

Special Edition  
**WAVES**

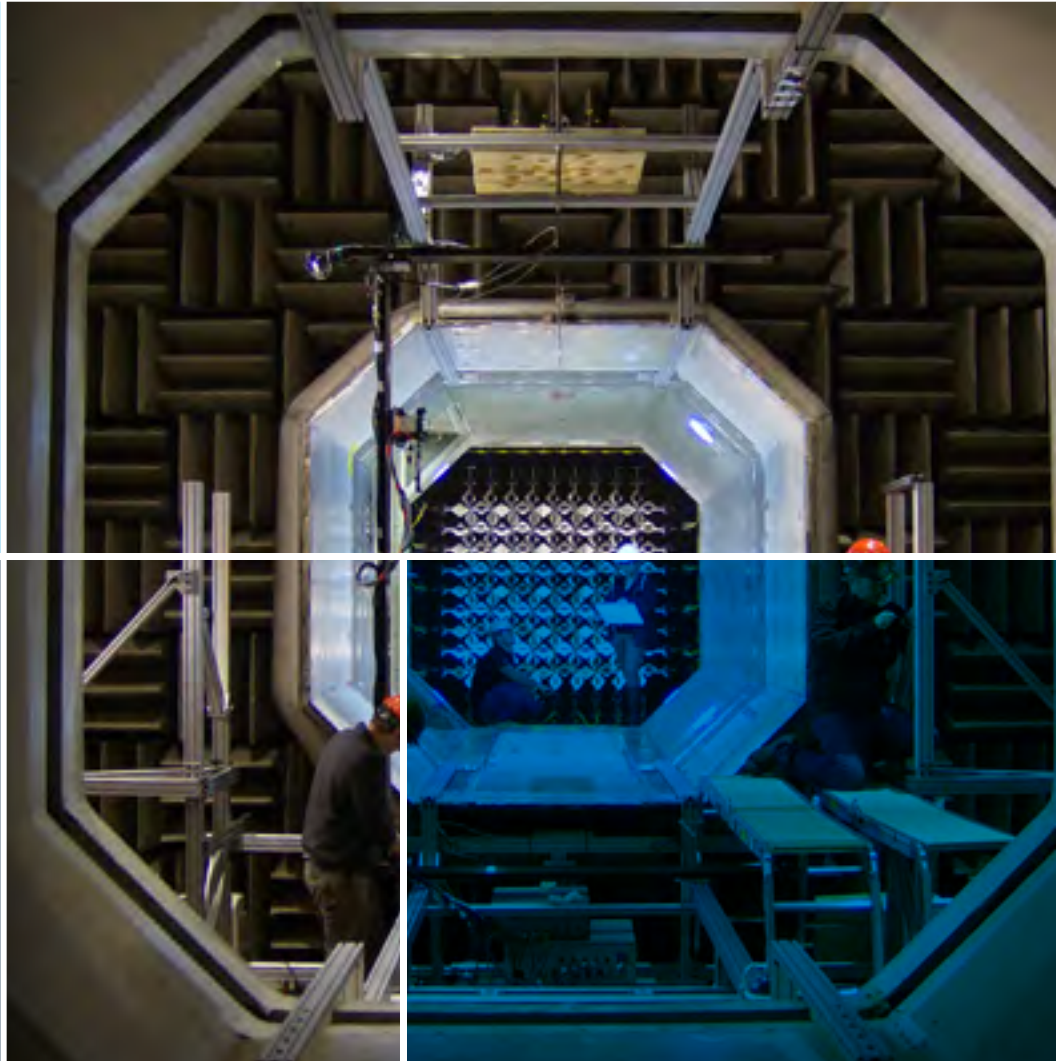
# 2017

## YEAR IN REVIEW

Naval Surface Warfare Center  
Carderock Division



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# YEAR IN REVIEW

# 2017

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## Cover

*From left:  
Jason Joiner, Kent Bartlett,  
Emilia Kawashima and  
Jonathan Forest prepare  
the Anechoic Flow Facility  
for a test Nov. 20, 2016,  
at Naval Surface Warfare  
Center, Carderock Division  
in West Bethesda, Md.*

## Team

Kristin Behrle  
Jake Cirksena  
James Contreras  
Daniel Daglis  
Dustin Q. Diaz  
Katie Ellis-Warfield  
Harry Friedman  
Devin Pisner  
Ryan Hanyok  
Neubar Kamalian  
Monica McCoy  
Roxie Merritt  
Kelley Stirling  
Kevin Sykes  
Margaret Zavarelli

## **Capt. Mark Vandroff**

**Commanding Officer**  
**Naval Surface Warfare Center, Carderock Division**

Capt. Mark Vandroff assumed command of Naval Surface Warfare Center, Carderock Division on Sept. 8, 2016. He is the 37th commander to lead the organization since its founding as the Experimental Model Basin in 1898. As commanding officer, Capt. Vandroff leads more than 2,200 employees who provide the Navy a broad range of technical support specializing in hull, mechanical and electrical engineering.

Capt. Vandroff graduated from the U.S. Naval Academy in 1989 with a B.S. in physics. While at the Naval Academy, he participated in the Voluntary Graduate Education Program. In December 1989, he graduated from The Johns Hopkins University with a Master of Science in applied physics.

His first sea tour was the pre-commissioning crew of USS Arleigh Burke (DDG 51), where he served as Auxiliaries Officer, Damage Control Assistant, First Lieutenant, and CIC Officer. He also served in USS Gonzalez (DDG 66) as Weapons Officer and Combat Systems Officer.

His initial Engineering Duty Officer (EDO) tour was at SUPSHIP Pascagoula as the AEGIS Test Officer. Additional EDO tours include AEGIS Shipbuilding Combat Systems, Test and Trials Division Head; Director of Surface Combatants in the Office of the Assistant Secretary of the Navy (Research, Development and Acquisition); Director of Fleet Introduction, Testing and Requirements for the LPD 17 Class Amphibious Dock Transport ships; Executive Assistant to PEO SHIPS; and Deputy Program Manager for LPD 17 Class Amphibious Dock Transport Ships (PMS 317B).

From May 2011 to August 2016 he served as Major Program Manager for the DDG 51 Shipbuilding Program (PMS 400D).

His awards include two Legion of Merit, four Meritorious Service Medals, three Navy Commendation Medals and two Navy Achievement Medals. The programs he has led have been the recipient of some of Department of Defense's highest awards for acquisition excellence, including the 2011 Secretary of the Navy's Competition Excellence Award and the 2012 David Packard Award.



## **Larry Tarasek**

**Technical Director (acting)**  
**Naval Surface Warfare Center, Carderock Division**

On Nov. 1, 2017, Mr. Larry Tarasek was assigned as Carderock Division's acting Division Technical Director. In this position, he is accountable for technical program planning and execution across the Division. He oversees the research, development, test and evaluation, analysis, systems engineering, design and integration across complex naval warfare systems related to ships and ship systems, and combatant craft for the Division. He is responsible for the long-term stewardship of Division technical capabilities including people and facilities and the support infrastructure for the Naval Sea Systems Command technical authority warrant holders.

On April 24, 2011, Mr. Tarasek was selected as Carderock's deputy Division Technical Director, providing direct support to the Division Technical Director. In this position he provides leadership in the areas of the health of the Division's technical capabilities, customer interactions, Division funding, strategic planning, and staff work to the Division Technical Director.

Mr. Tarasek has served as the Lead Customer Advocate of Undersea Programs, where he provided leadership to Carderock Division in Navy submarine design, technology integration and design workforce. He served as the primary interface between Carderock Division leadership and submarine executives in the NAVSEA/Program Executive Office. He has extensive experience in every phase of the submarine life cycle and has supported acquisition design and in-service submarine platforms.

Mr. Tarasek served a three-year detail to the Office of Naval Research providing program management to numerous early-stage submarine design projects and advanced technology demonstration projects. He started his career in Carderock's Signatures Department performing engineering design work for the SEAWOLF submarine. This work encompassed design and testing for numerous SEAWOLF silencing components and integration of these components into a balanced ship design.

Mr. Tarasek graduated from State University of New York at Buffalo with a Bachelor of Science degree in mechanical engineering.





# Command Profile

Naval Surface Warfare Center (NSWC) Carderock is the Navy's center of excellence for ships and ship systems. For over 100 years, Carderock has helped preserve and enhance the nation's presence on and under the seas. Carderock is the full-spectrum research and development, test and evaluation, engineering, and Fleet support organization for the Navy's ships, submarines, military watercraft, and unmanned vehicles with insight into new concepts and diverse technologies for the Navy Fleet of the 21st Century. The Division's expertise spans from naval architecture and marine engineering, to electrical and mechanical engineering, to computer engineering and physics.

