

2019 Issue 4

WAVES



**Carderock engineers
collaborate around
the world**

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WAVES

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In this issue

Well, another year is wrapping up. We've had many successes and lots of changes. Capt. Cedric McNeal came in as our commanding officer. We had our International Submarine Races and co-led the Advanced Naval Technology Exercise East this year. You'll see reminders of this in the next special edition of Waves, the Year in Review.



But, in this edition of Waves, the fourth and final one of 2019, we are looking at just the last few months. One of the things I like to highlight is how much collaboration we do, across the Warfare Centers and across the Navy, even across the world. Our cover story showcases how our Unmanned Aerial Systems Lab was involved in a NATO exercise. In our people spotlight, two of our Additive Manufacturing Branch folks have gone as far as Kuwait to teach Marines how to use 3D printing equipment to help them better meet their mission requirements. We had several people attend the "Hack the Machine" event in New York City this fall, and one team walked away with the top prize in their category.

These are just a few examples of the great things our folks are doing, but what it really comes down to is the people. This issue of Waves also includes our Division Honor Awards, aka Magnificent Eight, as well as a few other important recognition from outside Carderock.

We continue to invest in our people and the work they do. By opening a new Rapid Innovation Center, our folks are going to be able to find ways to think a little differently to get to their solutions faster. This will help answer the call to the "sense of urgency" the Navy is feeling in the Great Power Competition. As we continue our collaborations and create new partnerships, like the Education Partnership Agreement with George Mason, I can honestly say Carderock is doing their part to Expand the Advantage. But we can, and will, do more.

Have a great 2020.



Cover

The Navy's Towed Airborne Lift of Naval Systems (TALONS) flies behind the Arleigh Burke-class guided-missile destroyer USS Porter (DDG 78) during NATO Exercise Recognised Environmental Picture by Maritime Unmanned Systems 2019 in the Atlantic Ocean Sept. 14, 2019. See story on page 6. (U.S. Navy photo by Eric Silberg/Released)

Spotlight

our people & work

Carderock engineers teach deployed Marines additive manufacturing

By Benjamin McKnight III, NSWCCD Public Affairs

In 1986, Colorado-born inventor Chuck Hull received the first patent for a 3D printing technology. At the time, he told his wife that it would take roughly 30 years before the technology would be available for people to have at home.

For a technological prediction, Hull was not too far off. Today, the 3D printer is not what a toaster or television is to a household, but the additive manufacturing process that it is a part of has steadily become a staple in parts of American industries, to include the United States military. As the world of additive manufacturing grows and users unveil new possibilities, the need for individuals to be skilled in utilizing the tools for the subject also increases.

Ryan Fisher and Jacob Aljundi, engineers in the Additive Manufacturing Branch at Naval Surface Warfare Center Carderock Division, have stepped up to the challenge of teaching additive manufacturing to service members. For the past year, the duo have been part of a Carderock task, sponsored by Marine Corps Systems Command, to train deployed Marines on how to effectively use this technology as its role in the service grows. The work falls under larger thrusts to enable manufacturing agility through low-volume production in maintenance and operational environments, as well as to train the Department of the Navy (DON) workforce as outlined in the DON Additive Manufacturing Implementation Plan. The AM Implementation Plan is coordinated by the deputy chief of naval operations for Fleet Readiness and Logistics (OPNAV N4), with work



Jacob Aljundi, an engineer in the Additive Manufacturing Branch at Naval Surface Warfare Center Carderock Division, explains to a Marine how to capture scan data with a FARO Scan Arm during a training week in Kuwait at the end of August. (Photo provided by Ryan Fisher/Released)

in AM being led by Naval Sea Systems Command (NAVSEA), Marine Corps, Naval Air System Commands and the Office of Naval Research.

In partnership with the Johns Hopkins University Applied Physics Lab and the training teams supporting NAVSEA's At-Sea Additive Manufacturing Program, the team develops and provides training courses for Sailors and Marines whenever they are needed.

"When Gen. Robert Neller was commandant of the Marine Corps, he was pushing [additive] technology forward," Fisher said. "Through what is now the Advanced Manufacturing Operations Cell (AMOC) within the Marine Corps, we have been providing additive manufacturing trainings all over the world."

The team has supported multiple training events across the continental U.S., but additional support was required by Marines overseas. Fisher and Aljundi, who had specialized training in additive manufacturing, were identified by the AMOC as the team most qualified to teach this content. Shortly thereafter, Fisher and Aljundi began flying to various countries using their expertise to provide weeklong courses on how to apply additive manufacturing into the daily functions of deployed Marines.

"Giving somebody a couple million dollars in equipment and expecting them to be a master of it has never gone well," Fisher said. "We're not at that point yet. If they do not know how to use it, they will not use it, the technology won't advance, and they won't see any benefit for it."



Spotlight our people & work



Jacob Aljundi (left) and Ryan Fisher, engineers in the Additive Manufacturing Branch at Naval Surface Warfare Center Carderock Division, stand in front of a 3D printer in Carderock's Manufacturing, Knowledge and Education Lab on Nov. 15, 2019, in West Bethesda, Md. The two engineers travel to different parts of the world training deployed U.S. Marines how to use 3D printers and the associated software and technology. (U.S. Navy photo by Edvin Hernandez/Released)

In order to be able to use the parts they make, the Marine Corps has created a risk-based approval approach that gives the commander in the field the knowledge to determine whether the part can be used. Many printed parts are quickly approved.

During the training, the duo teaches their students how to use their recently fielded 3D printers, build parts effectively and maintain their machines. To overcome the challenge of making people comfortable with new concepts they have minimal previous understanding of, Aljundi said that they start with small projects to build confidence.

"We have had some trainings where Marines said they don't think it is useful, so it's our job to show them how it can be useful, save them time and make their lives easier," he said. "They can be nervous by new technology, so we give them examples of things we've done in the past with other Marines and get them thinking about how it can be useful instead of just telling them."

Over the past year, the team has provided their services at a multitude of locations between North America, Europe and Asia. They are not the only Navy employees who conduct additive manufacturing training, with other groups also supporting out of the Naval Information Warfare Center Pacific, the NAVSEA Warfare Centers, as well as the Navy's Regional Maintenance Centers. The Carderock AMOC team is the main expeditionary manufacturing support group for the Marine Corps and has ventured to Kuwait, Bahrain, Spain and Japan, among other places. When dealing with stateside requests, Aljundi said they prefer to enlist the help of partners like the Johns Hopkins University Applied Physics Lab team, so they can focus on the overseas tasks that require more preparation and screenings to execute.

A normal schedule for the team starts with receiving a request from a group that needs training or advanced maintenance on their machines. Ideally, Fisher and Aljundi subsequently give their technical director a 30-day notice for their travel plans, during which they create a plan of action based on the specific needs of the requestor. However, there are times when they have to react much more rapidly.

"I think the shortest notice that we've been able to accommodate was 36 hours," Fisher said. "We already had the paperwork in, then the training was supposed to be cancelled, but it wasn't. Thankfully, we had the experience of being to this country three times prior, so we were able to quickly prepare ourselves."

By technology standards, 3D printing is still relatively new and there is much more research to do in the coming years. Aljundi and Fisher are seeing the growth of additive manufacturing's impact on the military firsthand through their work. Besides the Marine Corps training, Carderock also supports the fleet through NAVSEA-sponsored AM Afloat efforts where systems are installed shipboard and Sailors are trained. Over the past several years, multiple ships have seen printer installations that also may include limited machining capability. Between these efforts, the Navy is working to effectively get additive manufacturing out to the fleet.

Marines learn contained creative construction through additive manufacturing

By Sgt. David Bickel, Special Purpose Marine Air-Ground Task Force Crisis Response - Central Command

U.S. Marines with Combat Logistics Battalion 24, attached to Special Purpose Marine Air Ground Task Force (SPMAGTF) Crisis Response's Logistics Combat Element, participated in three-dimensional additive manufacturing training in Kuwait from Aug. 26 through Aug. 29.

"When we arrived on deck, we received this really awesome 3D printer with no instruction on how to use it," said Staff Sgt. James Stasiewicz, a CLB-24 communications electronics technician. "Some people go to years of school for what we are doing out here. The guys providing the training are cramming the basic necessities on what we need to know into four days' worth of training, and the Marines are doing an amazing job receiving it."

Additive manufacturing saves the Marine Corps precious time during the maintenance process in a forward-deployed environment. Some parts that could take months to order and deliver can be replaced within days utilizing the additive manufacturing systems organic to the SPMAGTF.

"We have seen replacement 3D printed parts come out of this SPMAGTF that didn't even exist in the region," said Ryan Fisher, an engineer with Naval Surface Warfare Center Carderock Division. "This 3D-printing center has become a hub where they can manufacture parts for different units in the region and get their equipment up and running much faster than we have seen before."

Additive manufacturing is also saving the Marine Corps large amounts of money.

"Instead of paying a different company's overhead, we are utilizing Marines within our battalion, training them and setting them up for success if they choose to do this after the Marine Corps, and saving the Marine Corps money in the process," said Stasiewicz.

Marines from many different military occupational specialties are being trained in the additive manufacturing field. This allows for advances at the most junior level all the way up to our senior staff noncommissioned officers.

"If you have a passion for helping the industry, you will succeed and you will advance," said Stasiewicz. "We are trying to solve maintenance issues within the Marine Corps and we are able to accomplish some of that at the junior Marine level. It's amazing to see people that want to help, and see their hard work pay off Marine Corps wide."



A U.S. Marine with Combat Logistics Battalion (CLB) 24 attached to Special Purpose Marine Air Ground Task Force-Crisis Response-Central Command, prepares to duplicate an Original Equipment Manufacturer (OEM) vehicle part for use within the battalion's maintenance section in Kuwait, Aug. 28, 2019. A Marine Air Ground Task Force is specifically designed to be capable of deploying aviation, ground, and logistics forces forward at a moment's notice. (U.S. Marine Corps photo by Sgt. David Bickel)



The Navy's Towed Airborne Lift of Naval Systems (TALONS) takes a photo as it flies above the Arleigh Burke-class guided-missile destroyer USS Porter (DDG 78) during NATO Exercise Recognised Environmental Picture by Maritime Unmanned Systems 2019 in the Atlantic Ocean Sept. 14, 2019. (U.S. Navy photo by TALONS/Released)

Carderock's Eric Silberg assists with NATO exercise

By Benjamin McKnight III, NSWCCD Public Affairs

When the Program Executive Office for Unmanned and Small Combatants approached Naval Surface Warfare Center Carderock Division's Eric Silberg in May to take part in a NATO exercise, it was clear that they would face a significant challenge. As the director for Carderock's Unmanned Aerial Systems Lab, Silberg, took the opportunity head on and in September completed his part

of the Recognized Environmental Picture (REP) by Maritime Unmanned Systems (MUS) exercise in Portugal.

"That's a very short timeline to plan and execute just our small participation in this large international exercise," Silberg said. "We decided that it was worth the challenge to try and make it happen."

The annual unmanned exercise provides an opportunity to determine how well each country's maritime unmanned systems technologies could work in conjunction with others.

With less than five months between the initial request and the start of the exercise, Silberg had to manage funds and contracting; obtain certification to

install equipment on a U.S. warship and a Portuguese navy vessel; coordinate international shipping of a large unmanned system; support planning an international exercise; and, ensure that the technical efforts to build and integrate the prototype were successful. Typically, it would take significantly longer than the time afforded to Silberg. He said his team had to be resourceful to get certain tasks done, but they refused to cut corners on their work.

"We needed to do it right, but we also needed to do it quickly, so we got a great team in place who was able to get it done," Silberg said.

Silberg's responsibility was to bring the Navy's Towed Airborne Lift of Naval Systems (TALONS) to the exercise. TALONS is a large, tethered parafoil

kite that can carry payloads from a host vessel to 1,000 feet in elevation or more. During REP (MUS), TALONS carried a radar and radio-relay system provided by the United Kingdom in order to extend communication ranges between unmanned vehicles, ships and shore points. Silberg was one of roughly 800 people on hand for the exercise.

For Silberg's team the exercise began with a week aboard guided-missile destroyer USS Porter (DDG 78), followed by a week aboard Portuguese navy offshore-patrol vessel NRP Figueira da Foz. TALONS flew off both ships, providing a tactical picture to exercise participants.

Before getting to Portugal, Silberg's team met USS Porter at Naval Station Rota, Spain, and installed the TALONS

equipment. When it was time to move from Porter to Figueira da Foz, the ships pulled into a commercial port a short ways away from the exercise in Sinez, as closer ports were too small to accommodate the large destroyer. Silberg said that they wasted no time getting everything moved over and back out to sea.

While the TALONS team was successful in completing the exercise objective, it was not without some significant challenges. Early in the event, TALONS crashed into the water and the team needed to work through the night in order rebuild and be ready to fly the next day. The overall success of the mission did not surprise Silberg, who said he learned a lot about rapid project coordination in the efforts to be a part of REP (MUS).

"For an event like this, you have to be creative in how you approach the problem," he said. "With the right team, you can make these things happen."

That team included Carderock's industry partner for the project and TALONS developer Maritime Applied Physics Corporation (MAPC) from Baltimore. What was accomplished in Portugal resulted from years of work on the concept between Carderock and MAPC. They were familiar with operations on various U.S. ships, but had never worked with another nation's navy before. Any concerns faded quickly as they boarded the Portuguese ship and got to work. Silberg said that the crew of Figueira da Foz was very hospitable and professional. They were eager to learn about employing TALONS and other technologies, and they provided an environment conducive to experimentation.

"One of the days, two three-star Portuguese admirals came on board and they wanted to learn about our technology and talk about what we did," Silberg said. "They were very interested in doing this exercise, participating in naval research and development and how to get the most out of their assets and budget."

Although the REP (MUS) exercise is an annual event, this year marked the first time the United States participated, and Silberg said he has already been asked to support next year's iteration. While the role Carderock will play and technologies for experimentation are still to be determined, Silberg is confident that, with a much larger window to plan, 2020 will be even better.



Carderock surveys ship biofouling using remotely operated vehicles

By Brooke Marquardt, NSWCCD Public Affairs

A dedicated team of Naval Surface Warfare Center Carderock Division employees is concerned with the small animals and plants that attach themselves to ships and cause big problems for the Navy. Engineer William Gottwald and biologists Elizabeth Haslbeck, Kody Lieberman, Brittan Steffel, David Stamper and Eric Holm in Carderock's Corrosion and Coatings Engineering Branch, research biofouling control for the Navy.

Fouling happens when foreign objects become tangled with or attached to another object, such as ropes becoming tangled in a ship's propeller, or scale forming within a pipe. Biofouling is a particular type of fouling, referring to biological growth on immersed manmade structures. Biofouling occurs on everything from ship hulls, propellers and piping systems exposed to the ocean, to surgical implants exposed to the blood stream. A great diversity of organisms occur as biofouling on Navy ships, including bacteria, barnacles, tubeworms, sea squirts and seaweed.

As small as these organisms are, they can still cause big problems. Biofouling growth on hulls and propellers causes ships to burn more fuel, reduces range and speed, and can affect the acoustic signature of the ship, making it more detectable. The Navy combats biofouling using antifouling coatings, but these coatings alone do not get the job done. Regular inspections paired with occasional in-water cleanings are also required to minimize the negative impacts of biofouling.

