were targeting allies.

Another victory for the team, several E-6B Mercury customers found themselves in need of fuel cell interconnecting fittings replacements, as the previous vendor for the part went under during the Covid-19 pandemic. The AM team received a call in October, requesting 12 replacements for the fuel cell interconnectors. Within four months, the team was able to produce the parts and get them to the customers.

Gronda stressed that this was just one example of how the pandemic affected the Naval Supply Systems Command (NAVSUP) ability to maintain sustainment capabilities and how the AM team is rising to meet those areas impacted by supply chain gaps created by the pandemic.

Recognizing the increasing need of AM implementations, Gronda said the Naval Aviation Schoolhouse for Additive Manufacturing was established in February in Danville, Virginia, and will aim to create a pipeline of AM artisans to meet growing AM needs. The Schoolhouse is a collaborative effort with Naval Sea Systems Command (NAVSEA).

Another success story related to the team was the ability to repair tire rim assemblies on F/A-18 Hornets. Gronda said pilots often land hard on carrier decks, causing the landing gear wheel hub to oblong and the tire to shake. If the tire shakes, it is taken off and discarded.

“That tire is wildly expensive,” Gronda said. “There wasn’t an effective way to repair it. We go through 166 of these tires a year and they cost six figures apiece. Eighty percent of those tires are repairable with cold spray technology. It takes me two hours and costs $300. It’s a big deal for us. And what that’s done is taught us to think different. Stuff that we previously thought was not repairable is repairable now with cool spray and our additive manufacturing repair machines.”

Small Business Opportunities

The final panel of the day began with an overview of the NAVAIR Office of Small Business Programs (OSBP) and how collaborations with modestly sized operations can be mutually beneficial.

The panel gave step-by-step guidance in how the team guides prospective partners through meeting with OSBP, specifically directing them to the OSBP website, https://www.navair.navy.mil/osbp/.

Irma Alexander, deputy director for the OSBP, summed up whole purpose attendees were at Sea-Air-Space this week – market research.

“The government is here to learn about you. You’re here to learn about us, about your competitors, about potential future collaborations,” Alexander said. “But how do you make those decisions? You make them through market research. That’s our common purpose. So, when you go home and you’re tired, think about the motivation you felt this morning, because that’s the motivation you need to go do your homework so you can come see us. Market research is the foundation from where you build your business decisions, where you decide how you’re going to capture that business, and how you’re going to mark it. The good news is we offer a lot of awesome market research resources.”