Carderock specializes in ship design and integration; environmental quality systems; hull forms and propulsors; structures and materials; signatures, silencing systems, and susceptibility; and vulnerability and survivability systems.

Carderock Division's unique laboratories, modeling and simulation facilities, at-sea-assets, and large-scale, land-based engineering and test sites at our headquarters in West Bethesda, Maryland, and seven detachment locations across the country contribute to the full-spectrum nature of our mission.

Navy and maritime communities have come to depend on our expertise and innovative spirit in developing advanced platforms and systems, enhancing naval performance, integrating new technologies, and reducing operating costs.

Carderock Division will continue to solve challenging engineering problems to meet future Fleet needs.



## Mission

To provide full-spectrum research and development, test and evaluation, analyses, acquisition, and Fleet support for the Navy's ships, ship systems, and associated Navy logistics systems. Specific emphasis is to provide the core technical capabilities required for the integration of surface and undersea vehicles and associated systems, to develop and apply science and technology associated with naval architecture and marine engineering, and to provide support to the maritime industry.

## Vision

To be the Navy's trusted partner for identifying and providing world-class, innovative, and cost-effective solutions for advanced ship and ship systems, for providing technical solutions to the warfighter, and to keep our Fleet at sea.

## Thrust areas

- Ship, Submarine, and Unmanned Vehicle Design and Integrity
- Advanced Manufacturing
- Digital Strategy
- Signature Management
- Unmanned Mobility Systems





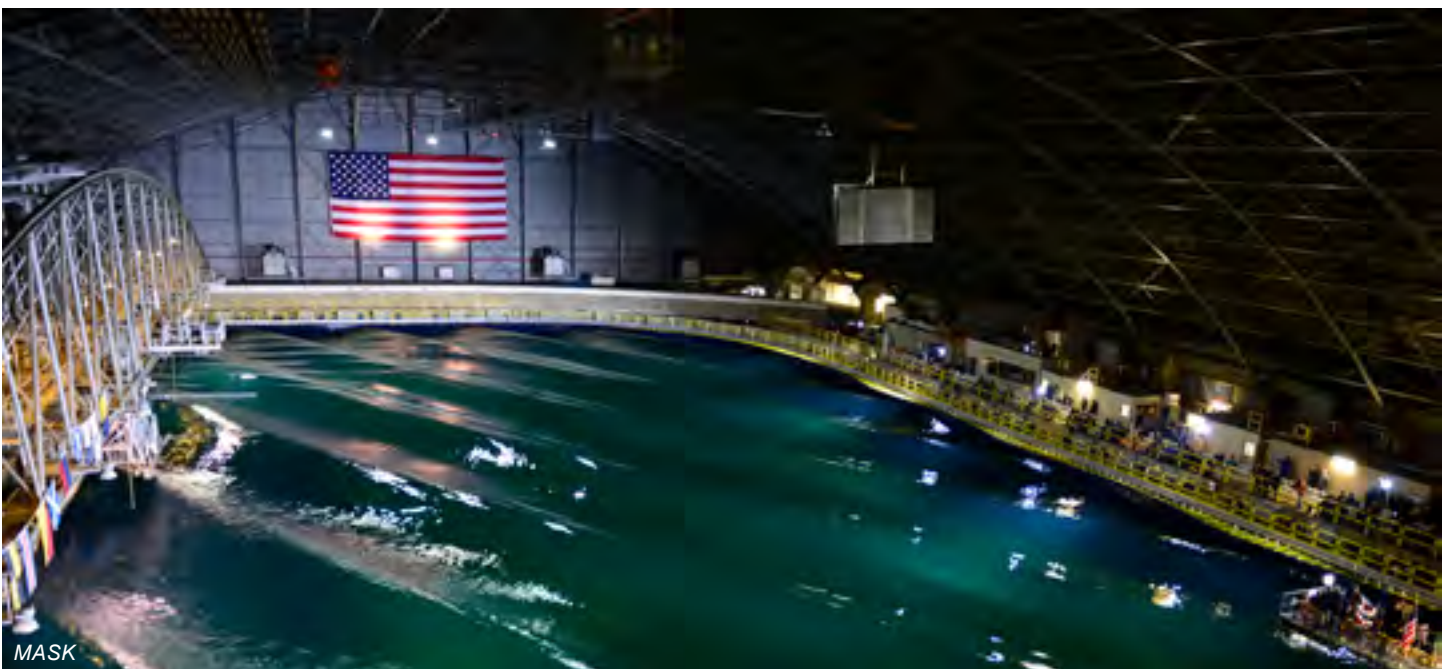
## Technical capabilities

- Ship and Submarine Design and Integration
- Ship and Submarine Acquisition Engineering
- Ship and Submarine Systems Concepts, Technologies, and Processes
- Combatant Craft and Expeditionary Vehicles
- Unmanned Vehicles Naval Architecture and Marine Engineering
- Hull Forms and Fluid Dynamics
- Propulsors
- Surface, Undersea, and Weapon Vehicle Materials and Manufacturing Technology
- Surface and Undersea Vehicle Structures
- Alternative Energy and Power Sources R&D
- Liquid Waste Management, Science and Systems
- Solid Waste and Hazardous Material Management, Science and Systems, and Ships and Subs Systems Safety
- Surface, Undersea and Expeditionary Vehicle Vulnerability Reduction and Protection
- Surface and Undersea Vehicle Underwater Signatures, Silencing Systems, and Susceptibility
- Surface and Undersea Vehicle Non-Acoustic Topside Signatures, Silencing Systems, and Susceptibility
- Radiation Detection Technology Research and Management



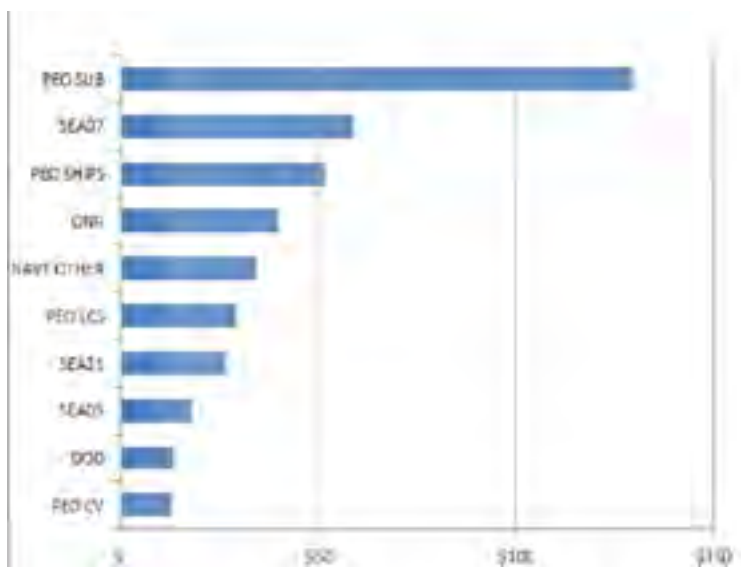
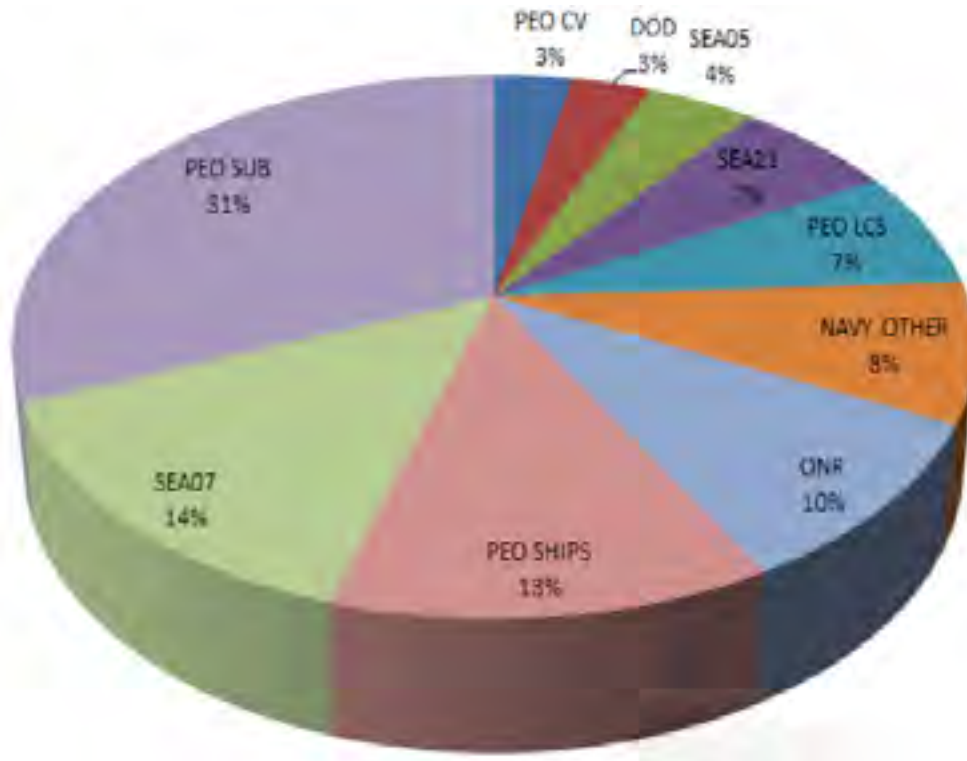
## Major facilities