Developing a quantitative measure of the degree to which current technologies reduce fuel penalties, which can be large, isn't as easy as it might seem.

"Currently, even though our ships' underwater hulls are inspected at least twice a year, we don't have a good idea of the fuel penalty that we're paying due to biofouling," Holm said. "These inspections don't always happen at the right time. If divers inspect the ship two months before it leaves dock, that information is not useful in calculating a fuel penalty. We need to understand the condition of the ship either immediately after it returns from activity or just before it leaves."

In addition to data from diver inspections, the team uses a commercial-off-the-shelf remotely operated vehicle (ROV) to survey ships' underwater hulls and propellers. The ROV is essentially a tethered remote-controlled submarine a little larger than a shoebox, and it is operated using a game controller and joystick. Due to the ROV's small size, a two-person team can conduct a survey from the back of a minivan. This allows the team to rapidly respond to ship availabilities. Recent surveys have been carried out in locations such as Norfolk, Seattle, San Diego, Pearl Harbor and Guam.

During a survey, the ROV pilot will follow features on the ship to navigate to pre-determined areas of the hull and propellers. These features include specific weld seams, draft marks and drive-shaft struts. Piloting the ROV shares some similarities with operating a drone in the air, but with some important differences. Visibility in some harbors may only be a few inches, strong currents may affect maneuverability and the ROV must pull a tether that supplies power and control commands to the vehicle while returning a video signal. These factors can make surveys of the complex areas around, for example, the propellers, challenging.

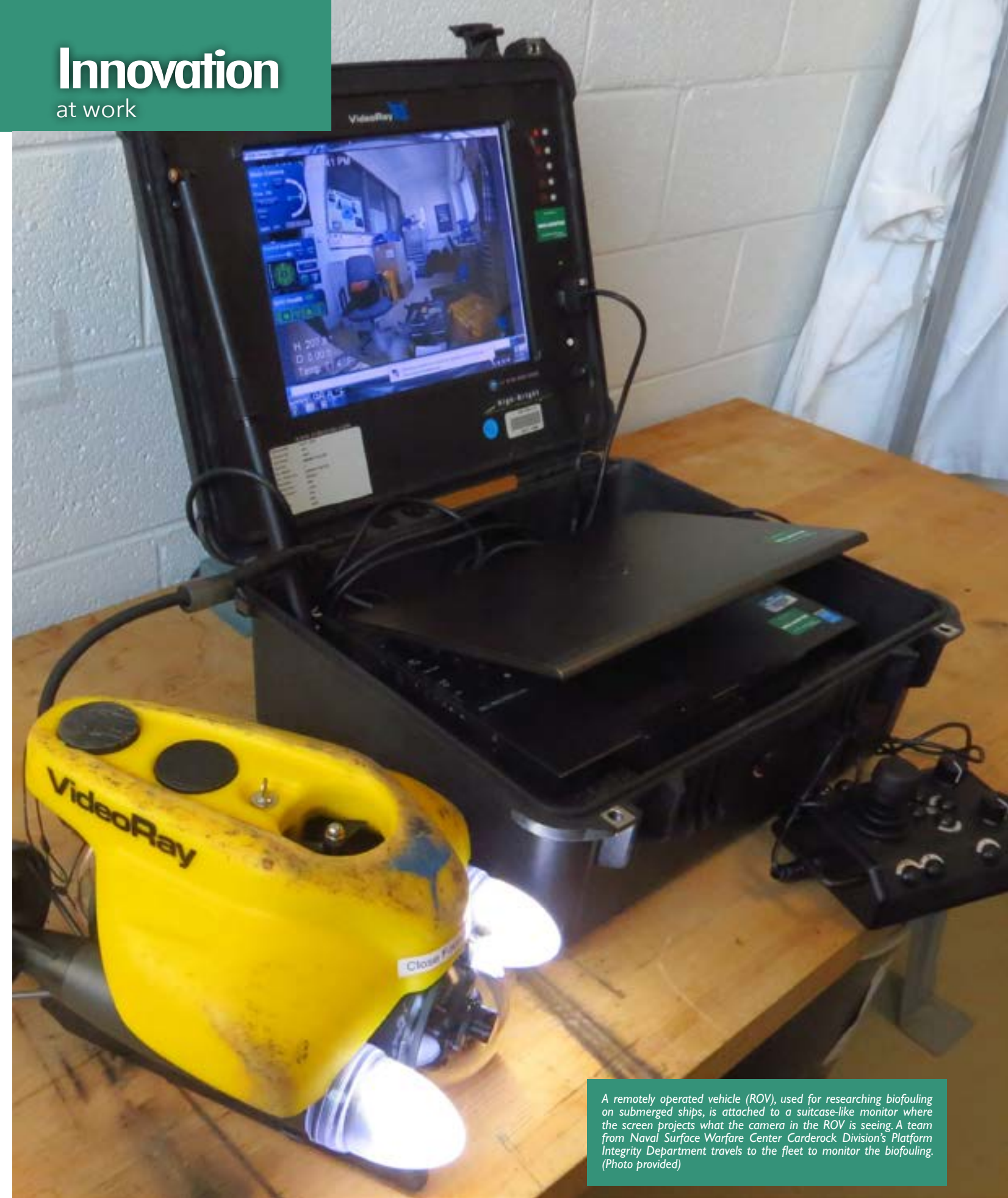
"The second team member, usually a biologist, will be there scoring the biofouling," Steffel said. "We'll note how much area it covers and how large it is, and then we can use these observations to calculate what kind of penalty we're getting from the fouling."

Calculation of the fuel penalties are carried out in collaboration with engineers in Carderock's Naval Architecture and Engineering Department and at NSWC Philadelphia.

Historically, engineers and scientists at Carderock have used ROVs to evaluate ships for more than just biofouling.

"ROVs are versatile. Our team owns and operates ROVs of various sizes and shapes, all of which are configurable. We can outfit them with sensors, non-destructive measurement devices, video and still cameras to meet the customer's needs," Gottwald said.

Over the years the team has measured hull coating thickness, hull-plate thickness, cathodic protection system performance and electro-magnetic and acoustic signatures. Carderock's ROVs have even been employed in archaeological surveys of Civil War shipwrecks and wrecks from the D-Day invasion at Normandy.



A remotely operated vehicle (ROV), used for researching biofouling on submerged ships, is attached to a suitcase-like monitor where the screen projects what the camera in the ROV is seeing. A team from Naval Surface Warfare Center Carderock Division's Platform Integrity Department travels to the fleet to monitor the biofouling. (Photo provided)



Composite components transition and availability

By Brooke Marquardt, NSWCCD Public Affairs

Corrosion-related maintenance accounts for 23.2% of the Navy's total equipment maintenance expenditure, based on fiscal year 2016 data. The Composites Working Group at Naval Surface Warfare Center Carderock Division has been working since the late 1990s to eliminate some of this maintenance by converting metallic components into composite ones.

Carderock engineer Dr. Maureen Foley of the Integrated Manufacturing and Project Management Office and her team have been working for years to develop, prototype, demonstrate and transition new composite components to the fleet and have the Defense Logistics Agency (DLA) on board to have them supported by the stock system.

The composite parts that have been developed at Carderock were created with the purpose to reduce corrosion-related maintenance and total-ownership costs. Foley has been working closely with the Naval Sea Logistics Center (NSLC) to ensure they have the data they need to support the stocking requirements for the fleet. The NSLC has been working to obtain the necessary commodity contracts with DLA in order for the Navy to take advantage of price breaks when purchasing larger quantities of materials.

In addition to the composite components, the team is also developing 3D printed components that can be used with the composite components during the installation to further improve the corrosion resistance of the system. This includes coamings for the composite-deck drain inserts and electrical enclosure caps, which are being designed under Carderock's cross-platform systems development funding.

"The work we've been doing has been going on since 2000, and the work varies as we develop new parts, test and transition them and support them in the fleet, and then look for new ones. It is not never-ending, but almost," Foley said. "There are always going to be a new corrosion issue on the ship, so we interact with the fleet to find out what needs to be done next."

Getting these composite components onto ships is an extremely long process with no end-date in sight, Foley said. Once they are able to get a new part on a ship permanently, another component idea will crop up. They work closely with the Naval Sea Systems Command technical warrant holders to decide what the requirements are and make a list from those requirements. Once they have that list, the next steps are creating prototypes and doing qualification testing, developing stock numbers for NSLC, writing or modifying maintenance cards and finally, getting approval from the ship classes.

"In 2015, when the composite-deck drains were still in the development phases, we touched base with NSWC Philadelphia to discuss the

commonality program, or the virtual shelf. This is where, if we have common parts on Navy ships, the database will say that any new ships that are purchased or designed should use these parts for their construction," Foley said. "We worked closely with them to get our composite-deck drains on the virtual shelf. This involves a very detailed business case analysis to prove that it is good for the Navy and that it will save their money. The composite electrical enclosures went through a similar process in 2017."

Foley said it is in the best interest of the Navy to take advantage of discounts by the supplier. She has been working with NSLC to set up commodity contracts, researching forecast for purchasing and finding historical data for the deck drains and the electrical boxes to send off to DLA, who actually does all of the purchasing.

"It's great to have NSLC in this mediator role because they can really push the DLA to make the right purchasing decisions," Foley said.

The team is currently working on the development of composite-cover plates, high-load grating and sunshields for ready-service lockers and gauge panels, in addition to performing an In-Service Engineering Agent (ISEA) role for all the composite components that are currently fielded in the fleet. The bulk of the portfolio is being funded through the Painting Center of Excellence program.

Foley recently received the 2018 Isherwood Award (one of Carderock's eight annual division awards) for her work on the composites team. The award recognizes innovation and expertise in the effective assessment, development, execution or deployment of technological solutions for operational fleet needs. She was recognized for her efforts by which the fleet has benefited greatly from the incorporation of the composite components and saved hundreds of hours in maintenance costs and time lost.

Examples of the composite deck drains, electrical boxes and more created by the Integrated Manufacturing and Project Management Office at Naval Surface Warfare Center Carderock Division in August 2019. (U.S. Navy photo by Brooke Marquardt/Released)



Hack the Machine 2019 sees big participation by Warfare Centers

By Kelley Stirling, NSWCCD Public Affairs



Normally “hacking” has a negative connotation when it comes to the cyber world. However, over the weekend of Sept. 6-8 in Brooklyn, New York, people came together to purposefully hack into a Navy system, and it was a good thing.

The Navy hosted “Hack the Machine 2019,” which brought together more than 600 people from government, industry and academia for the fifth iteration of the challenge to help the Navy solve complex problems. This year’s event was held in the New Lab at the Brooklyn Navy Yard.

Not only did Naval Sea Systems Command (NAVSEA) combine efforts with Naval Air Systems Command, Naval Information Warfare Systems Command and the Navy Cyber Warfare Development Group to organize the event, but they also sent many participants from the Warfare Centers, with nearly every Warfare Center participating. Organizers said this was the largest participation from the Warfare Centers they have had, so far, at a Hack the Machine, with Warfare Center engineers and data scientist on every first-place team.

“We have very talented engineers and scientists in the Warfare Centers, and when they attend events such as Hack the Machine, they are not only taking their knowledge to share, but they are also bringing what they learn back to the division,” said Larry Tarasek, technical director for Naval Surface Warfare Center (NSWC) Carderock. “The cyber world is evolving so quickly, and we have to keep up.”

During a team-building exercise held at the Intrepid Sea, Air and Space Museum in New York City on Friday night, people formed teams of about eight to take on one of three tracks. In the first track, called “Hack the Ship,” participants attempted to hack cyber physical systems of maritime vessels. The second, called “Data Science: Cleared for Takeoff,” challenged participants to use data science and machine learning to predict maintenance problems before they occur

on the Navy’s F/A-18 fighter jets. For track three, “Digital Manufacturing: Rendering Aid,” teams worked to design parts that could be remotely printed at sea to repair ships.

The winning team from track one, the “Hack the Ship” cyber challenge, was “Cactus Balloon Scream,” which included members from NUWC Newport, NSWC Philadelphia and outside government. Their challenge was hacking into maritime systems using either hardware or software. Jesse Carter from NUWC Newport’s Undersea Warfare Electromagnetic Systems Department said he was more comfortable working the software piece while his colleagues from NSWC Philadelphia worked on the hardware.

“It was nice to work with Philly, with their background in physical components,” Carter said, adding that he had worked with NSWC Philadelphia before at previous Hack the Machines, and they collaborated ahead of time to prepare for the New York event.

There was an educational version of track one and the winning team “Ahh Ship” included participants from NUWC Keyport, NSWC Port Hueneme, NUWC Newport and NSWC Panama City.

NUWC Newport had several people on the track two winning team “Jumbos.” For this “Data Science: Cleared for Takeoff” challenge, the team had to identify which aircraft had wiring problems. Using several different data analysis tools, like Tableau, Anaconda, Python and MATLAB, the team was able to analyze millions of actual maintenance records for the F/A-18 and find the defective airframes. There were 13 known problem aircraft, and the Jumbos found them all, as well as a 14th problem not known to even the event organizers. The team did this all during the two-day event.

“Getting up close to real Navy problems and collaborating on solutions in such a short time period really helped us fine tune our problem statement, solution

approaches and presentation style,” said Colby Wilkinson, a member of the Jumbos and a research scientist in NUWC Newport’s Undersea Warfare Combat Systems Department. “The condensed timeline got us over ‘analysis paralysis’ and the pressure made us more productive.”

In a congratulatory note to the NUWC Newport employees that went to Hack the Machine 2019, Technical Director Ronald Vien said these events are a great opportunity for the organization to team with government, industry and academic partners.

“I look forward to having our folks compete in future Hack the Machines and similar events that focus on skills that are critical to our Navy’s digital transformation,” Vien said.

NSWC Crane employees made up the entirety of track two’s third place team Databaes. John Vorwald from NSWC Carderock’s Sea-Based Aviation Branch was part of track two. Though his team did not win, he said he was very happy with the team and thought the people were focused on the goal and had a wide background of experience. He said he wanted to help his team members contribute on a fast schedule and wanted to learn different points of view about solving a challenging data-science problem.

“It was a humbling experience to face a problem that appears beyond our current capabilities,” Vorwald said, adding that organizers emphasized the need to both envision future technology applications, and then apply actions to those visions.

Two NSWC Carderock employees, Frankie DiSanto and Stephanie Blease, were part of the winning team from track three. DiSanto works in NSWC Carderock’s Non-Metallic Materials Research and Engineering Branch and Blease is a brand-new employee at

NSWC Carderock who works in the Dynamic Measurements and Testing Branch. DiSanto said she went in not knowing exactly what to expect.

“I expect to fail a lot, learn a lot and dream up fresh new ideas,” DiSanto said before heading to New York. “I sat through a high-velocity learning talk this year, and the author talked about the importance of failing quickly and learning quickly. I definitely think this is a good opportunity to put that in motion.”

DiSanto said the name of their team was “KISS,” which stands for “keep it simple, stupid.” She claimed that was why they won, not because of the name itself, but because that’s what they did.

“We produced simple, clear damage reports in small, easily transferable file sizes,” DiSanto said. Other members of their team included another engineer from NSWC Crane Division, a technology teacher, a German entrepreneur, an international law expert and a Coast Guard employee.

The second place winners for track three, the “Mad Adders,” had employees from NSWC Port Hueneme, and NSWC Crane had one person on the second-place team.

NSWC Corona Division sent three teams to the event, one for cyber (track one) and one for data science (track two). Their technical director, Dianne Costlow, said the people that went have a clear passion to become better data scientists and analysts, and Hack the Machine was a good investment in workforce development, as well as being a way to gain feedback on development efforts to date.

Costlow said in the area of workforce development within the Warfare Centers, data science and analytics is something that everyone is working with already, and they are building those capabilities across the Navy.

“When we develop our own folks, who already know Navy systems, they know Navy language, they know the processes, they know the culture, they already understand the historical ways of using data, and now they are learning new techniques,” Costlow said. “Those are the really powerful people, and they are the ones that already have the passion for the Navy, and they want to stay with the Navy.”



Bryan Kessel (right) and Nathan Deslover (center), both engineers at Naval Surface Warfare Center Carderock Division, speak with Rear Adm. Lorin Selby, chief engineer and deputy commander for Ship Design, Integration and naval Engineering at NAVSEA, during the Hack the Machine 2019 in New York City on Sept. 7, 2019. (U.S. Navy photo by Garry Shields/Released)



Holding the check for one of the winning teams at Hack the Machine 2019 on Sept. 8 in Brooklyn, New York, is Frankie DiSanto (left) and Stephanie Blease (middle), both engineers at Naval Surface Warfare Center Carderock Division. Their team won first place for the “Rendering Aid” track. (Photo provided)



Carderock team sets new standard for ship maintenance

By Benjamin McKnight III, NSWCCD Public Affairs

With the cost of building ships often north of a billion dollars, keeping maintenance costs low is always a high priority. A team of engineers at Naval Surface Warfare Center Carderock Division's Corrosion and Coatings Engineering Branch has introduced a new standardized method of ship inspection that they believe contributes to that goal.

The engineers created two maintenance-requirement cards (MRCs) that were uploaded onto the Planned Maintenance System (PMS) Viewer software. PMS Viewer is a document tool

allowing users to search, view and print ship-wide maintenance index pages.

These particular maintenance-requirement cards provide step-by-step instructions for inspections and repairs to topside platforms on naval ships. One card calls for an annual inspection of the exterior steel window-frame structure for corrosion, cracks or shrinkage within the window sealant around the glass. If corrosion is excessive (more than 10 percent of linear area around the windows) or if sealant is shrinking, cracking

New maintenance requirement cards are available to Sailors for the inspection and repair of windows on ships, such as the bridge windows of an Arleigh Burke-class destroyer. (U.S. Navy photo/Released)

of the CCAT noticed windows that were shattered, sealant that was cracked or other corrosion product around various window structures on ships.

Delbridge and Jim Wigle, the CCAT project engineering lead, developed the maintenance-requirement cards referencing the CCAT non-standardized procedure. The approval process for the cards took nearly six months, as Delbridge had to send the drafted cards to NSWC Philadelphia Division's Logistics Branch. It was eventually approved by the NAVSEA program manager, who owns the cards. Once approved, the commodity specialists uploaded the cards onto PMS Viewer.

Delbridge said the only information on windows maintenance procedures that was previously available in PMS Viewer was for repairing window wipers and its associated parts, but nothing in regards to replacing the window sealant or repairing and preserving the ship's exterior window superstructure. CCAT had already created a non-standardized procedure to preserve window structures and replace cracked sealants; it was just a matter of getting the procedure on a maintenance-requirement card in the PMS Viewer.

To understand if the corrosion issue was across the fleet, Delbridge inspected 14 ships, including Arleigh Burke-class destroyers, Wasp-class amphibious ships and the Ticonderoga-class cruisers. The inspection discovered the corrosion issues were a greater problem with the destroyers. The bridge and the landing safety officer-window structures were identified as having the reoccurring corrosion issues.

Several factors contributed to the corrosion issues: a corrosive environment; an engineering design flaw that enabled entrapment of fresh water and seawater on top the window seal; and ineffective repairs, such as painting over sealants and using high-impact tools causing the glass to shatter in some cases. After Delbridge started this task, he discovered that the window configuration had dissimilar metals.

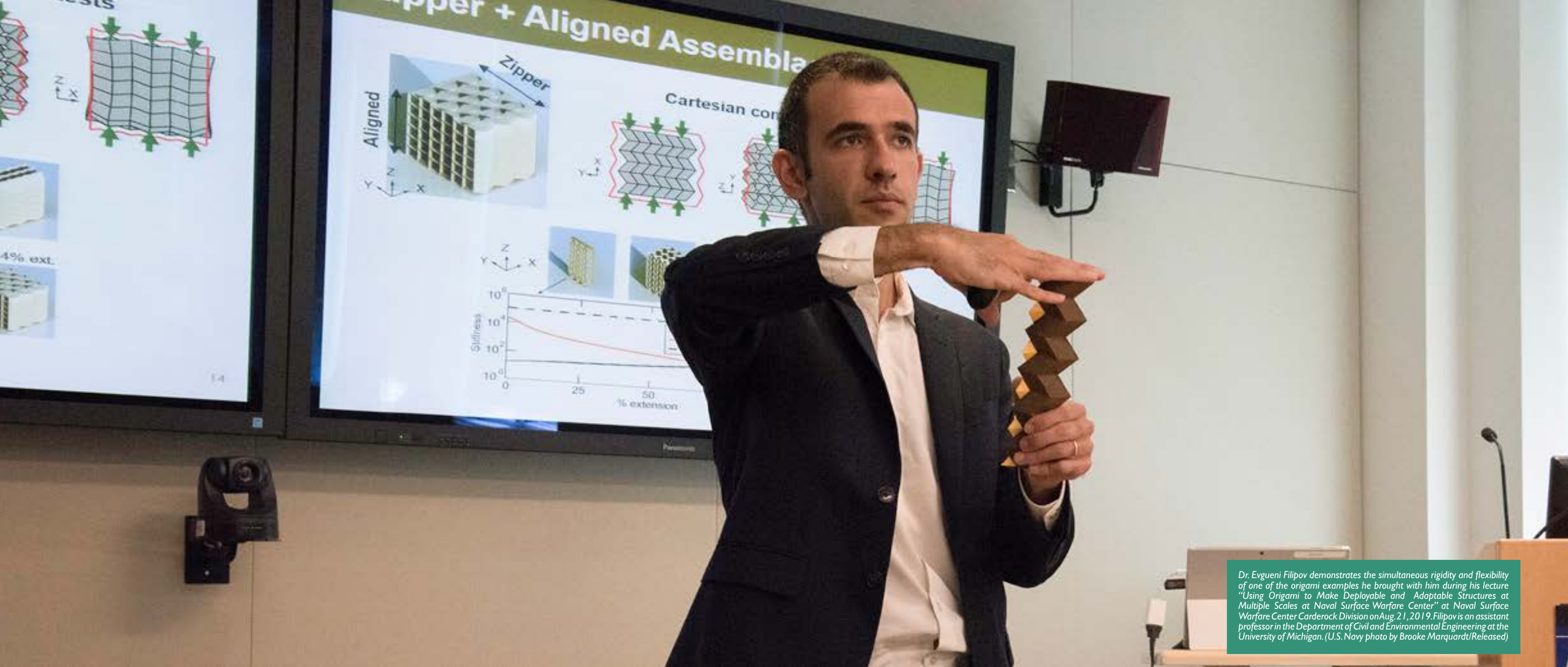
"There were a lot of the corrosion issues. The window frame on the inside was stainless steel, but you had carbon steel nuts and bolts that were connecting the ship superstructure, which is steel," he said. "That's a recipe for galvanic corrosion."

Cutting costs is always a goal for the fleet, and Delbridge said the developed maintenance-requirement cards would play a big role in achieving that goal by extending the service life of the exterior window structures prone to corrosion.

"These windows corrode within six months to a year. With this new MRC, not only will it give the right procedures, but you've extended the service life of these windows," he said. "You won't have to do as much maintenance, which also means decreasing costs."

or deteriorating, then the inspector should perform the second maintenance-requirement card for repair and preservation of the exterior window structure and sealant replacement.

According to Jamaal Delbridge, a materials engineer at Carderock, the inspiration for this project came from a proposal written by Brittany Preston-Baker, another member of the Carderock team and a part of the Corrosion Control Assistance Team (CCAT). The CCAT program is a Painting Center of Excellence program under the management of Naval Sea Systems Command's (NAVSEA) Ship Integrity and Performance Engineer. When assisting ship's force with maintenance procedures on various platforms, members



Dr. Evgueni Filipov demonstrates the simultaneous rigidity and flexibility of one of the origami examples he brought with him during his lecture "Using Origami to Make Deployable and Adaptable Structures at Multiple Scales at Naval Surface Warfare Center" at Naval Surface Warfare Center Carderock Division on Aug. 21, 2019. Filipov is an assistant professor in the Department of Civil and Environmental Engineering at the University of Michigan. (U.S. Navy photo by Brooke Marquardt/Released)

Professor discusses using origami to make deployable and adaptable structures at Carderock

By Brooke Marquardt, NSWCCD Public Affairs

Most people are familiar with the Japanese art of origami, folding paper into various three-dimensional shapes, most commonly animals, but what about using it for structural engineering purposes? Dr. Evgueni Filipov, assistant professor in the Department of Civil and Environmental Engineering at the University of Michigan, is doing

just that. In a lecture at Naval Surface Warfare Center Carderock Division on Aug. 21, Filipov discussed his thoughts on the matter.

"Can we take something, make it compact, and then deploy it? Can we have something that's prefabricated? Or something that requires self-assembly,

something that starts out flat and then we get it into a 3D shape?" Filipov said. "When we start getting into the smaller-scale projects where origami can be useful, some of the work we're doing is self-folding, like stints."

Filipov's research interests are focused on the underlying mechanics of origami

to inspire deployable, reconfigurable and adaptable 3D structures. He claims that these mechanics are used to improve stiffness, functionality and the manufacturing of the folded systems.

"Within origami, there are three main research topics: theory and analysis, where you put the fold lines and how do you decide how to fold these structures; system design, used when you want to have a specific shape and how to fold through complex geometry; and materials and fabrication," Filipov said. "Flexibility, rigidity and where fold-lines can be placed are important to consider when wanting to use origami for systems."

By designing the geometry and mechanical properties of the origami, it is possible to

create engineering systems ranging from micro-robots and novel metamaterials to large-scale adaptable architecture, according to Filipov. An origami design with a hyperbolic paraboloid geometry is used to achieve bi-stable and multi-stable characteristics that can aid in actuation. Filipov presented cellular and tubular origami, which can be used for stiff, large structures. Using curved creases in an origami design, he also showed a broad range of possible geometric designs that possess highly anisotropic properties and tunable stiffness.

"There is a very popular pattern called the Miura-ori that is developable, meaning it can be folded from a flat sheet. The application of space, because it can be created and go back to being flat and

compact. The last is rigid foldability, once it has been folded the flat parts do not bend and here we can also add thickness in the basic design," Filipov said. "These patterns have a one-degree of freedom kinematics, there is one specific way you can fold and unfold these."

Filipov has been working with graduate students at the University of Michigan and program officer Paul Hess from the Office of Naval Research on his most recent project and its applicability to the Navy. More information about it can be found online at: <http://www.efilipov.com>.



Bosworth shares decades of lessons at David Taylor Lecture

By Benjamin McKnight III, NSWCCD Public Affairs

Giving nearly half a century of combined uniformed and civil service to the Navy is destined to build a wealth of knowledge regarding being an effective member of the organization.

Naval Surface Warfare Center Carderock Division's Michael Bosworth used his Rear Adm. David Taylor Naval Architecture Lecture Series session on Sept. 12 to reflect on the decisions and direction of his naval career to impart some professional wisdom to the audience.

Bosworth leads the Center for Innovation in Ship Design branch at Carderock, but 42 years ago, he took his oath of office as a surface warfare officer when he graduated from the United States Naval Academy. All of his choices, from choosing to chase the surface warfare route over other options, to starting a family in the early years of his career, to even his decision to retire, were calculated decisions to reach his desired end goal.

During his lecture, Bosworth provided a 10-point list of lessons he has learned in his naval tenure. The first point – one that he stressed multiple times – was to “work your passion and plan your own career.” For him, that passion was ship designing.

“I chose surface warfare because I knew I wanted to be a designer, and there's a lot of diversity in the surface ships of the Navy,” Bosworth said.

That decision alone catapulted Bosworth into a 20-year career as a Navy officer, retiring in 1996. He pursued an opportunity with Syntek Technologies before winding up back with the Navy as a civilian in 2001. Since then, he has been able to live out the dream the young Bosworth had to be a ship designer. Along the way, he had six stints with Naval Sea Systems Command (NAVSEA) and two at Carderock, when it was the David Taylor Research Center, first as a graduate intern and the second of which was his introduction to the civilian side of the Navy. Learning how to operate in the Navy's civilian sphere while he was an officer came back to benefit Bosworth when he returned to the service from his commercial contractor time.

The other nine lesson points Bosworth identified included nearly every part of his uniformed

service. When his initial five-year obligation was complete, he continued his uniformed service while attending graduate school at MIT, an experience that emphasized to him that experience is just as important as education. Leadership opportunities build that experience and in that process, one must learn how to be the right type of leader. According to Bosworth, compassion is important when it comes to being an effective leader, but so is a degree of ruthlessness. Leaders should exercise the former before the latter, as Bosworth believes that giving chances to correct mistakes is only fair. What he said is not fair, however, is allowing a poorly performing member of an organization to cause decreased morale among the rest of the employees.

As he approached the end of his naval officer career in the mid 1990s, Bosworth's newest learning point was the art of transitions, both within his job and in making the personal adjustment from being a full-time officer to becoming a civilian.

“We do a lot of development, and much of it doesn't transition. If you make a priority on transitions from the very start and work that skillfully, you can really increase your transition possibilities,” Bosworth said. “The other transition was when I was going to leave the Navy. They gave me time to search for a new job and find out what I wanted to do, and that was extremely beneficial to the second half of my professional life.”