- David Taylor Model Basin — West Bethesda, MD
- Maneuvering and Seakeeping Facility (MASK) — West Bethesda, MD
- Deep Submergence Pressure Tank — West Bethesda, MD
- Anechoic Flow Facility — West Bethesda, MD
- Structure Evaluation Laboratory — West Bethesda, MD
- Explosives Test Pond — West Bethesda, MD
- Ship Materials Technology Center — West Bethesda, MD
- Magnetic Fields Laboratory — West Bethesda, MD
- Acoustic Research Detachment — Bayview, ID
- Large Cavitation Channel — Memphis, TN
- Southeast Alaska Acoustic Measurement Facility (SEAFAC) — Ketchikan, AK
- South Florida Ocean Measurement Facility (SFOMF) — Fort Lauderdale, FL



# Command Profile

## Major customers and budget FY17

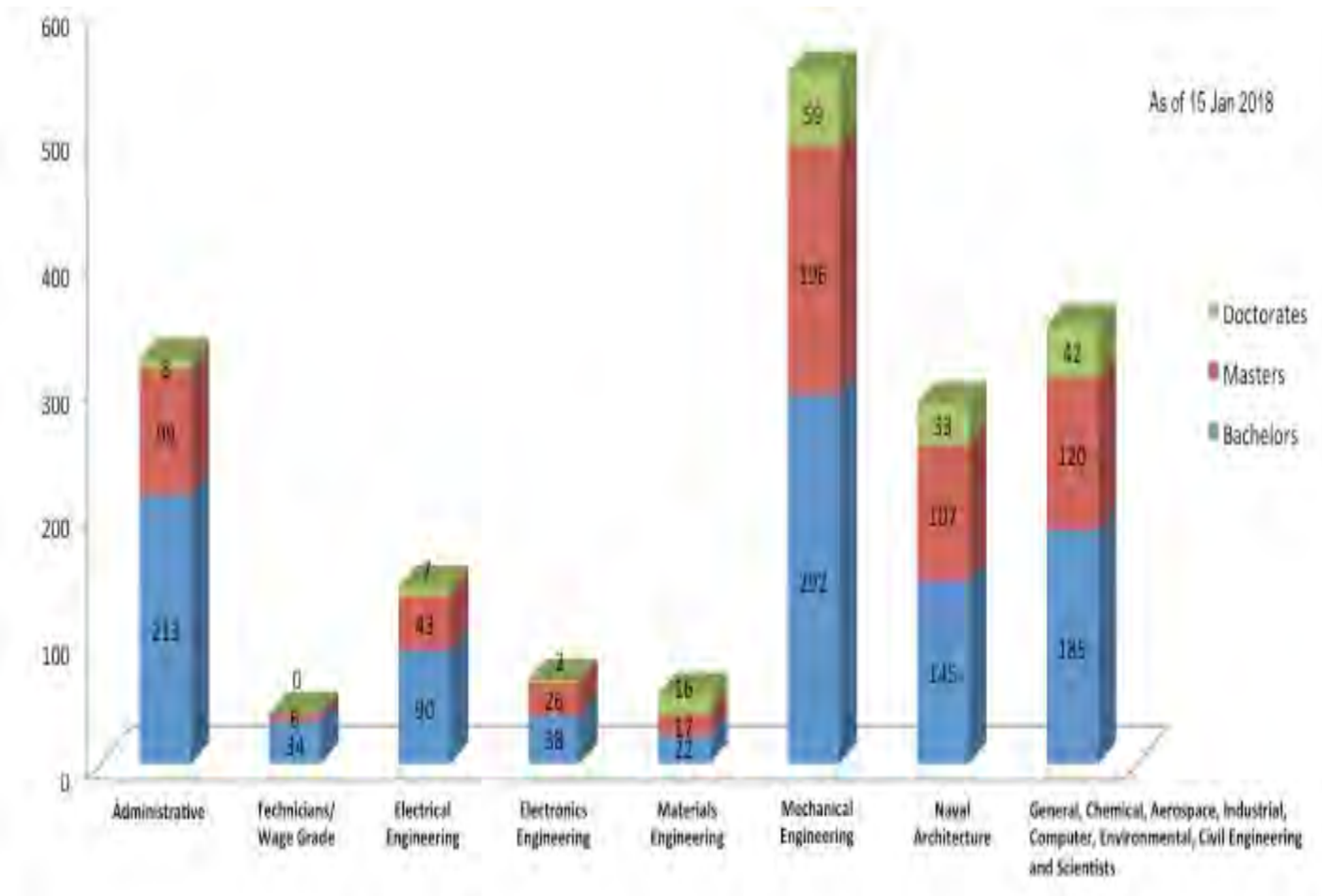


**Business  
cost reimbursable  
and direct cite total:**  
\$661 million

**Reimbursable:**  
\$499 million

**Direct cite:**  
\$162 million

# Our workforce and engineers



**Total employees: 2,206**

**Scientists and engineers:  
1,448**

**Education:**

Bachelors - 1,019

Masters - 614

Doctorate - 164

Non-degree - 406



# Command Profile



## Carderock Division Headquarters West Bethesda, Maryland

Naval Surface Warfare Center, Carderock Division is the principal Navy resource, national focal point and international leader in surface and undersea vehicle science, ship systems and related maritime technology. A major technical component of the Naval Sea Systems Command, the Division is a source of innovative technology for other national priorities such as environment, energy and transportation.

The Division is responsible for research, development, test and evaluation, fleet support, in-service engineering for surface and undersea vehicles, associated hull, machinery and electrical systems and propulsion. It conducts logistics research and development, as well as provides support to the maritime administration and the maritime industry.

The technical leadership areas of Carderock Division include materials, structures, ship protection systems, vehicle concepts, hydrodynamics, acoustic and electromagnetic signatures, environmental protection systems and logistics.



**Southeast Alaska Acoustic Measurement Facility**  
Ketchikan, Alaska



**Puget Sound Detachment at  
Naval Submarine Base Bangor**  
Bangor, Washington



**Acoustic Research Detachment**  
Bayview, Idaho



**South Florida Ocean Measurement Facility**  
Dania, Florida



**Acoustic Trials Detachment**  
Cape Canaveral, Florida



**Norfolk Detachment Combatant Craft Division**  
Norfolk, Virginia



**Memphis Detachment**  
Dr. William B. Morgan Large Cavitation Channel  
Memphis, Tennessee

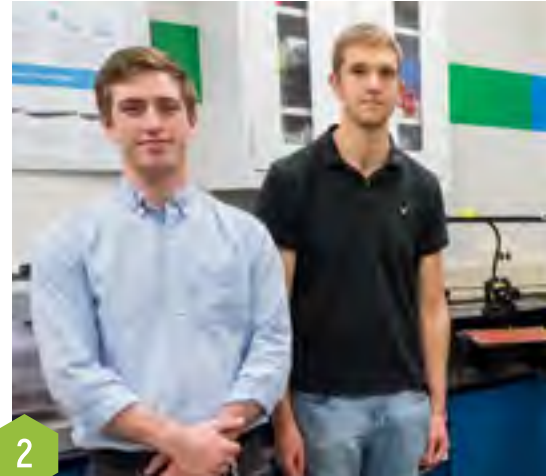


# Future of the Fleet

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# ine Corps Innovation Challenge



**1** Bryan Kessel (left), an engineer from Naval Surface Warfare Center, Carderock Division's Welding, Processing and Nondestructive Evaluation Branch, and U.S. Marine Corps 2nd Lt. Ben Lacount work together to design an ammunition rounds counter in Carderock's Manufacturing, Knowledge and Education Lab in West Bethesda, Md., Dec. 22, 2016, as part of the Marine Corps Innovation Challenge.