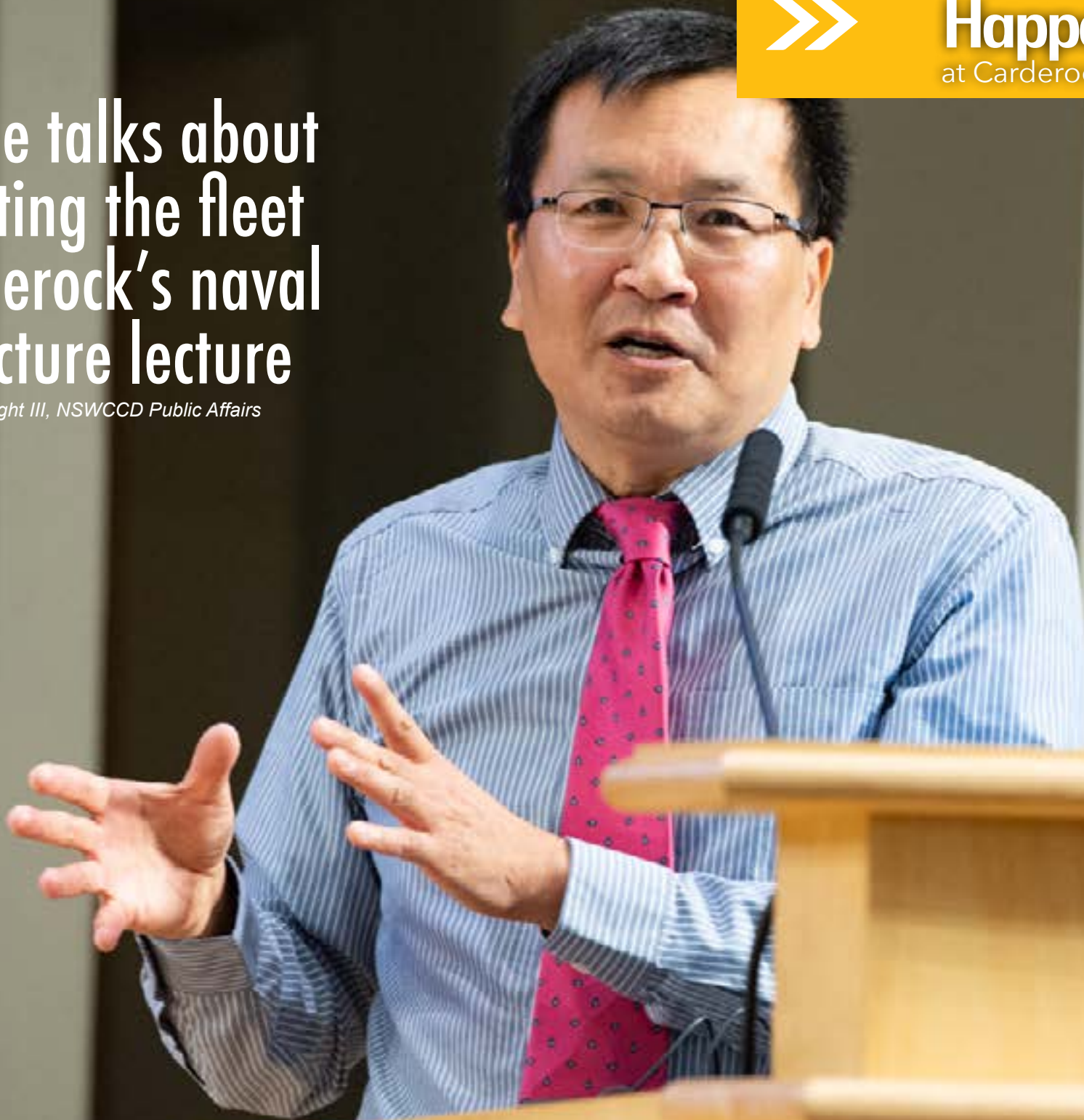
Because much of the audience has served the Navy in an exclusively civilian capacity, Bosworth made sure to provide equivalent examples to his officer experiences. Although his time with the Navy began before some audience members were born, Bosworth said he continues to learn from his own experiences and encourages others to do the same.

Michael Bosworth, director of Naval Surface Warfare Center Carderock Division's Center for Innovation in Ship Design, discusses his Navy career and the lessons he has learned through the years as a service member and civilian during September's session of the Rear Adm. David Taylor Architecture Lecture Series Sept. 12, 2019, in West Bethesda, Md. (U.S. Navy photo by James Contreras/Released)



Jack Lee talks about supporting the fleet at Carderock's naval architecture lecture

By Benjamin McKnight III, NSWCCD Public Affairs



Naval Surface Warfare Center Carderock Division's Jack Lee explains the various ways Carderock engineers strengthen the Navy during his Rear Adm. David Taylor Naval Architectural Lecture, "Supporting the Fleet: An Engineering Perspective," on Oct. 10, 2019, in West Bethesda, Md. (U.S. Navy photo by Nicholas Brezzell/Released)

Being part of an organization requires its members to give their best effort in contributing to the overall success of the establishment, and Naval Surface Warfare Center Carderock Division is no different.

For a command that is historically revered as being at the forefront of naval innovation, much of that success has come from the years of selfless work

in support of the Navy. On Oct. 10, Carderock veteran employee Jack Lee in the Hydrodynamics and Maneuvering Simulation Branch addressed the importance of supporting the fleet through daily work in this month's Rear Adm. David Taylor Naval Architectural Lecture, titled "Supporting the Fleet: An Engineering Perspective."

"What have you done for the fleet today?" Lee asked to begin his lecture, quoting Naval Surface and Undersea Warfare Centers Executive Director Don McCormack's email signature line. Lee is no stranger to civilian naval service himself, with 22 years of experience at Carderock and 13 at the Washington Navy Yard before he returned to the command last year. In his previous time

at Carderock, Lee's work focused on resistance and powering and propulsors, as well as maneuvering and control.

According to version 2.0 of "A Design for Maintaining Maritime Superiority," released by Chief Naval Operations Adm. John Richardson last December, "Our Navy will protect America from attack, promote American prosperity and preserve

strategic influence." While there may be different ideas on how to preserve that level of superiority, Lee highlighted three facets of influence that makes up what he calls the force behind the fleet.

The fleet is only as effective as the people who work within it and people need to feel empowered and motivated to do their jobs well. Those jobs consist of projects

and research that the fleet has to invest in, and affordability remains a constant factor in what projects are completed. Lee emphasized the importance of naval engineers making every dollar count, streamlining processes to reduce timelines and lower costs, as well as leveraging their digital tools, technologies and data analytics to keep their work affordable. Through these projects, engineers should regularly engage in collaboration and knowledge sharing, creating a high-velocity learning environment.

Carderock has its own five-year Strategic Plan, which Lee discussed. It combines the operational needs of the Navy and the technical inputs of the command to form a practical submarine and shipbuilding process. Elements of the operational needs include assumptions, scenarios and threat, mission and effectiveness analyses. Gross-system optimization and schedule, cost and feasibility studies make up the command's technical inputs.

To bring his lecture full circle, Lee went into further detail of the command's mission in addition to how the aforementioned force behind the fleet and the command's Strategic Plan make the mission possible.

"Our mission is to provide full-spectrum research and development, test and evaluation, analysis, acquisition, and fleet support for the Navy's ships, ship systems and associated Navy logistics systems," Lee said. "Our vision is to be the Navy's trusted partner for identifying and providing world-class, cost-effective and innovative technical solutions for advanced ships and ship systems, enabling the warfighter to execute their missions and maintain their technological edge."

More than 2,400 employees make up the Carderock team and each person plays a vital role in the command's contribution to a greater Navy. Although the needs from the people vary by positions, meeting the requirements Lee addressed are certain to keep the command in line with its tradition of innovation.



McBride discusses in-service submarine ship design management with Carderock employees

By Edwin Hernandez, NSWCCD Public Affairs



Former ship design manager Matthew McBride speaks to Naval Surface Warfare Center Carderock Division employees about his work experience at the Rear Adm. David Taylor Naval Architecture Lecture in West Bethesda, Md., on Aug. 8. (U.S. Navy photo by James Contreras/Released)

Matthew McBride, a former senior ship-design manager for in-service submarines for the Navy, shared his work experience with in-service design management at the Rear Adm. David Taylor Naval Architecture Lecture Series on Aug. 8 at Naval Surface Warfare Center Carderock Division.

McBride began by telling the crowd in West Bethesda, Maryland, that submarine engineering is divided into three categories: technical endeavor, management endeavor and leadership endeavor. When the fleet has a technical issue, they phone the engineering community to evaluate the risks of going out to sea. Ship-design managers (SDM) do their best to help the fleet meet their mission requirements; however, they make their recommendations based on the calculated danger that a ship could face.

“John Leadmon, another ship designer, once told me being an SDM is like walking point through a mine field, with both sides throwing grenades at you,” McBride said. “The program office emphasizes on getting things done within cost, while technical communities emphasize getting things done in accordance with technical specifications. There’s pressure on both sides.”

The requirement to reach a compromise, then, makes communication an engineer’s greatest tool, according to McBride.

“The most important course for an engineer to take is freshman English, because you have to be able to speak, and you have to be able to write competently,” he said. “If you’re working on submarines, everything that you do has potentially serious consequences, so good communication is imperative.”

He also said it is important to know how to deal with people.

“That is what being an SDM is all about,” McBride said. “Bringing the people from the technical side and the program side together to execute the mission.”

He said ship design managers should know who the technical experts are, and he acknowledged they can usually be found at Warfare Centers like Carderock. He also highlighted ship operating and maintenance environments because of the important role they play in meeting a hull’s expected life span.

Reflecting on his time as an SDM, McBride talked about the

costly repair of a main-reduction gear on a Los Angeles-class submarine that occurred because of serious rusting over the nine months that the submarine was in a shipyard.

“The shipyard did not do a proficient job in maintaining the required dehumidified environment inside the reduction gear,” he said. “It’s essential to understand the system in its operating environment, so that you know the limitations and can explain it to your customer out there in the fleet.”

According to McBride, going out to sea and spending time with a designed system is the best way to observe how Sailors are going to interact with the new equipment. He encouraged engineers at Carderock to seek opportunities to go out to sea and become familiar with the culture of a Sailor.

Disagreements will occur by nature warned McBride, but the danger of complacency can be the determining factor between life and death. Critical information, like a warning about impending disaster, is a top priority even if it means standing up to the boss, he said.

He pointed to other submarine casualties like the Ohio-class nuclear-powered ballistic missile submarine, now a guided-missile submarine, USS Michigan (SSGN 727), Los Angeles-class nuclear submarine USS San Francisco (SSN 711) and USS Dolphin (AGSS 555) to stress the mistakes that occur when proper attention and care are not given to a ship design, configuration management and maintenance.

“The clutch on USS Michigan broke and there were pieces that were sliding relative to one another that shouldn’t have been, creating a hotspot near the reduction gear,” he said. “It ignited the lube-oil vapors, ruptured the rubber boot between the sound isolation coupler in the main thrust bearing and filled the engine room with smoke.”

On the way to Naval Base Kitsap, the captain of Michigan asked McBride if the ship could reach a speed of 12 knots to cross the Hood Canal Floating Bridge near the peninsula of Kitsap. Not knowing the additional harm that greater speed could do with the shaft components already damaged, McBride quickly gathered a team of a few engineers to develop a plan. The team determined that the operational needs justified the additional risk to the propulsion equipment and Michigan reached the naval base safely, where they replaced the broken clutch in 10 days, a record time.

Before concluding, McBride reminded those in attendance of the opportunity they have to make a difference in the daily grind of Sailors and Marines and suggested that they find opportunities to have fun on the job because careers will go by fast.



Happenings at Carderock



(U.S. Navy photo by Nicholas Brezzell/Released)

Carderock employees receive “Magnificent Eight” awards

By Edvin Hernandez, NSWCCD Public Affairs

Naval Surface Warfare Center Carderock Division recognized its employees who made major contributions to the Navy and the division in 2018 at its 20th Annual Honor Awards, also known as the “Magnificent Eight.” The event was held at the command’s West Bethesda, Maryland, headquarters on Sept. 10.

Commanding Officer Capt. Cedric McNeal delivered his opening remarks and congratulated the winners on their achievements.

“Since I have been here, not a day goes by where I am not impressed with the team’s commitment to the Navy’s mission,” he said. “We play a significant role in the defense of our nation. Thank you all for joining Mr. Tarasek and me in honoring our winners of these great awards.”

Gravely Award

The Vice Adm. Samuel L. Gravely, Jr. Award for achievement in diversity and inclusion recognizes significant contributions in promoting understanding of cultural differences and furthering equal employment opportunities for all persons at all levels in the workplace. This year’s Gravely Award voting resulted in a tie.

Chief of staff Kathy Stanley was the first recipient of the Gravely Award for her tireless work in leading and organizing the division’s first Leadership in a Diverse

Environment (LDEE) event held in May 2018. Through her guidance, Carderock brought together women leaders from within the Department of the Navy to share their experiences on their paths to Navy leadership roles.

The second Gravely Award for achievement in diversity and inclusion was presented to scientist River Clemens for her contribution to Naval Sea Systems Command’s (NAVSEA) Inclusion and Engagement (IE) Council. Clemens, who works at the Acoustic Research Detachment in Bayview, Idaho, applied for membership on the IE Council to gain more knowledge of NAVSEA’s work in addressing exclusion in the workforce. She immersed herself in the work and on multiple occasions, briefed NAVSEA leadership on the council’s recommendations supporting a productive,



dynamic and engaged workforce through inclusion and diversity.

“I am very honored and humbled by this award,” Clemens said. “The purpose of the council is to improve employee performance and support the mission more effectively by making everyone feel like his or her work is valued. When we talk about diversity, inclusion and employee engagement, these are not wishy-washy, hand-waving concepts. When people feel left out or excluded from a group that is important to them, the brain experiences social pain. When an individual is experiencing this pain, he or she is not producing their best work, which directly affects the Navy’s mission.”

Hopper Award

The Rear Adm. Grace M. Hopper Award recognizes outstanding accomplishments in organizational support that result in developing or improving a critical product or process. This award also resulted in a tie for 2018.



The first recipient of the 2018 Hopper award was Contracts Division Head Michael Peduto for successfully managing and executing over 70 percent of the command’s contractual obligations, enabling the Carderock Division to meet critical fleet-driven requirements.

“This award is really my team’s doing and I just get the portion of pleasure of standing up here for them,” Peduto said. “Last year, my team obligated a majority of the funds that were for the command and this year we continued that trend, as well. In terms of the command, this helps us reach our promises in what deliver.”

Deputy Head for Corporate Operations (Property) Department Luke Van Buskirk was the second recipient of the 2018 Hopper Award for his management and oversight of materials and asset management efforts that resulted in a culture of affordability savings of \$1.6 million per year. He also led a \$3.5 million cleanup effort, ensuring the successful execution of the property plan of action and milestones, doubling



Chief of Staff Kathy Stanley receives the Vice Adm. Samuel Gravely Award during the Naval Surface Warfare Center Carderock Division Honor Awards on Sept. 10, 2019, in West Bethesda, Md. With Stanley is Commanding Officer Capt. Cedric McNeal and Technical Director Larry Tarasek. (U.S. Navy photo by Nicholas Brezzell/Released)



River Clemens, a scientist at the Acoustic Research Detachment, receives the Vice Adm. Samuel Gravely Award during the Naval Surface Warfare Center Carderock Division Honor Awards on Sept. 10, 2019, in West Bethesda, Md. With Clemens is Commanding Officer Capt. Cedric McNeal, Technical Director Larry Tarasek and Ship Signatures Department Head Dr. Paul Shang. (U.S. Navy photo by Nicholas Brezzell/Released)



Happenings at Carderock



Michael Peduto, Contracts Division head, receives the Rear Adm. Grace Hopper Award during the Naval Surface Warfare Center Carderock Division Honor Awards on Sept. 10, 2019, in West Bethesda, Md. With Peduto is Commanding Officer Capt. Cedric McNeal, Technical Director Larry Tarasek and Contracting and Acquisition Department Head Tariq Al-Agba. (U.S. Navy photo by Nicholas Brezzell/Released)



Luke Van Buskirk, deputy head for the Corporate Operations (Property) Department, receives the Rear Adm. Grace Hopper Award during the Naval Surface Warfare Center Carderock Division Honor Awards on Sept. 10, 2019, in West Bethesda, Md. With Van Buskirk is Commanding Officer Capt. Cedric McNeal, Technical Director Larry Tarasek and Corporate Operations Department Head Tamar Gallagher. (U.S. Navy photo by Nicholas Brezzell/Released)

the division headquarters' property audit scores from fiscal year 2017 to 2018.

"The Joint Asset Management COI and the property line effort, their working groups and leaders are the main reason this was all possible," Van Buskirk said.

Isherwood Award

The Rear Adm. Benjamin F. Isherwood Award recognizes innovation and expertise in the effective assessment, development, execution or deployment of the technological solutions for operational fleet needs.



Composites Team Lead Dr. Maureen Foley received the Isherwood Award for creative and effective use of composite materials solutions. Dr. Foley's contribution benefitted the Navy greatly by the incorporation of composite deck rain insert, vent screens, gratings, deck drain trough cover plates and electrical enclosures. Her initiatives have also saved the fleet hundreds of man hours in maintenance cost and time lost.

"Thirteen years ago last week I was laid off from my job," Foley said. "My dad told me at the time, 'This is the best thing that has ever happened to you.' I looked at him confused, but since moving to Carderock, it really has been the best thing that has happened to me. I found a job that I love doing and that I am passionate about. This is a great community to work with."

Land Award

The Vice Adm. Emory S. Land Award recognizes significant contributions establishing new relationships, fostering communication and promoting collaborative working relationships at all levels to deliver high-quality, effective products and services to customers and the fleet.



The FFG(X) design team was presented the award for leading the development of a next-

generation guided-missile frigate FFG(X) specification, a complex task completed in nine months, meeting the Navy's aggressive timeline. The team also supported the Navy's new initiative to field medium unmanned-surface vessels by 2021.

"Integration Design is a lot of hard work," FFG(X) Design Team Lead Dr. Jason Strickland said. "While it was basic engineering and problem solving, it was equally and most importantly, a team sport. No one of us could do this alone; it took all of us to get here."

Melville Award

The Rear Adm. George W. Melville Award recognizes outstanding engineering contributions in the research and development of materials, devices, systems or methods; including design, development and integration of prototypes and new processes.



Program Manager Paul Young was the Melville Award winner for his performance as program engineering manager for the Columbia- and Virginia-class submarine pressure hull model program. Young led groundbreaking efforts to change the way pressure hull models are engineered, designed and fabricated.

"My goal coming back to Carderock was to bring some of that SSGN (nuclear-powered, guided-missile submarine) culture to the pressure hull community and apply that across the Virginia and Columbia programs," Young said. "In the submarine world, when you send a man to sea you cannot take any chances, you want to be sure. I am honored. Thank you."

Saunders Award

The Capt. Harold E. Saunders Award recognizes exemplary achievement in leadership of a major technical area or management of a complex technical project.



Dr. Maureen Foley, Composites Team lead, receives the Rear Adm. Benjamin Isherwood Award during the Naval Surface Warfare Center Carderock Division Honor Awards on Sept. 10, 2019, in West Bethesda, Md. With Foley is Commanding Officer Capt. Cedric McNeal, Technical Director Larry Tarasek and Platform Integrity Department Head Jeff Mercier. (U.S. Navy photo by Nicholas Brezzell/Released)



The next-generation, guided-missile frigate FFG(X) Design Team receives the Vice Adm. Emory Land Award during the Naval Surface Warfare Center Carderock Division Honor Awards on Sept. 10, 2019, in West Bethesda, Md. The team consists of Dr. Jason Strickland (team lead), Wesley Boone, David Colburn, Thomas Devine, Joseph Dvorak, Christian Henes, Jonathan Holbert, David Maxwell Jones, Joseph Lilly, Oliver Neal Raj, Jamie Shenk, Willard Sokol, Kariann Vander Pol, Trevor Wakeley and Wesley Wilson. Commanding Officer Capt. Cedric McNeal, Technical Director Larry Tarasek and Naval Architecture and Engineering Department Head Mike Brown presented the award. (U.S. Navy photo by Nicholas Brezzell/Released)



Happenings at Carderock



Paul Young, program and engineering manager for Columbia and Virginia pressure hull model programs, receives the Rear Adm. George Melville Award during the Naval Surface Warfare Center Carderock Division Honor Awards on Sept. 10, 2019, in West Bethesda, Md. With Young is Commanding Officer Capt. Cedric McNeal, Technical Director Larry Tarasek and Platform Integrity Department Head Jeff Mercier. (U.S. Navy photo by Nicholas Brezzell/Released)



Bradley Schafer, head of the Columbia-class Submarine Management Branch, receives the Capt. Harold Saunders Award during the Naval Surface Warfare Center Carderock Division Honor Awards on Sept. 10, 2019, in West Bethesda, Md. With Schafer is Commanding Officer Capt. Cedric McNeal, Technical Director Larry Tarasek and Naval Architecture and Engineering Department Head Mike Brown. (U.S. Navy photo by Nicholas Brezzell/Released)

The 2018 Saunders Award winner was Deputy Ship Design Manager Bradley Schafer for his contribution in developing a progressive preliminary/critical design review process. Schafer and the Columbia program arrangements team also completed the common missile compartment major area closeout; the first and largest arrangement closeout that supported the United States and United Kingdom design and construction efforts.

"I would not be up here if it were not for the fantastic people I get to work with every day," Schafer said. "I'm very humbled and honored to receive this award, and I am looking forward to working with the same brilliant team until we deliver the Columbia class."

Strasberg Award

The Dr. Murray Strasberg Award recognizes commitment to the highest standards for over 25 years of federal service.



U n d e r w a t e r
Electromagnetics Senior Scientific Technical Manager Dr. John Holmes earned the inaugural Strasberg Award for his contributions as an internationally recognized expert for all aspects of Navy's extremely low frequency and ultra-low frequency signatures measurement technologies. Holmes' expertise has also established Carderock as the preeminent leader in underwater electromagnetic signature theory, modeling and analysis for all surface and undersea Navy platforms.

"Looking back on my career, the technical problem that I remember being most difficult came in 1991 when I was visiting the magnetic silencing facility at the naval base in Charleston, South Carolina," Holmes said. "It seemed like everywhere we went, someone from the crew would ask 'Are we going to be safe?' because they were going into a real mine field in the Persian Gulf to clear the mines. After a long day, I saw – just at the end of the pier – a young boy and girl running and waving, yelling 'Daddy, daddy!' and the mother carrying a baby walking behind them. That's when my career switched from being a profession to being a duty."

Taylor Award

The Rear Adm. David W. Taylor Award recognizes outstanding scientific contributions developing future maritime systems through the creation of technology-based research.



This year's recipient of the Taylor Award was Naval Architect Dr. Anne Fullerton for her crucial role in formulation, validation and application of the theoretical models and computer- and physical-model simulations of electromagnetic signatures.

"Through the work with my team and the support of leadership, as well as the various experiences I had, I was able to bring a new capability to Carderock," Fullerton said. "The capability that we stood up here, in the long term, will provide and enhance warfighting capability."

In his closing remarks, Technical Director Larry Tarasek congratulated all the Carderock award winners for their committed work in 2018.

"This is a great ceremony to recognize the best and the greatest; it is an honor for the captain and me," he said. "The future of Carderock is in good hands."

Sue Rossi and Meg McConnell of the Human Resources Division organized the awards nomination process and the ceremony.



Dr. John Holmes, senior scientific technical manager for underwater electromagnetics, receives the inaugural Dr. Murray Strasberg Award during the Naval Surface Warfare Center Carderock Division Honor Awards on Sept. 10, 2019, in West Bethesda, Md. With Holmes is Commanding Officer Capt. Cedric McNeal, Technical Director Larry Tarasek and Ship Signatures Department Head Dr. Paul Shang. (U.S. Navy photo by Nicholas Brezzell/Released)

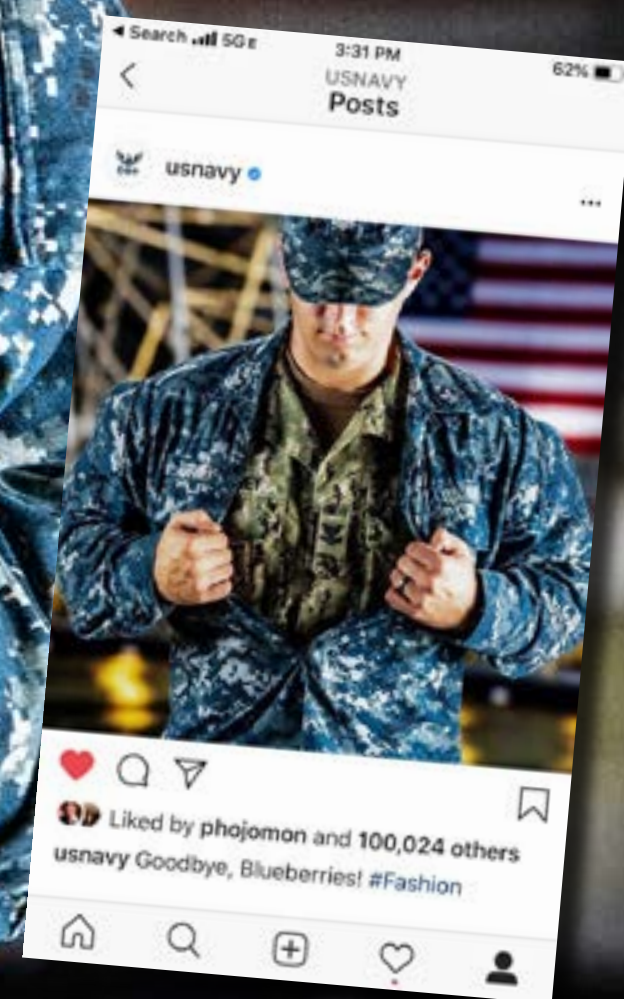


Dr. Anne Fullerton, head of the Emergent Technology Branch, receives the Rear Adm. David Taylor Award during the Naval Surface Warfare Center Carderock Division Honor Awards on Sept. 10, 2019, in West Bethesda, Md. With Fullerton is Commanding Officer Capt. Cedric McNeal, Technical Director Larry Tarasek and Ship Signatures Department Head Dr. Paul Shang. (U.S. Navy photo by Nicholas Brezzell/Released)

Saying goodbye to the Navy “Blueberries”



Petty Officer Second Class Brennen Devney from Naval Surface Warfare Center Carderock Division peels off his Navy Working Uniform Type I on Sept. 26, 2019. Beginning Oct. 1, Sailors were no longer authorized to wear the NWU Type I uniform. This photo illustration was published on Carderock's social media pages. The U.S. Navy Instagram page shared the image and it went viral within the Navy (see inset). (Photo illustration by Nicholas Brezzell/Released)



Carderock's Michael Slater receives NDIA Bronze Medal for his work in undersea warfare

By Benjamin McKnight III,
NSWCCD Public Affairs

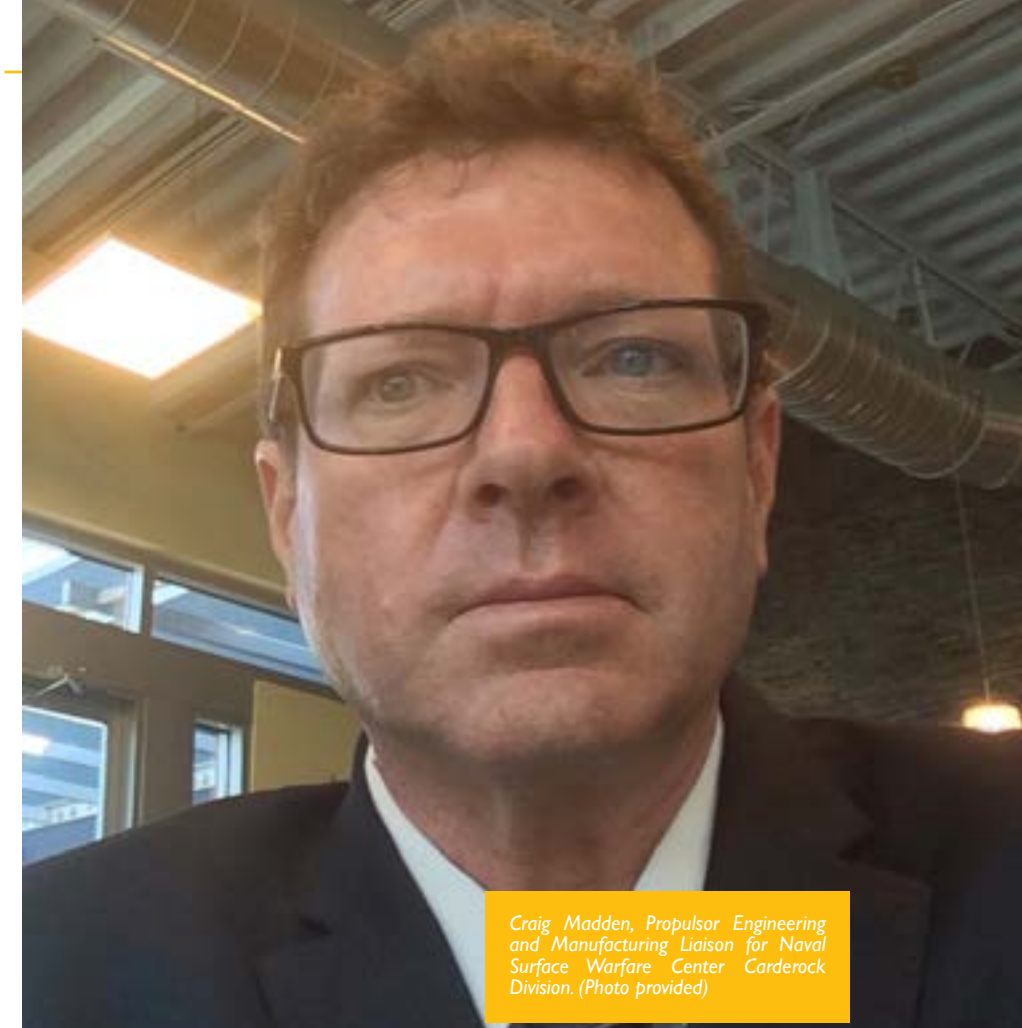


Mike Slater (left), head of the Signature Measurement Technologies and Systems Division at Naval Surface Warfare Center Carderock Division, is presented with the National Defense Industrial Association (NDIA) Award for Technical Achievement in Undersea Warfare by Mike Cortese, division chair for the Undersea Warfare Division Sept. 17 in Groton, Connecticut. (Photo provided)

Happenings at Carderock

Carderock engineer Craig Madden earns an NDIA Bronze Medal for his undersea warfare innovation

By Brooke Marquardt,
NSWCCD Public Affairs



Craig Madden, Propulsor Engineering and Manufacturing Liaison for Naval Surface Warfare Center Carderock Division. (Photo provided)

Every year, the National Defense Industrial Association (NDIA) hosts an Undersea Warfare Technology Conference in the fall, inviting industrial, academic, government and military personnel of the Navy to discuss all things undersea warfare, as well as recognize major contributors to the United States' dominance in undersea warfare. During the Sept. 17 event in Groton, Connecticut, Michael Slater of Naval Surface Warfare Center Carderock Division received the NDIA Bronze Medal for Technical Achievement in Undersea Warfare.