**4** Capt. Kyle McCarley, one of three winners of the 2016 Marine Innovation Challenge, showcases a prototype of his "Bang Bag" which is a modified field backpack that enables the warfighter to easily carry Bangalore, explosive charges used by combat engineers to clear obstacles in the field. McCarley visited Naval Surface Warfare Center, Carderock Division in West Bethesda, Md., to work on his prototype May 22-24.

**2** From left: Bryan Kessel, an engineer from Naval Surface Warfare Center, Carderock Division's Welding, Processing and Nondestructive Evaluation Branch; Alex Punzi, a mechanical engineer from Naval Surface Warfare Center, Dahlgren Division; U.S. Marine Corps Staff Sgt. Daniel Diep; Sam Pratt, an engineer with the Welding, Processing and Nondestructive Evaluation Branch; and Kevin Lin, an electrical engineer with Carderock's Advanced Power and Energy Branch gather in Carderock's Manufacturing, Knowledge and Education Lab, Feb. 8, 2017, in West Bethesda, Md.

**5** Matt Huffman (left), a naval engineer with Naval Surface Warfare Center, Carderock Division's Advanced Power and Energy Branch, tells U.S. Marine Lt. Gen. Michael Dana (second from right), deputy commandant for installation and logistics, Headquarters Marine Corps, and other visiting Marines about innovations in expeditionary solar power during a tour in West Bethesda, Md., Aug. 15, 2017.



**3** U.S. Marine Lt. Gen. Michael G. Dana, deputy commandant for installations and logistics, Headquarters Marine Corps (far left), and other visiting U.S. Marine Corps leaders in additive manufacturing watch a welding display put on by Greg Nehl, a welding engineer assigned to Naval Surface Warfare Center, Carderock Division's Welding, Processing and Nondestructive Evaluation Branch, during a tour in West Bethesda, Md., Aug. 15, 2017.

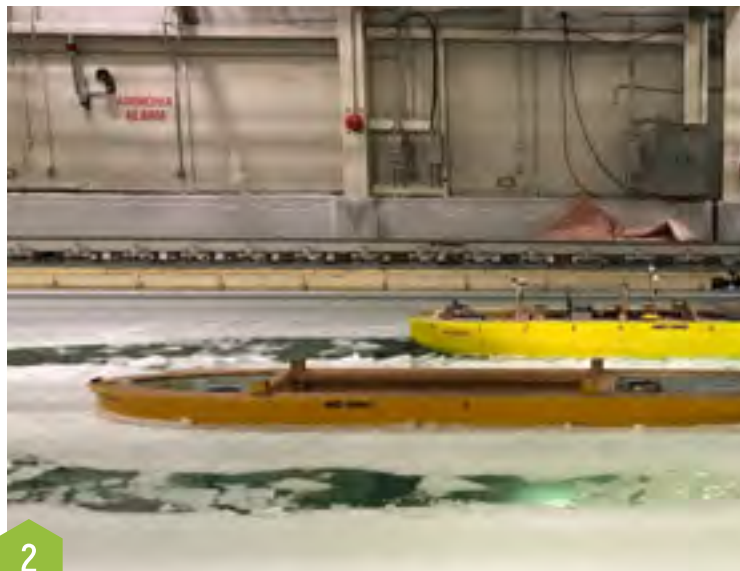
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# Future of the Fleet

# Coast



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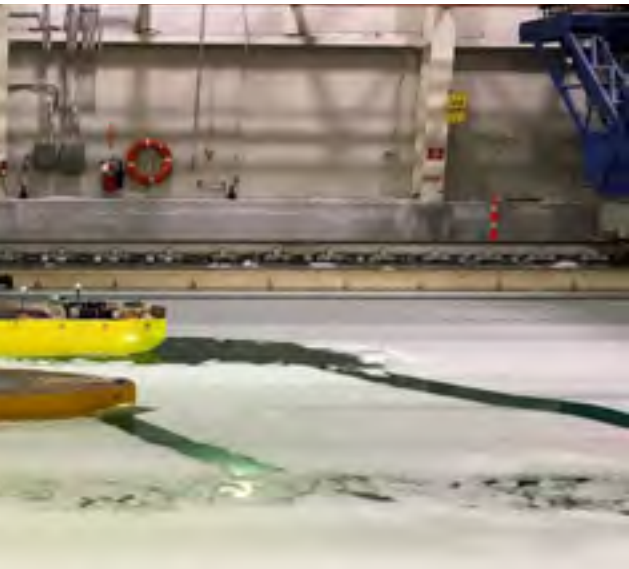
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# Guard's heavy polar ice breaker



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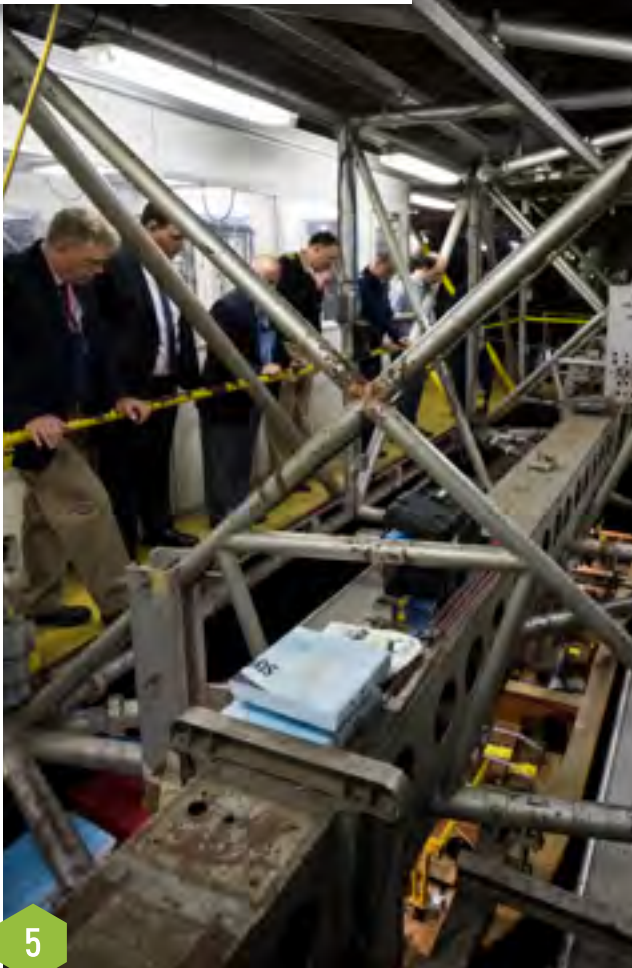
**1** Steve Ouimette (left), deputy department head for the Naval Architecture and Engineering Department at Naval Surface Warfare Center, Carderock Division, tells U.S. Coast Guard Rear Adm. Melvin Bouboulis (fourth from right), assistant commandant for engineering and logistics, other Coast Guardsmen and congressional staff about the command's Model Fabrication Facility during a tour of Carderock's headquarters in West Bethesda, Md., Oct. 24, 2017.

**2** A model icebreaker (yellow) maneuvers to free a beset vessel during a test at the National Research Council of Canada's facility in St. Johns, Newfoundland, July 26, 2017.

**3** A model icebreaker demonstrates its maneuverability during a test at the National Research Council of Canada's facility in St. Johns, Newfoundland, July 26, 2017.

**4** Coast Guard Rear Adm. Michael Haycock (third from right) and congressional staff get briefed by Capt. Mark Vandroff about testing on the Coast Guard's next heavy polar ice breaker at Naval Surface Warfare Center, Carderock Division in West Bethesda, Md., Oct. 24, 2017.

**5** Coast Guard Adm. Charles Michel (second from right) gets an overview of design model testing for the Coast Guard's heavy polar icebreaker in the David Taylor Model Basin on Nov. 27, 2017, at Naval Surface Warfare Center, Carderock Division, in West Bethesda, Md.



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# Future of the Fleet



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**1** From left: Dung Su, Frank Neukam, Sam Pratt, Jonathan Hopkins, Keith Brennan and Ryan Franke, all employees with Naval Surface Warfare Center (NSWC), Carderock Division display additively manufactured aviation parts they rapidly produced in a first-of-its-kind response to a critical fleet need in West Bethesda, Md., May 31, 2017. Carderock engineers collaborated with other commands from the Additive Manufacturing Warfare Center Working Group, including NSWC Indian Head and NSWC Dahlgren and Combat Directions Systems Activity Dam Neck, to fulfill a request from Naval Air Systems Command for parts to restore stalled training operations for the T-45 Goshawk.