According to the award announcement, Slater's detailed knowledge of systems engineering and acoustic signal processing, combined with his leadership and technical expertise, provided the Navy with a robust capability to assess and improve signatures and stealth for over three decades.

"My experience has taught me that enduring success is based on healthy leadership practices, clear communication of objectives, and placing a high value on people and their

contributions, trusting and equipping them to get the heavy lifting done," Slater said, also acknowledging the leaders and coworkers who inspired him along the way. "I owe my success to those who have gone before me and taught me the means to get things done."

Slater serves as the division head for Carderock's Signature Measurement Technologies and Systems Division, where he supervises work with acoustic measurement programs. He also supports the Naval Sea Systems Command (NAVSEA) submarine signatures and susceptibility technical warrant holder and is designated as the Navy's engineering manager for acoustic measurement systems.

Slater's NDIA recognition fits with the conference's theme being "Preserving Undersea Superiority: A System of System's Approach." In an early career accomplishment, Slater oversaw the Southeast Alaska Acoustic Measurement Facility (SEAFAC) static-site facility commissioning in Alaska for submarine testing. The site debuted its capabilities in 1995 with the acoustic trial for USS

Birmingham (SNN 695) and remains operational today.

Slater oversees three separate In-Service Engineering Agent programs of record for submarine stealth and training systems, directly supporting the operational fleet with software, equipment and maintenance support, system installation and checkout assistance, Integrated Logistic Support (ILS), media readiness and full-scale operations. He also chairs Carderock's Acoustic Validation Review Board, which ensures that undersea vessels are reaching the standards to fall under the quiet submarines classification.

"Most of my achievements are directly related to the people and teams I've worked with," Slater said. "The major responsibility of a technical leader is to build and foster a creative and trusting environment, with a clear focus on the desired outcomes. I take this role seriously, and I work hard to ensure that teams are engaged, they have good tools, and they are motivated to own the result."

Naval Surface Warfare Center Carderock Division engineer Craig Madden was awarded the National Defense Industrial Association's Bronze Medal for his dedication in the area of undersea warfare, specifically his work in propulsor technologies, which has directly contributed to the acoustic superiority owned by the United States submarines and their future fleet. The NDIA awards were presented in Groton, Connecticut, on Sept. 17.

From the beginning of his Navy career in 1983 to now, Madden has greatly contributed to the advancement of the United States' undersea acoustic superiority.

"I am honored to receive this prestigious award. I believe that when employees are empowered and engaged, they are the driving force behind the success of an organization. Carderock is a great place to work as it provides the exceptional engineering problem solving environment, employee empowerment and engagement opportunities needed for anyone to achieve success," said Madden, who was unable to attend the

ceremony in Groton.

Madden works in Carderock's propulsor technical warrant holder engineering manager for propulsor design and manufacturing for Seawolf-, Virginia- and Ohio- class submarines. He is the engineering lead for Columbia-class mechanical propulsor design, manufacturing and production planning. Madden has played a critical role in the redesign of Virginia- and Columbia-class rotors simultaneously, while executing the Naval Foundry and Propeller Center prototype castings, developing production processes and updating designs and drawings to meet industry demand.

Madden worked to incorporate hydrodynamic-shaping material into the Columbia-class propulsor design and developed an all-encompassing production specification for the use of composite materials in propulsor designs. His work on these propulsor projects has been essential to the Navy's incorporation of using composites in the production of these parts.

Taking a personal interest in seeking and championing innovative technologies for submarine technologies, Madden has designed, fabricated and installed hardware on fleet assets in unprecedented timeframes. Propulsor design and production timelines typically last around eight years, but for one project, Madden completed it in only five months.

His successful execution of these innovative designs and process modifications formed the basis for the Navy's decision to adopt them permanently, allowing the fleet to benefit for years to come.

Carderock's John Phillips named ONR Global Science Advisor of the Year for his work with the Marines

By Kelley Stirling, NSWCCD Public Affairs

Naval Surface Warfare Center Carderock Division leadership recognized John Phillips for being named the Office of Naval Research (ONR) Global Science Advisor of the Year during an all-hands presentation on Oct. 30 at Carderock's Combatant Craft Division (CCD) in Norfolk.

Phillips is on detail from Carderock as an ONR Global science advisor for United States Marine Corps Forces Command (MARFORCOM). Prior to starting his three-year detail in April 2018, Phillips worked as a mechanical engineer in Carderock's Systems Design and Integration Branch at CCD.

"When it was announced, I was completely surprised," said Phillips, who received the official award at the 2019 ONR Global Technical Meeting in Arlington, Virginia, in September. "The 25 science advisors across the Navy and Marine Corps are all extremely impressive, and each of them are doing amazing work to bring future capability to the fleet."

Phillips described his role as a Marine Corps science advisor as a bridge connecting the fleet, ONR and the larger Naval Research and Development Establishment and industry, all while being the primary technical person on the senior staff of a flag officer. Phillips works on the staff of Commander MARFORCOM Lt.

Gen. Robert Hedelund, who also wears the hat of commanding general for Fleet Marine Force Atlantic, in Norfolk.

"You have to be on your 'A game,' as you never know when you will be brought into a discussion to be the technical expert for the command," Phillips said. "The five Marine Corps science advisors have formed a team that feels more like a family as we lean on one another to work through our challenges while maintaining a focus on what truly matters of bringing future capability to the warfighter."

Phillips said some of his work as a science advisor has crossed paths with his work at Carderock, like the Sea Mob Long-Range Unmanned Surface Vehicle Program. He has also arranged counter-unmanned aerial systems demonstrations, mine-countermeasure

experiments involving multi-domain unmanned systems and augmented and virtual-reality training systems. In addition, he worked at the 2019 Advanced Naval Technology Exercise East in Marine Corps Base Camp Lejeune, North Carolina this summer. Phillips said one of the most rewarding parts about being a science advisor is seeing some of the programs that he worked on while at Carderock being briefed to senior naval leaders.

"When I was working on project teams at the Combatant Craft Division, I would often get so focused on the project that it would feel more like a science experiment than a future capability," Phillips said. "Seeing programs I worked presented as a capability to help the fleet win a high-end fight and better understand the full spectrum of our work has been extremely motivating. What we do at the Warfare Centers matters, and it is making a difference."

Phillips said that ONR and ONR Global have given him great opportunities to work on the very interesting programs and industry partners.

"I am extremely thankful for this opportunity. I feel as though I am on several incredible teams that empower me," Phillips

said. "The staff at MARFORCOM has been welcoming, and I have learned so much both personally and professionally from working with Marines on a daily basis. I am thankful Carderock and the Combatant Craft Division has supported me in this position."

Office of Naval Research Global (ONRG) Science Advisor Program Director Tom Gallagher (left) presents John Phillips, ONR Global Science Advisor for U.S. Marine Forces Command and engineer with Naval Surface Warfare Center Carderock Division, with the Science Advisor of the Year award on Sept. 10, 2019, during the 2019 ONR Global Technical Meeting in Arlington, Va. (U.S. Navy photo by John F.Williams/Released)

Carderock hosts Unmanned Maritime Systems leaders

By Kelley Stirling,
NSWCCD Public Affairs

Capt. Pete Small, head of Naval Sea Systems Command's Unmanned Maritime Systems (PMS 406) visited Naval Surface Warfare Center Carderock Division on Aug. 16 to get an overview of Carderock's unmanned portfolio and capabilities.

"Carderock's technical expertise and world-class facilities are essential in developing coordinated and comprehensive Navy plans to develop, test, field and sustain unmanned surface and undersea maritime systems at scale," Small said. "It was a great visit."

During the visit, Small, along with Capt. Tim Moore, deputy for Unmanned Surface Warfare Fleet Introduction and Sustainment; and Dr. Chris Dowd, NAVSEA ship design manager, were welcomed by Larry Tarasek, technical director, and Capt. Cedric McNeal, commanding officer. They received technical briefs on Carderock Unmanned Surface Vehicles (USV) Autonomy Lab and Integration Center out of Carderock's Combatant Craft Division, as well as the testing facilities Carderock has in South Florida Ocean Measurement Facility and the Acoustic Research Detachment in Bayview, Idaho. Dr. Jason Strickland gave the visitors an overview of where they are on the medium and large USV indicative design.

"Meeting with the PMS 406 leadership



Garry Shields, director of the Disruptive Technologies Lab at Naval Surface Warfare Center Carderock Division, shows the Optionally Manned Technology Demonstrator to Capt. Pete Small, head of Naval Sea Systems Command's Unmanned Maritime Systems (PMS 406), during his visit to Carderock's West Bethesda, Md., site on Aug. 16, 2019. Small was at Carderock to get an overview of Carderock's unmanned portfolio and capabilities. (U.S. Navy photo by James Contreras/Released)

was vital to validate that Carderock Division is providing the right level of support across the PMS 406 Unmanned Maritime Systems portfolio," Tarasek said, adding that Carderock conducts these type of exchanges with its sponsors and stakeholders on a regular basis to strengthen relationships, understand changes in demand signal and receive customer feedback on Carderock-delivered products and services.

According to Carderock's Reid McAllister,

co-lead for the Navy's Unmanned Vehicles and Autonomous Systems Working Group, the PMS 406 portfolio budget is in the billions of dollars.

"PMS 406 is a critical growing sponsor here at Carderock," McAllister said. "We need to ensure Carderock is providing the best personnel and capabilities across Capt. Small's portfolio."

McNeal said it is the Navy's responsibility to manage, maintain and

sustain unmanned systems throughout their planned service life, regardless of what industry organization is awarded the contract to deliver the platform.

"As the unmanned acquisition portfolio continues to expand, Carderock must remain intimately involved with the design and fielding of this next generation, game-changing capability," McNeal said. "Our involvement is key to ensuring we're prepared to support these new planned additions to the future fleet."

This meeting was not only beneficial to the PMS 406 team, but also to Carderock. McNeal said these types of customer engagements help Carderock to understand what is needed to shape what the future fleet will deliver in the way of technological advancements and capabilities. He said it is Carderock's responsibility to provide technical solutions that meet affordability goals, while being fiscally aware of what is recommended in the way of design specifications and requirements.

"Customer feedback is the best way to understand how we're doing in supporting our acquisition program sponsors," McNeal said.



Happenings at Carderock

Carderock's missile tube team wins NAVSEA Technical Authority of the Year award

By Edwin Hernandez, NSWCCD Public Affairs

A team of engineers from Naval Surface Warfare Center Carderock Division's Platform Integrity Department received the Naval Sea Systems Command (NAVSEA) Technical Authority of the Year Team Award for their contribution in addressing a critical shipbuilding challenge.

Materials and Manufacturing Technology Division Manager Johnnie DeLoach conducted non-destructive evaluations with his team to address welding defects found in fabricated missile tubes. With the help of the NAVSEA technical warrant community, DeLoach and his missile-tube team were able to create a "get-well plan" that was successfully executed.

"There were some unexpected defects in the missile tubes that had already been inspected and were believed to be acceptable," DeLoach said. "Our group came in and evaluated all the welding procedures used by the sub vendors to help determine the cause of the defects and help determine why the initial inspections were inaccurate."

The team began the shipbuilding challenge one year ago and completed their mission between six to eight weeks. Since then, DeLoach, Program Manager Paul Young, Physical Metallurgy and Fire Branch Head Charles Roe and a team of engineers including Maria Posada, Jeffrey Farren, Nathan Livesey, Kevin Mendala, Matthew Sinfield, Nathan Korinchak and Michael Swormstedt have provided follow-ups to assure the product's quality and function.

Commanding Officer Capt. Cedric McNeal and Technical Director Larry Tarasek congratulated the missile tube team and presented them with a command coin on Dec. 6.

"I cannot say enough how proud we are of this achievement and the team's exceptional service toward the security and defense of our nation," McNeal said. "Tech authority is what sets the standards as it pertains to the performance of our platforms at sea. It is about making sure you reach the technical ability, but also are ready to fight when called upon."

The NAVSEA Technical Authority of the Year Team Award was a collective first for the missile-tube team, and DeLoach said it was special.

"Technical authority is what we depend on, that whole concept of what we depend on to make sure we're being sound and disciplined from an engineering standpoint," he said. "To get this award is pretty special and to have the folks at headquarters nominate us – really thankful for that – shows a lot of appreciation for what we do."

Capt. Cedric McNeal, commanding officer of Naval Surface Warfare Center Carderock Division, recognized a team of engineers from Carderock's Platform Integrity Department on Dec. 6, 2019, for receiving the Naval Sea Systems Command Technical Authority of the Year Team Award for their contribution in addressing a critical shipbuilding challenge. From left, front row: Technical Director Larry Tarasek, Matthew Sinfield, Kevin Madala, Nate Livesey and McNeal. From left, back row: Paul Young, Maria Posada, Johnnie DeLoach, Charles Roe and Jeff Mercier. (U.S. Navy photo by Harry Friedman/Released)

Carderock TD receives SES plaque and pin

Larry Tarasek, technical director for Naval Surface Warfare Center Carderock Division, officially received his Senior Executive Service (SES) plaque and pin from Don McCormack, executive director for the Naval Sea Systems Command (NAVSEA) Warfare Centers, on Oct. 23 at Carderock's West Bethesda, Maryland, headquarters.

"I'm proud and honored to make this presentation," McCormack said. "There's no question that Larry has all the technical skills needed to lead Carderock Division. What's more, he's a true leader. He's a team-focused problem-solver. He's a man of uncompromising trustworthiness and integrity. Those qualities combined make him the right person for this top position in the NAVSEA Warfare Center Enterprise."

Although he has technically been an SES for just over a year, schedules finally lined up for the presentation.

"I couldn't be happier in my role as the technical director here at Carderock," Tarasek said. He started at Carderock in 1985 in what is now the Signatures Department. Throughout his time at Carderock, Tarasek has gained experience in submarine design, as well as surface ships and unmanned vehicles.

Over the last year, Tarasek said Carderock has concentrated on technical execution and strategic planning, focusing on ship design, unmanned system, acoustic superiority, digital technology and platform integrity. Part of Tarasek's strategy has been building a trained workforce and providing them the tools and facilities needed to support the growing business at Carderock, something he said will always be a top



Larry Tarasek (left), technical director for Naval Surface Warfare Center Carderock Division, officially receives his Senior Executive Service (SES) plaque and pin from Don McCormack, executive director for the Naval Sea Systems Command (NAVSEA) Warfare Centers, on Oct. 23, 2019, at Carderock's West Bethesda, Md., site. (U.S. Navy photo by Nicholas Brezzell/Released)

priority for him.

Tarasek said Carderock's Center for Innovation in Ship Design aligns with the expansion of the Navy's ship-design capability, and it's important for Carderock to be hiring the next generation workforce and training them in ship design.

"The Navy's changing. Additive manufacturing, digital design – these are things that weren't relevant five years ago, they weren't part of the way we do things," Tarasek said, adding that first-class design capabilities, information technology and cyber are changing the way ships are designed and maintained.

"And we have to prepare ourselves, and that's part of the strategic aspect."

This preparation can come in many forms, and Tarasek said one way is the participation in the Advanced Naval Technology Exercises (ANTX), which provide an opportunity for government, industry and academia to test prototypes and to participate in an interactive and

progressive series of exercises in a collaborative and low-risk environment.

"ANTX events allow us to bring experts together, both the innovators and the operators, to continue our focus on fleet experimentation and rapid prototyping, working to address the needs of the warfighter," Tarasek said, adding that Carderock will continue to have a

presence at future events like ANTX or Hack the Machine.



Carderock plays role in US gift of a Navy ship model to Australian prime minister

By: Edwin Hernandez, NSWCCD Public Affairs



A 24-inch model of the Independence-class littoral combat ship USS Canberra (LCS 30) is pictured on Sept. 18, 2019, at Naval Surface Warfare Center Carderock Division's Office of the Curator of Model Ships in West Bethesda, Md. (U.S. Navy photo by Neubar Kamalian/Released)

The Office of the Curator of Ship Models at Naval Surface Warfare Center Carderock Division received a special request to convert a 24-inch model of USS Independence (LCS 2) into USS Canberra (LCS 30) from the Office of the Secretary of Defense.

Colan Ratliff, a ship conservator at Carderock, received the LCS model from the Pentagon on Sept. 16 and had only two days to complete the alterations, as the new model was to be a gift for Australian Prime Minister Scott Morrison during a state visit to the United States on Sept. 20.

“From the communication we got from

the Pentagon, we knew that this was going to be something special,” Ratliff said.

The model is of a new Independence-class littoral combat ship currently under construction. USS Canberra (LCS 30) will be the second U.S. naval vessel named after the Australian capital city.

USS Canberra’s namesake is HMAS Canberra (D33), the Australian heavy cruiser that was sunk in the Battle of Savo Island during World War II by a Japanese cruiser. She was part of Task Force 44, which was an allied naval strike force between the United States and Australia that defended northeast Australia from

attacks by the Axis powers.

In HMAS Canberra’s honor and for the first time in its naval history, the United States named a ship after a foreign warship, the World War II Baltimore-class cruiser USS Canberra (CA 70). That ship was struck from naval service in 1978.

To begin the transition of the model from USS Independence to USS Canberra, Ratliff said a new nameplate, ship name and number was needed for the hull, as well as some cosmetic details.

Unlike other model shops that use outside support for ship modifications,

the Office of the Curator of Ship Models at Carderock used all of their own equipment to deliver their clients’ needs in a timely manner.

“Our reputation is that we are always able to deliver,” Ratliff said. “Everything we do is mostly done in-house, and we do not need to depend on outside sources, which can really slow us down.”

Ratliff used his famous flag-folding technique to add a profound visual effect on the model of USS Canberra. He mounted an American and Australian flag on the hull’s halyard.

“I am kind of known for putting very realistic flags on models,” he said. “If you see a wavy flag, you know I worked on it.”

A ceremonial piece from the actual hull was suggested at the last minute, which Ratliff admits was the most challenging aspect of converting the ship model.

“We were informed about the ceremonial piece after we had finished, but I was pleasantly surprised that it was just a round disc,” he said. “I probably spent more time refining that piece than any other aspect on that ship model. I had to clean it up, address the outside edges, file

it, bevel it and polish it.”

Remarkably, Ratliff managed to finish converting USS Independence into USS Canberra a day early.

President Donald Trump presented the ship model to the Australian prime minister in Washington during the state visit.



Trent Hone, author of "Leading War," speaks at the Federal Government Complexity Workshop hosted at Naval Surface Warfare Center Carderock Division, Aug. 27, 2019. (U.S. Navy photo by Ryan Hanyok/Released)



Investing in our future

NSWC Carderock workshop thinking big on complexity science

By Kevin Sykes,
NSWCCD Public Affairs

After nearly four decades, the modern scientific study of complex systems, known as complexity science, has matured sufficiently in professional and commercial fields.

In the national security field, the need to apply the science of complexity to complex adaptive systems, operating at different scales, is becoming significantly important both strategically and tactically, to the work of the Navy, the Department of Defense (DOD) and the federal government.

Complexity researchers and practitioners from the Naval Surface Warfare Center (NSWC) Carderock Division teamed with their colleagues from the Naval Undersea Warfare Center, Naval War College and Naval Information Warfare Center to plan, organize and host a three-day Complexity Workshop at Carderock Division's West Bethesda, Maryland, site Aug. 27-29.

With the theme of "Complexity: Advancing the State of Thought and Practice Across Navy, DOD and FedGov," this workshop attracted more than 100 current and prospective complex systems thinkers and doers to its inaugural event.

"This workshop brought together complexity researchers from across the Navy, DOD and federal government to explore how to use complexity tools that will assist in their thinking about

and solving complex organizational, social and project management work problems," said Garth Jensen, Carderock's director of innovation and the Complexity Workshop lead organizer.

The Complexity Workshop keynote speakers addressed various complexity science theories, methods, data, tools and other sources of complexity systems to help attendees deal with complex issues across different organizational boundaries and at different scales.

On day one of the workshop, opening keynote speaker Dr. Yaneer Bar-Yan, founder of the New England Complex Systems Institute, delivered a visually inspiring overview of complexity through his presentation titled, "Addressing Real World Problems Using Complexity Science," explaining how complexity science might be used. Bar-Yan showed a video illustration of a flock of thousands of starlings in flight turning what seems ever chaotic into beautiful formations, demonstrating how complexity work element fits in the development of agility within organizations in order that they can keep pace in a rapid, ever-changing world.

Other workshop featured speakers included:

- Dr. William Conley, director of electronic warfare at the office of the Secretary of Defense;
- Trent Hone, author of the "Learning War";
- Dr. Dave Alderson, director of the Center for Infrastructure Defense at the Naval Postgraduate School;
- Dr. David Woods of the Department of Integrated Systems Engineering at Ohio State University;
- Arianne Miller, the managing director of 'The Lab' at the Office of Personnel Management.

In addition to the workshop's featured presentations, complexity-science practitioners gave short talks describing a complex work problem or issue that they are addressing, where they are still struggling and where they are having successes.

These talks lasted 15 minutes, followed by 15-minute, moderated panel discussions on questions from the audience.

"The short talks by the practitioners identified complex work problems that are not being recognized as such, or are being addressed poorly by conventional approaches," said David Newborn, an ocean



Dr. David Alderson, director of the Center for Infrastructure Defense at the Naval Postgraduate School (NPS) speaks at the Federal Government Complexity Workshop hosted at Naval Surface Warfare Center Carderock Division, Aug. 28, 2019. (U.S. Navy photo by Devin Pisner/Released)

engineer in Carderock's Maritime Systems Hydromechanics Branch and complexity workshop practitioner/facilitator. "The goal of these talks is to help complex problem owners assess and address their complex issues more deeply within in a group think, interactive environment."

The highlight of the workshop was the hands-on, experiential activities, where participants joined in small peer groups and directed into one of the four activities, rotating through all four by the end of the workshop.

"The keynote addresses, presentations by the practitioners and even shorter talks by complex problem owners brought a much deeper awareness or understanding of complexity science as a whole, but the participation in experiential activities served to embody complexity cognizance,"

said Dr. Judy Conley, Carderock's science and technology coordinator for the Platform Integrity Department and workshop attendee.

"Developing a larger network of relationships between current and prospective thinkers and doers working to solve complex work problems was the clear take away from this workshop," Jensen said. "Our workshop was a necessary first step in building a stronger Complexity Community of Interest across the Navy, DOD and federal government."

NSWC Divisions Dahlgren and Carderock collaborate to build small business relationships

By NSWC Dahlgren Division
Corporate Communications

What does building a body have in common with building small business relationships at the Navy Warfare Centers?

According to Carlos Duran – the new deputy for small business at Naval Surface Warfare Center Carderock Division – bodybuilding and his current duty at Carderock have three things in common: determination, dedication and discipline.

Duran found the combination of bodybuilding and small business fascinating soon after his retirement from the Marine Corps.

The workout enthusiast took up physique bodybuilding last year after connecting with a fellow retired Marine who is now his trainer.

Meanwhile, Duran connected with Kris Parker, the NSWC Dahlgren Division deputy for small business who filled in as the acting deputy for small business at NSWC Carderock for about six months.

Duran considers his experience working with Parker as “nothing but exceptional” during their collaboration at the NSWC Dahlgren small business office on Oct. 29.

“His business acumen, experience, willingness to share his knowledge, and desire to help are admirable,” said Duran after spending a day with Parker to better develop his foundation in the small business arena. “It allowed me to be more familiar with certain critical areas and electronic platforms that we use in the contracting and the small business realm. SeaPort is one of the many platforms that are essential to our day to day operations, and Kris is without a doubt a fountain of information in that system, and many others.”

SeaPort Next Generation (NxG) – the Department of the Navy's mandatory vehicle for procurement of professional support services – provides an efficient and effective means of contracting for professional support services and enhancing

small business participation. SeaPort-NxG refers to both a set of Indefinite Delivery Indefinite Quantity multiple award contracts and also an electronic platform to solicit, award and administer task orders.

One of Duran's objectives is to increase small business contracts awarded by NSWC Carderock Division. He believes that an increase in the command's partnerships with small businesses will have a positive impact on innovation and creativity in Carderock's technical programs.



Investing
in our future



Carlos Duran (left), the new deputy for small business at Naval Surface Warfare Center (NSWC) Carderock Division, meets with Kris Parker, the NSWC Dahlgren Division deputy for small business who filled in as the acting deputy for small business at Carderock for six months. (U.S. Navy photo)

“Collaboration and close communication are paramount to the success of any program and specifically in small business,” said Duran, who was a contracting officer in his final years as a Marine. In 2016, he transitioned to a civilian career as a supervisor procurement analyst for the Regional Contracting Office at Marine Corps Base Quantico.

In his new role in the NSWC Carderock Small Business Branch, Duran will be able to use much of what he learned from his position at Quantico to help the command better service small businesses looking to obtain government contracts.

“Throughout my career in the Marine Corps, I was able to work in the small business side of the house, but only on a part-time basis,” Duran said. “But I found it very fascinating, and that’s why I made the move here.”

“I appreciate working with Carlos because he clearly has a passion for the job,” Parker said. “The more you collaborate with other Warfare Centers, the more consistency is achieved across NAVSEA (Naval Sea Systems Command). Our collaboration and consistency helps industry better understand our needs and, ultimately, benefits the entire acquisition community.”



Robert Alekos, an electrical engineer in the Systems Development Branch at Naval Surface Warfare Center Carderock Division, drives his Lego car during the Defense Acquisition University (DAU) Engineering Management Workshop on Aug. 15, 2019, at Carderock's West Bethesda, Md., site. (U.S. Navy photo by Ryan Hanyok/Released)



Investing in our future

Carderock teams attempt platform acquisition start to finish in less than a week

By Ryan Hanyok, NSWCCD Visual Information Branch

Three teams of Naval Surface Warfare Center Carderock Division employees attempted the impossible: design, fabricate, integrate software and test a robotic vehicle that meets specific performance criteria in less than five days.

The Defense Acquisition University (DAU) conducted its Engineering Management Workshop Aug. 12-16, providing Carderock employees at the West Bethesda, Maryland, headquarters a hands-on learning experience that simulated the processes and situations Department of Defense (DOD) employees face in real life. After an initial introduction to the concepts, participants split into teams to plan, design, build and test their Lego robots and using Lego computer-aided software.

"We created our own master schedule, like a real acquisition program," said Parker Field, a naval architect in Carderock's Future Ship and Submarine Branch. "For each design, we evaluated the expected cost, logistic index and producibility index, and conducted notional tests to see how it handles and performs. Then we put together metrics for each design and compared, so we could justify why we picked a design."



From left: Haley Kirby, a STEM and outreach specialist, Joel Luehr, and engineer in the Signatures Characterization and Analysis Division, Sylvia Rivera, the chief engineer for the Platforms Integrity Department, and Lou Carl, chief engineer for Naval Surface Warfare Center Carderock Division, work as a team to design and build a Lego car during the Defense Acquisition University (DAU) Engineering Management Workshop on Aug. 15, 2019, at Carderock's West Bethesda, Md., site. (U.S. Navy photo by Ryan Hanyok/Released)

The workshop may use Legos, but the lessons are not child's play. Each team must evaluate each Lego robot's design as if it were a DOD platform: Will it meet weight requirements? How much will materials cost? How much will a design feature cost over the lifetime of the platform?

"When students experience issues firsthand, it's a much better learning experience," said U.S. Air Force Lt. Col. Brian Kozola, one of the DAU course instructors. "I have found people often have a very narrow view of the program or acquisition cycle. This course gives an appreciation from initial conception all the way to realization and sustainment."

Having a technical degree was not a requirement, with employees from a diverse mix of experiences and educational backgrounds attending the graduate-level workshop. Department chief engineers (CHENGs) worked with other employees.

"As the week goes on, students hear from each other's experience, not just the teacher, and this makes the lessons that much more real," said Dr. Jim Roche, DAU professor of engineering technology and former Carderock employee. "If you can anticipate what somebody's needs are and plan toward that direction, then you're that much more of a force multiplier."

By mid-week, mechanical engineer Joel Luehr, who performs full-scale analysis for Carderock's Signatures Characterization and Analysis Division, said he gained a better understanding of what his sponsors have to deal with on a day-to-day basis.

"I rarely get to see how requirements affect cost and schedule," Luehr said. "Now I understand why things shift in the schedule."

With only one month on the job, Haley Kirby, a STEM and outreach specialist, quickly learned what other Carderock

employees do and the challenges they face.

"I think even new hires, like myself, can get so much out of this workshop and learn what the organization does," Kirby said.

Carderock's Technical Excellence Community of Interest (TechEx COI) evaluated a number of low-cost, high-impact courses and worked with the Workforce Development Branch to bring them on site. The TechEx COI's goal was to provide knowledge, experiences and tools to the workforce to sustain Carderock's technical excellence culture.

"Good policies and processes can only go so far," said Lou Carl, Carderock CHENG and team lead for the TechEx COI. "We have to provide our people with the tools and training to be successful."

Carderock signs an Educational Partnership Agreement with George Mason

Brooke Marquardt,
NSWCCD Public Affairs

Naval Surface Warfare Center Carderock Division signed an Educational Partnership Agreement (EPA) with George Mason University this year, giving each organization reciprocal resources. Capt. Cedric McNeal, Carderock commanding officer and Larry Tarasek, technical director, met with Dr. Kenneth Ball, Dean of Volgenau School of Engineering at George Mason University, as well as Dr. Oscar Barton and Dr. Leigh McCue on Nov. 1 to celebrate the signing of the EPA. There were also students from the school of engineering in attendance.