**2** Dr. Jonathan Tu discusses the benefits of using big data with department heads, engineers and other leadership at a brown bag at Naval Surface Warfare Center, Carderock Division in West Bethesda, Md., June 28, 2017.

**3** Samuel Pratt (left), an engineer with the Additive Manufacturing Project Office at Naval Surface Warfare Center, Carderock Division, teaches Office of Naval Research program managers (from left after Pratt) Dr. Jennifer Wolk, Stephen Glotzhofer, Dr. Airan Perez and Dr. David Drumheller how to use a recently installed 3-D printer Oct. 19, 2017, in Arlington, Va.

**4** Garth Jensen, director for innovation at Naval Surface Warfare Center, Carderock Division, briefs the Singularity Massive Multiplayer Online Wargame Leveraging the Internet workshop Aug. 15, 2017, on the results of the MMOWGLI game at the Naval Postgraduate School in Monterey, Calif.

**5** Joseph Curran (right), an ocean engineer with the Welding, Processing and Nondestructive Evaluation Branch at Naval Surface Warfare Center Carderock, Division, explains how to use the HoloLens to Henry Molintas, a mechanical engineer in Carderock's Propulsor Manufacturing Office, on Dec. 5, 2016, in West Bethesda, Md.

**6** Garth Jensen, walks through steps of a process using human-centered design methods at a training session Jan. 12, 2017, in West Bethesda, Md. Twenty Carderock employees from across the command attended the three-day training class conducted by the Office of Personnel Management staff to learn about human-centered design and propose ideas to the question "How might we improve the free flow of communication in every direction: top-down, bottom-up and peer to peer?"

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# Future of the Fleet

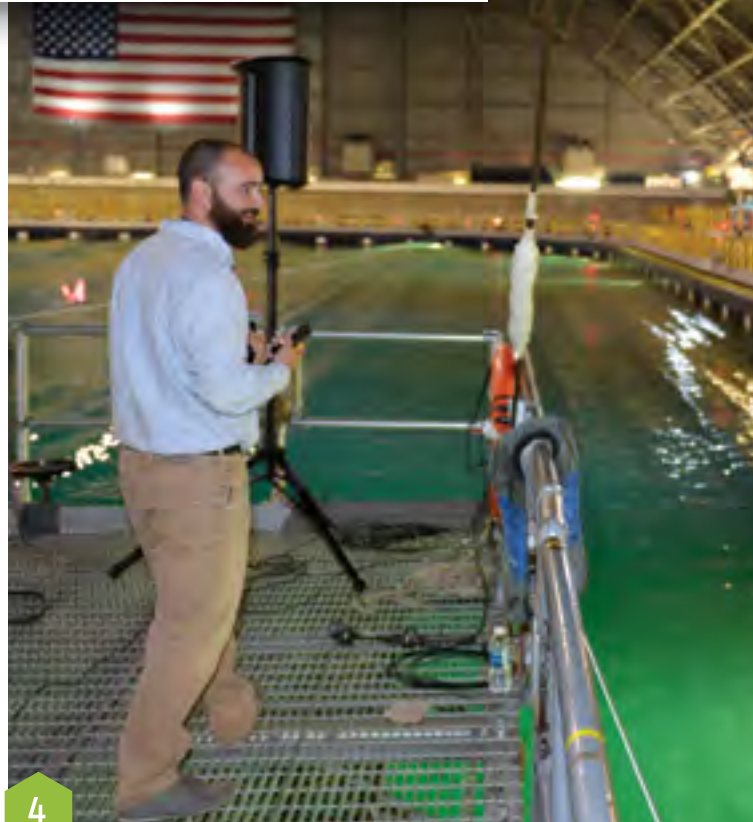
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**1** From left: Naval Surface Warfare Center, Carderock Division's William Golumbskie, materials science engineer in the Physical Metallurgy and Fire Branch of the Materials and Manufacturing Technology Division; Daniel Hart, aerospace engineer in Carderock's Survivability and Weapons Effects M&S Program Office; and materials engineer Daniel Stiles attend the Surface Navy Association's 29th National Symposium at the Hyatt Regency hotel in Crystal City, Va., Jan. 10, 2017.

**2** Dr. Alex Gray (center), team lead for the Future Ship and Submarine Tools Branch at Naval Surface Warfare Center, Carderock Division, takes questions as Carderock's Technical Director Dr. Tim Arcano (right) and Combatant Craft Division Site Director Kip Davis (left) listen during a panel at the 2017 American Society of Naval Engineers Technology, Systems and Ships Day in Crystal City, Va., Feb. 15, 2017.

**3** Capt. Mark Vandroff, commanding officer, Naval Surface Warfare Center, Carderock Division, speaks during the Surface Navy Association's 29th National Symposium in Crystal City, Va., Jan. 10, 2017.

**4** Miguel Quintero, an ocean engineer at Naval Surface Warfare Center, Carderock Division, gives a demonstration in the Maneuvering and Seakeeping Basin to attendees of the 30th American Tow Tank Conference on Oct. 4, 2017, in West Bethesda, Md.

# Future of the Fleet







**3** Faculty and students from Old Dominion University in Norfolk work with engineers from Naval Surface Warfare Center, Carderock Division's Combatant Craft Division to build an unmanned surface vehicle on July 22, 2017. From right to left, counter-clockwise: Dr. Yiannis Papelis, ODU; Nathan Sivertson, Carderock; Lawrence Michelon, Carderock; Chris Powell, ODU; Joseph Lemanski, ODU; and, David Colburn, Carderock.

**4** Lt. Col. William P. Dobbins, an engineer for U.S. Marine Corps Forces Command, watches a demonstration and test kickoff of the first logistics fuel compatible renewable-hybrid Solid Oxide Fuel Cell system Jan. 26, 2017, at Naval Surface Warfare Center, Carderock Division in West Bethesda, Md.

**1** Miguel Quintero, an ocean engineer assigned to Naval Surface Warfare Center, Carderock Division's Model and Testing Branch for Surface Ships, records and analyzes data collected from a wave energy converter being tested in the command's Maneuvering and Seakeeping Basin in West Bethesda, Md., Aug. 3, 2017. This WEC test was the second of its kind done as a knowledge share in collaboration with engineers from Sandia National Laboratory in the MASK as part of an effort to increase the efficiency and amount of power generated and collected by these devices.

**2** From left: Virginia Military Institute cadets Austin Roes; Tyler Corcoran; and Brandon Conley with Jonathan Holbert, a naval architect in Naval Surface Warfare Center, Carderock Division's Center for Innovation in Ship Design; pose for a picture in front of a Small Unit Riverine Craft at the V-47 waterfront facility at the Combatant Craft Division in Norfolk, Virginia.



# Future of the Fleet

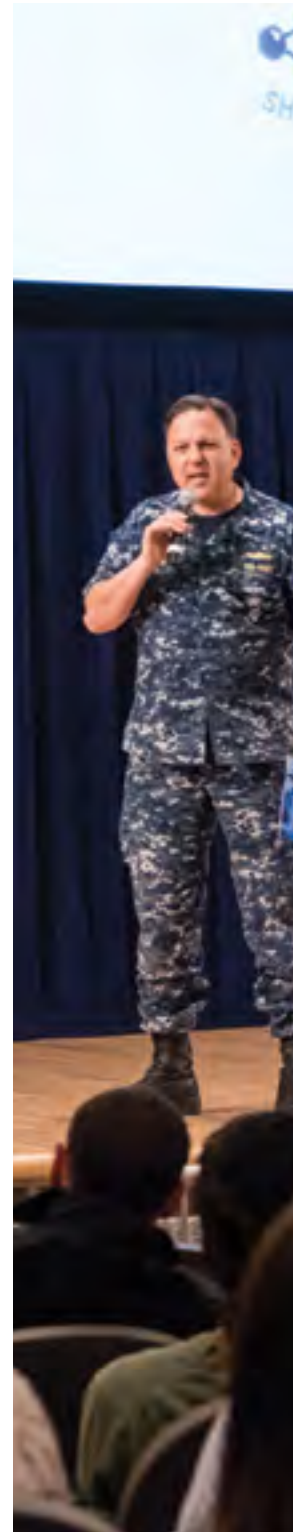
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Expand the Advantage



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**1** Rick Rhodes (front) from the Office of the Chief of Naval Operations (Air Warfare (N98), participates in the Deputy Assistant Secretary of the Navy for Unmanned Systems Facilities Roadmap workshop Sept. 19, 2017, at Naval Surface Warfare Center, Carderock Division in West Bethesda, Md.

**2** Carderock Commanding Officer Capt. Mark Vandroff speaks to employees at an all-hands meeting about the Naval Sea Systems Command Campaign Plan to Expand the Advantage on April 19, 2017, in West Bethesda, Md.

**3** Tamar Gallagher (front), head of the Corporate Operations Department, and Mike Brown, head of the Survivability, Structures, Materials and Environmental Department, sign their names to the "Expand the Advantage" Campaign Plan poster April 19, 2017, in West Bethesda, Md.

**4** Employees from across the Department of the Navy interested in unmanned systems discuss potential training and test ranges and facilities during the Deputy Assistant Secretary of the Navy for Unmanned Systems Facilities Roadmap workshop at Naval Surface Warfare Center, Carderock Division's West Bethesda, Md., headquarters Sept. 19-20, 2017.



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# Future of the Fleet







**1** Engineers from Naval Surface Warfare Center, Carderock Division launch an unmanned surface vehicle in Triadelphia Reservoir near Brighton Dam in Brookville, Md., that will function as a relay for an unmanned underwater vehicle conducting bathymetry in the reservoir Sept. 28, 2017. Staff from the Naval Meteorological and Oceanography Command controlled the collaborative autonomous demonstration via satellite connection from their headquarters at John C. Stennis Space Center, Mississippi, with assistance from the Autonomous Vehicle and Instrumentation Group and other Carderock personnel. Front row, from left: electrical engineer Ben Gordon, control systems engineer Matt Greytak and mechanical engineer Kyle Coffman. Back row, from left: electrical engineer Woody Pfitsch, program officer Judah Milgram, hardware engineer Alex Punzi and group leader Jim Rice.



**2** Naval Surface Warfare Center, Carderock Division Assessment and Identification of Mine Susceptibility system team member and barge crew working diligently to recover sensors from the ocean floor.

**3** Ben Gordon and Kyle Coffman, engineers assigned to Naval Surface Warfare Center, Carderock Division's Autonomous Vehicle and Instrumentation Group, supervise a joint integrated autonomous demonstration being run remotely by colleagues from the Naval Oceanographic Office in John C. Stennis Space Center, Mississippi, from the control room at the Triadelphia Reservoir in Brookeville, Md., Sept. 27, 2017.

**4** Dr. Dan Edwards, an aerospace engineer from the Naval Research Laboratory, shows employees of Naval Surface Warfare Center, Carderock Division, a mockup of the buoyancy engine mechanism used in the Flying Sea Glider vehicle during a presentation at the West Bethesda, Md., headquarters Dec. 4, 2017.

**5** The Flying Sea Glider vehicle glides underwater in the Naval Research Lab's Laboratory for Autonomous Systems during testing in October 2017.





# Winners' Circle

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**1** Allison Stiller, left, assistant secretary of the Navy for research, development and acquisition, is joined by Dr. Delores M. Etter as they present the 2016 Dr. Delores M. Etter Top Scientists and Engineers Award for Individual Scientists to Dr. Matthew Craun, Naval Surface Warfare Center, Carderock Division, during a ceremony July 13, 2017, at the Pentagon.

**2** Kevin McMahon from the Onboard Signatures and Fleet Support Branch receives the fleet support award March 7, 2017, at the Naval Surface Warfare Center, Carderock Division, in West Bethesda, Md. Dr. Tim Arcano (left), technical director, stands with McMahon, Dr. Paul Shang, head of the Ship Signatures Department and Capt. Mark Vandroff, commanding officer.

**3** Naval Surface Warfare Center, Carderock Division Commanding Officer Capt. Mark Vandroff and Technical Director Dr. Tim Arcano present Matthew Lewis, head for the Cost Effectiveness Branch, with a letter of appreciation April 13, 2017, in West Bethesda, Md. The letter was from the branch head for the Shipbuilding and Conversion, Navy, programming division for Lewis' outstanding achievement and dedication in the execution of all assignments during his three-month rotation in support of the SCN manager and the entire division, which included assisting in finalizing the Department of the Navy budget estimate submission for 2018.



**4** Allison Stiller, left, assistant secretary of the Navy for research, development and acquisition, is joined by Dr. Delores M. Etter as they present the 2016 Dr. Delores M. Etter Top Scientists and Engineers Award for Emergent Scientist Investigators to Dr. Brian Glover, Naval Surface Warfare Center, Carderock Division, during a ceremony July 13, 2017, at the Pentagon.

**5** Dr. John Gilbert from the Hull Response and Protection Branch receives the High Performance Computing Modernization Program Hero Award on March 7, 2017, at the Naval Surface Warfare Center, Carderock Division, in West Bethesda, Md. Dr. Tim Arcano (left), technical director, stands with Gilbert, Dr. Kevin Newmeyer, chief of staff for DOD's HPCMP, and Capt. Mark Vandroff, commanding officer.

**6** Naval Surface Warfare Center, Carderock Division's Human Resources Division accepts the Team Award for Excellence, Innovation and Collaboration during the command awards ceremony March 7, 2017, in West Bethesda, Md.

# Winners' Circle

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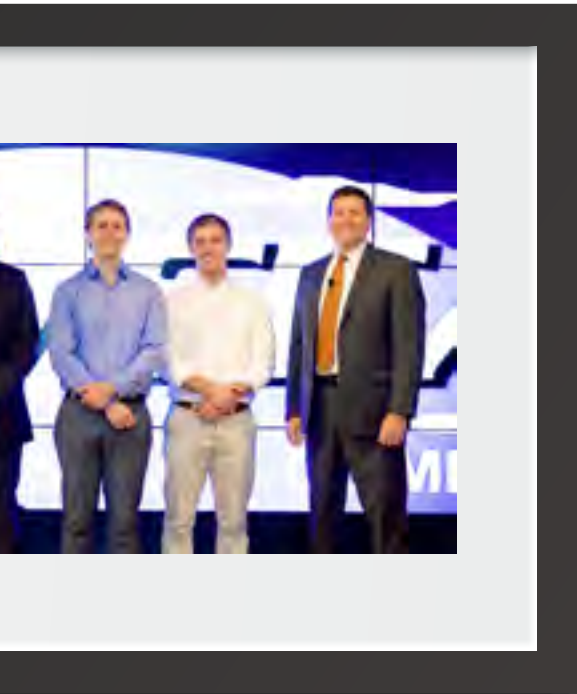


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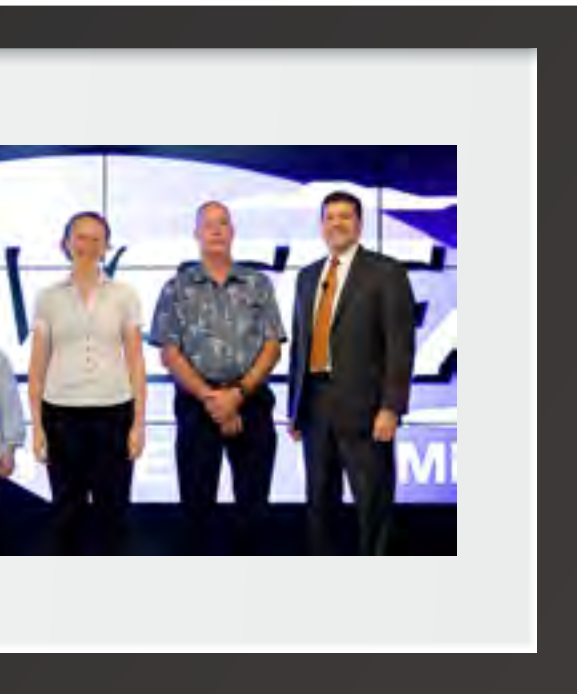


# NAVSEA Awards



**1** Vice Adm. Tom Moore, left, commander, Naval Sea Systems Command, and Mr. Jim H. Smerchansky, far right, NAVSEA executive director, present a 2017 NAVSEA Team Excellence Award to Naval Surface Warfare Center, Carderock Division's Virginia Class Block III Forward Structural Issue Sensor Installation and Analysis Team during an award ceremony in at the Washington Navy Yard. With Moore and Smerchansky, from left are Michael Hultberg, Kelly Parker, James Sracic, John Wagner, Darrell Garrison, Andrew Kucerovy and Brandon Stanley.