“George Mason is the largest public and most diverse university in Virginia. This relationship with Carderock will provide fantastic opportunities for our students and the many veterans who enroll at our school. We take the role we can play in supporting our military, specifically the fleet, very seriously and we’re delighted to have the opportunity to do so,” Ball said. “It is important to a lot of our students to serve their nation, and this is one way that they can, as well as potentially getting a great job. I’m personally delighted to be able to encourage students to take advantage of Carderock being in our backyard, gaining

engineering and computer science experience and serving their nation at the same time.”

Once signed, the EPA stays in effect for five years. The signing of an EPA is an agreement between two organizations entrusting years of partnership, collaboration and the promotion of practical, real-world applications of STEM programs and education.

“This is just another great day at Carderock, another opportunity for us to engage with local academia and build upon these valuable relationships,” McNeal said. “We also want to consider

job opportunities for those coming from George Mason into our workforce and build upon our capabilities and advancements in technologies. We want to leverage the intellectual property that they have at George Mason and partner that with that of Carderock’s, all in the name of advancing the technological capabilities in defense of our nation.”

Under this EPA, Carderock will provide George Mason students with access to U.S. Navy technology and surplus materials, in addition to mentorship from Carderock engineers and other personnel. In return, George Mason students will help Carderock engineers with research;

Carderock engineers will be given the chance to guest lecture and some students may go on to join the Naval Research Enterprise Interns Program (NREIP).

The partnership is already underway. Carderock’s Center for Innovation in Ship Design is reaching out to collaborate on a naval architecture and engineering course, primarily working with McCue, a former summer faculty professor at Carderock. Trisha Shields, a Carderock engineer in the Sea-Based Aviation and Aerospace Branch, co-hosted a data analytics workshop and has been a guest-lecturer at George Mason. Many students have also worked with Carderock

engineers researching for their capstone projects about corrosion science.

“Carderock has a lot of opportunities for us to learn about naval shipbuilding here and around the United States. Today, we were able to learn more about shipbuilding, the different divisions, how they play a role in government, the materials that go into building these ships and how it fits into the Navy,” mechanical engineering student Sydney Slayton said. Slayton was one of several George Mason mechanical engineering students who came to Carderock for the EPA signing. They were also given a tour of the base.

“We did not know much about Carderock before this event, even though it is so close to our school. This partnership is going to allow us, as students, to continue to learn how this Warfare Center works, as well as how engineering plays an important role into shipbuilding. The exposure of seeing the day-to-day work of engineers is good, so that we get an idea of what the future has in store for us.”



Investing
in our future



Dean of the Volgenau School of Engineering at George Mason University (GMU) Dr. Kenneth Ball (left, seated); Naval Surface Warfare Center Carderock Division Technical Director Larry Tarasek (center, standing); and Commanding Officer Capt. Cedric McNeal (right, seated) pose in front of other Carderock employees and GMU students on Nov. 1, 2019. Ball and McNeal signed an Educational Partnership Agreement (EPA), ensuring years of partnership, collaboration and the promotion of practical, real-world applications of STEM programs and education. (U.S. Navy photo by Neubar Kamalian/Released)



Investing in our future



NAVSEA Inclusion and Engagement Council moving along after a year

By Kelley Stirling, NSWCCD Public Affairs

The Naval Sea Systems Command (NAVSEA) Inclusion and Engagement (IE) Council, chaired by Vice Adm. Thomas Moore (center) and co-chaired by James Smerchansky (center, back), pose for a photo on Oct. 22, 2019, during their face-to-face meeting to discuss their initiatives for diversity, inclusion and engagement in the NAVSEA Enterprise. The IE Council includes: Adam Sipp, Program Office for Advanced Undersea Systems (PMS 394); Alicia Sasso, Naval Surface Warfare Center (NSWC) Philadelphia Division; Angela MacMurray, NSWC Dahlgren Division; Antonio Luciani, Portsmouth Naval Shipyard (PNSY); Catherine Barrett, Program Executive Office (PEO) Carriers; Craig Taylor, PEO Integrated Warfare Systems; D.J. McDonald, PNSY; Dan Miller, NSWC Philadelphia Division; Debbie Jones, NSWC Crane Division; Doris Tung, NSWC Philadelphia Division; Jeannette Lacasse, Submarine Maintenance Engineering, Planning and Procurement (SUBMEPP); Juan Berrocal, PEO Submarines; Katy Kingsbury, PNSY; Lorna Tebrich, NSWC Dahlgren Division; Lou McIntosh, PNSY; Dr. Luis Rodriguez, NSWC Dahlgren Division; Mary Mapa, Naval Sea Logistics Command; Medar Edmond, PNSY; Michael Schock, PNSY; Michael Taylor, Norfolk Naval Shipyard (NNSY); Dr. Ramona Armijo, NSWC Port Hueneme Division; River Clemens, NSWC Carderock Division; Shari Thomas, NSWC Indian Head Explosive Ordnance Disposal Technology Division; Sherry Yu, NSWC Corona Division; Sree Bodana, Naval Undersea Warfare Center (NUWC) Newport Division; and Steven Littlejohn, PEO Carriers. (U.S. Navy photo by Laura Lakeway/Released)

Just over a year has passed since Naval Sea Systems Command (NAVSEA) established the Inclusion and Engagement Council.

“This council will help eliminate barriers to building and maintaining a workforce that accepts people from all walks of life so we can focus on our mission,” said James Smerchansky, NAVSEA executive director, in an October 2018 email to the more than 80,000 NAVSEA employees. “Expanding the Advantage is our common bond; it’s why we’re here and what we need to rally around. By removing social pains and the concept of insiders and outsiders, we can put our full focus on our jobs.”

Now that the IE Council has been around for a year, how exactly are they planning to remove these barriers?

During a face-to-face meeting in October 2019, the 26 members of the IE Council, which is chaired and co-chaired by NAVSEA Commander Vice Adm. Thomas Moore and Smerchansky,

respectively, focused their effort on what the deliverables would be from the group.

“This team passed through the forming, norming, storming phases and got to performing very quickly,” Smerchansky said when he addressed the council. “We deliberately provided this group of NAVSEA employees with loose boundaries so we could maximize their leadership, insight, innovation and passion.”

River Clemens, an engineer from Naval Surface Warfare Center (NSWC) Carderock Division Bayview, Idaho Detachment and part of the IE Council’s communications team, said one of the main goals for the council is making sure people feel empowered, equipped and supported so they can accomplish the mission of working for the warfighter.

“When people are excluded, they experience social pain and they concentrate on that feeling, which means they’re not focused on their work,” Clemens said. “NAVSEA’s IE Council

is working to address this issue from an enterprise perspective so all of us can focus on Expanding the Advantage our Navy has over all others.”

The IE Council self-organized into four teams: diversity, inclusion, engagement and communications. Each team is working on diversity, inclusion and engagement initiatives, while the communications team works on strategies to inform and educate the workforce on the deliverables. While the IE Council doesn’t include the word diversity in its name, Clemens said it’s no less important.

“Diversity is part of the charter,” she said, adding that Smerchansky explained to the group that diversity is an input, and inclusion and engagement are the outputs. “So, we still have to do maintenance on diversity, obviously, it’s a big part.”

Dr. Ramona Armijo, a manager for policy planning and analysis in NSWC Port Hueneme’s Corporate Operations, defined diversity as people from different walks of life, different genders, different cultures, different experiences, different educational backgrounds and different thought processes.

“Hiring and respecting a diverse workforce is important to the growth and sustainability of any organization,” Armijo said.

Armijo and the diversity team are focused on two deliverables: a NAVSEA internal promotion and hiring guidance document and a NAVSEA interview candidate survey. Starting with an existing, though outdated, guidance document, the diversity team is updating it with the help of NAVSEA Human Resource leads and legal counsel. The new guidance will require hiring panels for high-grade interviews and will require an Equal Employment Opportunity representative to be present.

The survey will be issued via a link to anyone who participates in an interview. It will be anonymous and serve to capture feedback on fair interviewing, as well as encourage managers to provide interview feedback and career-related mentoring suggestions. Phase I of this initiative will implement the new guidance at the Warfare Centers. The guidance is expected to be signed by Moore and Smerchansky in the coming months. The council will need help from senior leadership to discuss options for implementing a similar guidance at the shipyard level. Armijo said the goal is to increase accountability for fair merit promotions throughout the Enterprise.

“If we don’t strategize on helping our workforce by updating old policies and change organizational behaviors, then our world is not going to change, and we are not going to make advancements,” Armijo said.

The IE Council’s inclusion team is working on inclusive workplace competencies, training and surveys. The group intends to pull data from already-established surveys, such as the Federal Employee Viewpoint Survey, to look at how people see inclusion. The training will focus on conscious and unconscious bias in the workforce. At some point, they will roll out disability awareness training, making people more aware of how to include people with disabilities, so that their intellectual equality is recognized, and the organization can retain them.

Mary Mapa, a logistician from Naval Sea Logistics Center in Mechanicsburg, Pennsylvania, is working on the workplace competencies part of the inclusion initiative. The competency portion focuses on identifying skills and abilities that define inclusive behaviors for an individual, a team and the organization. She gave the example of practicing humility as an individual skill that would lead a person to become more inclusive.

Mapa said this all links to the NAVSEA Expand the Advantage guiding document.

“NAVSEA’s foundational lines of effort, which underpin our ability to Expand the Advantage are high-velocity learning, affordability and people. But, you have to enable and empower the people to get the other two,” Mapa said. “There is just a small talent pool, and if you make people feel welcome and included in your environment, they’re going to want to stay there and build those proficiencies.”

For the engagement team, Catherine Barrett, the deputy assistant program manager for CVN 74 Refueling Complex Overhaul (RCOH), said they are working on reinvigorating and empowering Employee Resource Groups (ERGs) across NAVSEA.

“We believe that ERGs, when performing at their fullest, are catalysts and force multipliers for all sorts of other engagement and inclusion ideas,” Barrett said. “They can be part of the ground swell of actors making the changes happen that need to happen, so that everyone is included and engaged at work.”

Because the framework for ERGs already exists, Barrett said their deliverables will include an updated tool kit to help employees start an ERG or take their ERG to the next level, as well as a guidance package for ERG champions. They are setting up a wiki page for the ERGs to find these resources and a chat room for people to collaborate and share ideas.

A rotation on the IE Council is a two-year commitment, so the current 26 members from across the NAVSEA Enterprise have a year left to get their priorities and initiatives out to the workforce. Some members will be invited to stay an additional year to provide continuity and stability for the council. The next cadre of IE Council members will determine improvements to the current initiatives or may create new initiatives.

“The council has the backing of Vice Adm. Moore and Mr. Smerchansky in everything we are doing,” Armijo said. “We have a dynamic group of diverse council members who all work together collaboratively. I’m very proud and honored to serve on this council, because the work we are doing is going to affect positive change for NAVSEA.”



Carderock employees have new tool for rapid innovation

By Kelley Stirling, NSWCCD Public Affairs

From left: Matt Early, branch head for Information Technology (IT) Operations; Garth Jensen, director of innovation; Larry Tarasek, technical director; Anna Eshbaugh, branch head for Information Management Customer Service; and Mike Kirby, command information officer cut the ribbon to the new Rapid Innovation Center at Naval Surface Warfare Center Carderock Division on Oct. 29, 2019, in West Bethesda, Md. (U.S. Navy photo by Harry Friedman/Released)

A vision became a reality at Naval Surface Warfare Center Carderock Division on Oct. 29. The Rapid Innovation Center (RIC) was officially opened during a ribbon-cutting ceremony at Carderock's West Bethesda, Maryland, headquarters.

Larry Tarasek, technical director (TD); Garth Jensen, director of innovation; Mike Kirby, command information officer; Anna Eshbaugh, branch head for Information Management Customer Service; and Matt Early, branch head for Information Technology (IT) Operations cut the ribbon at the event.

Tarasek began by talking about how the RIC came to be in the

first place. He said at a Warfare Centers' leadership conference several years ago, the other technical directors were talking about having the ability to use a closed space to try out different software packages. Bringing the concept back to Carderock, Tarasek said he raised the idea during his regular Friday morning TD coffees with employees.

"I was hearing from the employees that it was a great idea and how valuable it would be to the workforce," Tarasek said, adding that he tasked Jensen to lead the effort to develop the RIC. "This new facility will enable enterprising engineers and scientists to move quickly, and with less administrative burden,

experiment with cutting-edge software and hardware, and more rapidly transition these technologies to the fleet."

Formerly the medical clinic, Building 22 became the ideal space for the RIC. The facilities team, led by Rob Purvis, worked for about a year transforming the building that sits between Building 1 and the west end of the tow basin into the RIC, creating three open bays, each bay known as an enclave. Then the IT team came in to set up the cyber infrastructure.

While the RIC only officially opened last week, there have been users in the space for several months. Dave Newborn, an ocean engineer in

Carderock's Maritime Systems Hydromechanics Branch, conducted a weeklong design thinking/agile boot camp for Carderock's Center for Innovation in Ship Design (CISD) in the RIC this fall. He said the facility provides trainees and workshop participants a location that helps foster new perspectives and mindsets.

"The RIC is an excellent, vital facility for our workforce, and it will provide a unique location at West Bethesda to foster the open, creative dialogue that is critical to design-thinking exercises," Newborn said. "As a 'digital sandbox,' the RIC will enable important advancements in product development that would otherwise be an onerous endeavor."

Kirby's IT team made it their goal to make that "onerous endeavor" a little easier to navigate. Katrina Moore, the command information systems security manager, said using this area to test software will still require local approval, but the advantage the space provides is that this local approval can be granted much more quickly and with more direct collaboration than is typically associated with the full Department of Defense approval needed for use on the NMCI or RDT&E networks.

Kirby said they have also installed the Defense Research and Engineering Network (DREN) Outreach Network, a guest network that allows unfettered access to the internet for transmittal of non-government data. Additionally, the RIC has both Windows and Linux operating systems available in a virtual, closed-enclave network. In the future, he said they are looking to add additional capability with Wi-Fi connectivity for both NMCI and RDT&E.

"This space is going to be an evolving concept that's relatively new to the Navy," Kirby said. "As we get a better sense of the demand signal and requirements people need, we are going to go back and work with the Navy higher echelons and security folks to understand how we can meet mission requirements for this space."

Harry Whittaker, team lead for Sailor Performance Support Technology at Carderock, used the RIC over the summer while he had interns working on the Microsoft HoloLens augmented reality initiative, which seeks to create virtual training for Sailors so they won't have to leave the ship for certain training evolutions. Whittaker said that since the interns often don't get their CACs for a couple of weeks after checking in, the RIC was a perfect option, because they had access to the DREN guest network.

"We had two weeks of great productivity even before they had their NMCI accounts set up," Whittaker said, adding that he expects he'll have competition next summer for time in the RIC with interns. "I wish it would stay a well-kept secret."

Whittaker said having the resources the RIC offers, including the ability to process very large images, was critical to their success with HoloLens. They also required several software packages that integrated with the HoloLens, yet another opportunity he found helpful in the RIC.

"We needed a lot of different software to actually create the images, process them and to get the storyline set up," Whittaker said. "The IT staff here at Carderock did a phenomenal job. If we didn't have it, we did the research, we found what we needed, we specified it, IT made sure it was acceptable, we got it installed and started using it within days. We were incredibly happy, and the interns were very much energized."



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