**2** NAVSEA Commander Vice Adm. Tom Moore, left, and NAVSEA Executive Director Mr. Jim H. Smerchansky, far right, present a 2017 NAVSEA Commander's Award for Innovation to Jonathan Hopkins, Michael Britt-Crane and Bryan Kessel, members of NSWC, Carderock Division's Manufacturing, Knowledge and Education Lab Team at the Washington Navy Yard, July 19.



**3** NAVSEA Commander Vice Adm. Tom Moore, left, and NAVSEA Executive Director Jim H. Smerchansky, far right, present members of Naval Surface Warfare Center, Carderock Division's Disruptive Technologies Laboratory and their partners with a 2017 NAVSEA Commander's Award for Innovation at the Washington Navy Yard, July 19, 2017. This team created the largest 3-D printed naval asset ever, a proof-of-concept hull print for the Optionally Manned Technology Demonstrator.

**4** NAVSEA Commander Vice Adm. Tom Moore, left, and NAVSEA Executive Director Mr. Jim H. Smerchansky, far right, present members of NSWC, Carderock Division's Radar Cross Section Measurement System Upgrade Simultaneous Data Collection Team a 2017 NAVSEA Commander's Award for Innovation at the Washington Navy Yard, July 19, 2017. With Moore and Smerchansky, from left are Laurel Martin, Heather Barden and Bruce Crock.

# Winners' Circle

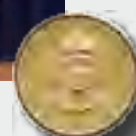
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**JaeLee Waldschmidt**  
Vice Adm. Samuel L. Gravely Jr. Award

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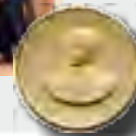
**Christine Mitchell**  
Rear Adm. Grace M. Hopper Award (tie)

4



**The Uniform National Discharge Standards Team**  
Vice Adm. Emory S. Land Award

5



**The Littoral Combat Ship Full-Ship Shock Trials Team**  
Benjamin F. Isherwood Award

7



**Richard Loeffler**  
Capt. Harold E. Saunders Award

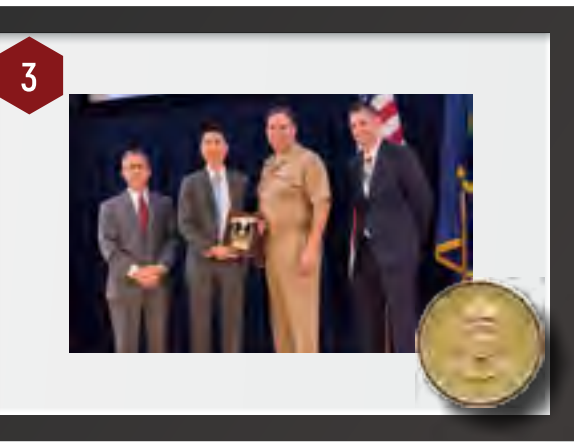
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**Lawrence Michelin**  
Rear Adm. George W. Melville Award



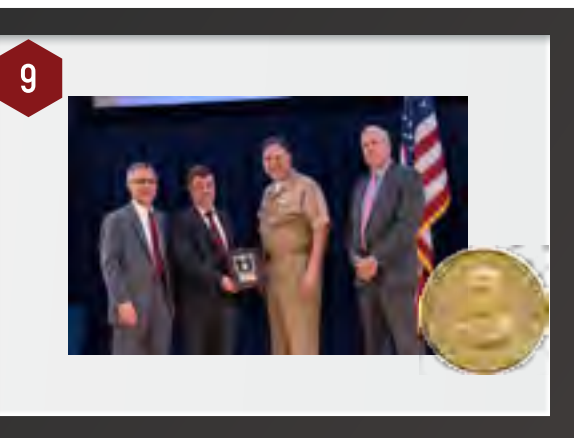
# Carderock Division Honors Awards



**Ji Kim**  
**Rear Adm. Grace M. Hopper Award (tie)**



**The Warfare Center Test and Evaluation Directors  
Collaboration Working Group**  
**Donald F. McCormack Award**



**Dr. Vadim Belenky**  
**Rear Adm. David W. Taylor Award**

**1** Gravely award (from left  
Technical Director Dr.  
Tim Arcano, Waldschmidt,  
Commanding Officer Capt.  
Mark Vandroff and Naval  
Architecture and Engineering  
Department Head Mike  
Brown.

**2** Hopper award (from left)  
Arcano, Kim, Vandroff and  
Comptroller Eric Stone.

**3** Hopper award (from left)  
Arcano, Mitchell, Vandroff  
and Contracting and Acquisition  
Department Head Tariq Al-  
Agba.

**4** Land award team members  
are John Black, Amanda  
Blumenthal, Robert (Larry)  
Burgess, Alan Cohn, Andrew  
Corbishdale, Jaime Corzo,  
Lana Craig, Tom Douglas,  
Rocco Gabriele, Randall  
Goodnight, William Gottwald,  
Jon (Matt) Grassman, Richard  
(Christian) Henes, David  
Ingler, Roy Javier, Bradley  
Klenow, Brandon Laing, Paul  
Lara, Gregory Lawrence, Paul  
Mantz, Timothy McGee, Mary  
Meares, Brian Mills, Devin  
Murphy, Charles Nelatury, Nick  
Nichols, Laurence O'Neill,  
Thaddeus Pryor, George  
Robinson, Jonathan Ruffa,  
Steven Rutgerson, Carrie Sell,  
Matthew Strawbridge, Henry  
(Joseph) Venne, Charles  
Westmoreland, Siobhan  
Williams, Sean Wills, William  
Wolfe and Joshua Yates.

**5** Isherwood award (from left)  
Arcano; Christine Park;  
Rachel Jacobs; Toby Cole;  
Dr. Eric Holm; Rita Schuh;  
Gordon Smith; Vandroff;  
and Survivability, Structures,  
Materials and Environmental  
Department Head (Acting)  
Ross Hempel. Not pictured  
are Cindy Chen and Leslie  
DeMichele.

**6** McCormack award (from  
left) Arcano; Naval Surface  
Warfare Center Deputy  
Executive Director Ana  
Gulian; NSWC Carderock:  
Paul Luehr and Michael  
Marsh; NSWC Crane: Brent  
Voigtschild; NUWC Newport:  
Eric Spigel; and NSWC Port  
Hueneme: Marcos Gonzales;  
Carderock Ship Signatures  
Department Head Dr. Paul  
Shang; and Vandroff.

**7** Saunders award (from left)  
Arcano, Loeffler, Vandroff  
and Shang.

**8** Melville award (from left)  
Arcano, Michelin, Vandroff  
and Brown.

**9** Taylor award (from left)  
Arcano, Belenky, Vandroff  
and Brown.

# Notable Visits

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**1** Retired Air Force Col. Victoria Bowens, director of diversity and inclusion management for the Department of the Navy, speaks at the Women's History Month during an observance held in Naval Surface Warfare Center, Carderock Division's Melville-Taylor Auditorium in West Bethesda, Md., March 30, 2017.

**2** Dr. Michelle Skoorka, the Office of Naval Research's director of laboratory research and internships, briefs about ONR programs that fund basic and applied research and workforce development and how to take advantage of them during a recent visit March 21, 2017, to Naval Surface Warfare Center, Carderock Division in West Bethesda, Md.

**3** Leadership from Naval Surface Warfare Center, Carderock Division and members of the Maryland Technology Alliance spend the morning on Capitol Hill on May 2, 2017, for a breakfast with representatives of Maryland's congressional delegation.

**4** Tim Smith (left) explains some DDG 51 Flight III testing to visiting Senate staff at Naval Surface Warfare Center, Carderock Division in West Bethesda, Md., on Feb. 10, 2017.

**5** Stephan Verosto (left) discusses work at the Ballast Water Research Lab at Naval Surface Warfare Center, Carderock Division in West Bethesda, Md., Feb. 10, 2017, with staff visiting from Sen. Ben Cardin of Maryland's office.

**6** Senate Appropriations Committee staff at the David Taylor Model Basin at Naval Surface Warfare Center, Carderock Division in West Bethesda, Md., Feb. 3, 2017.

**7** Senate Appropriations Committee staff in front of the Deep Submergence Pressure Tank at Naval Surface Warfare Center, Carderock Division in West Bethesda, Md., Feb. 3, 2017.

**8** A Virginia-class submarine free-running model is the backdrop as U.S. Sen. Ben Cardin's defense policy advisor Stephen Ham (foreground) is briefed by Steve Ouimette (far right) and Sam Cabbage (second from right) at Naval Surface Warfare Center, Carderock Division, in West Bethesda, Md., Feb. 10, 2017.

**9** Stephanie Ferrone (right), a physicist with the Electromagnetics Sensors and Technology Branch, talks with Commandant, Naval District Washington, Rear Adm. Charles "Chip" Rock about Carderock's electromagnetic facility during a tour of Carderock in West Bethesda, Md., Jan. 23, 2017.

# Notable Visits

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**1** Charlotte George (left), a naval architect with Carderock's Center for Innovation in Ship Design, briefs Maryland Lt. Gov. Boyd Rutherford (right) Aug. 21, 2017, about the International Human-Powered Submarine Races, which take place at Naval Surface Warfare Center, Carderock Division, in West Bethesda, Md.

**2** Bryan Kessel (left) and Jonathan Hopkins (right), both engineers with Carderock's Additive Manufacturing (AM) Program Office, explain Carderock's AM program to Maryland Lt. Gov. Boyd Rutherford (center) during his visit to the West Bethesda, Md. headquarters, Aug. 21, 2017.



**3** U.S. Rep. Jamie Raskin (MD-08) (second from right) hears about the capabilities of Naval Surface Warfare Center, Carderock Division's Electromagnetic Facility from Stephanie Ferrone (right), a physicist with the Electromagnetic Sensors and Technology Branch, during a tour at Carderock's West Bethesda, Md., headquarters Sept. 20, 2017.

**4** Rear Adm. Gary Mayes (center), commander, Navy Region Northwest, and Capt. Keith Eitner (right), Navy emergency preparedness liaison officer for Idaho, visit Naval Surface Warfare Center, Carderock Division's Acoustic Research Detachment in Bayview, Idaho, May 22, 2017.

**5** Naval Surface Warfare Center, Carderock Division patent attorneys in Carderock's Office of Counsel, Charles Buskey (far left), Howard Kaiser (fifth from left) and Dave Ghatt (back

right), accompany Naval Sea Systems Command summer law clerks on a tour of the Model Surfacing and Finishing Shop in West Bethesda, Md., led by Steve Ouimette, deputy director of the Naval Architecture and Engineering Department (far right), July 31, 2017.

**6** Dr. Steve Potashnik, head of Naval Surface Warfare Center, Carderock Division's Underwater Electromagnetic Sensors and Technology Branch, shows midshipmen from the U.S. Naval Academy the magnetometer array that is used to assess the magnetic signature of Navy ship models during a tour Oct. 18, 2017, in West Bethesda, Md.

**7** A U.S. Navy Sailor gives Naval Surface Warfare Center, Carderock Division employees and interns tour the flight deck of USS Dwight D. Eisenhower (CVN 69) aircraft carrier as part of a "Meet the Fleet" visit to Naval Station Norfolk, June 11, 2017.

**8** National talk-show host Hugh Hewitt (center) tours Naval Surface Warfare Center, Carderock Division's model shop in West Bethesda, Md., with Commanding Officer Capt. Mark Vandroff and Naval Architecture and Engineering Deputy Department Head Steve Ouimette, July 6, 2017.

**9** Deputy Assistant Secretary of the Navy for Research, Development, Test and Evaluation Bill Bray tours the Manufacturing, Knowledge and Education Lab during a visit to Naval Surface Warfare Center, Carderock Division in West Bethesda, Md., Oct. 5, 2017.



# Cultivating Our Workforce



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**2** Lt Cmdr. Jon Burrow watches as Buddy Beavers, assistant program manager for policy and competency for Naval Sea Systems Command Chief Information Office, places a sticky note on the board as their team gathers data and maps out a process for finding the best way to accurately fire and deliver balls from a statapult within a short time frame. This was part of a Lean Six Sigma green-belt course held Jan. 30-Feb. 3, 2017, at Naval Surface Warfare Center, Carderock Division in West Bethesda, Md.

**3** Thaddeus Pryor, computer engineer, fires a ball from his statapult during a Lean Six Sigma green-belt training class Feb. 1, 2017, at Naval Surface Warfare Center, Carderock Division in West Bethesda, Md.

**4** Capt. Mark Vandroff (left), Naval Surface Warfare Center, Carderock Division commanding officer, re-enlists Aviation Electronics Technician 3rd Class Adam Wallmark for four more years in the U.S. Navy in West Bethesda, Md., Aug. 25, 2017.

**5** Lt. Cmdr. Jon Burrow (center) presents the Sailors working at Naval Surface Warfare Center, Carderock Division, to Commanding Officer Capt. Mark Vandroff during an awards presentation, Feb. 28, 2017.

**6** Sailors aboard guided-missile destroyer USS Mahan (DDG 72) give a tour of the ship to the Business Operations Team of Naval Surface Warfare Center, Carderock Division on Oct. 26, 2017, while they were in Norfolk for an off-site meeting.



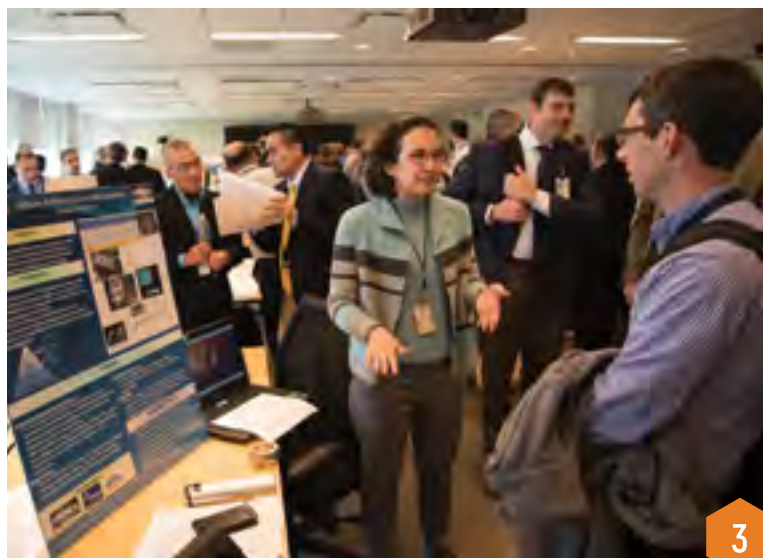
**1** U.S. Navy Reserve Sailors stationed at Naval Surface Warfare Center, Carderock Division during 2017 for at least one year of "deployed" service to assist Carderock with the Base Inventory Tracking System project, Enterprise Resource Planning Asset Inventory and other special projects. From left, bottom row: OSSN Senait Harris, YNC Jerri Andrew, OS2 MacKenzie Woodford, YN1 Arnuflo Obando, EN2 Trinea Wilson and AT3 Adam Wallmark; Middle row: MA2 Class Anna Rucker, MA3 Brittany Lavan, CTTSN Aaron Sena, IT2 Jaime Trujillo, YN2 Max Rosenkrantz and ET1 Curtis Mahaley; Back row: Lt. Cmdr. Jon Burrow, YN1 Marcelo Ordonez and LS3 Kojdo Noviho.

# Cultivating Our Workforce

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**2** Ben Bouffard (left), additive manufacturing lead and mechanical engineer in the Materials and Manufacturing Technology Division, talks about Naval Surface Warfare Center, Carderock Division's AM capabilities at the AM Technical Action Team kickoff held at Carderock's headquarters in West Bethesda, Md., March 29, 2017.

**3** Dr. Daphne Fuentevilla, a chemical engineer and power system specialist in the Advanced Power and Energy Group at Naval Surface Warfare Center, Carderock Division, describes her NISE 219 project for determining lithium battery failure mechanisms in order to improve failure mitigation technologies to an attendee of the NISE Technical Exchange Meeting, held Feb. 28, 2017, at Carderock's headquarters in West Bethesda, Md.



**1** Chief of Naval Research Rear Adm. David Hahn listens as Garry Shields (left), head of Naval Surface Warfare Center, Carderock Division's Disruptive Technologies Laboratory, describes the Optionally Manned Technology Demonstrator Big Area Additive Manufacturing test article, which is a 30-foot-long, proof-of-concept hull print modeled after a SEAL delivery vehicle. Hahn was at Carderock's headquarters in West Bethesda, Md., on Feb. 28, 2017, for the annual Naval Innovative Science and Engineering Technical Exchange Meeting. Alex Askari (far right) and Ray Alexander, both from Carderock, work with Shields in the DTL.

**4** Deputy Assistant Secretary of the Navy for Research, Development, Test and Evaluation Dr. John Burrow (left) speaks with Eduardo Danganan from Naval Air Systems Command and Karen Frech from Naval Air Warfare Center – Aircraft Division during the poster session March 1, 2017, at the annual NISE Technical Exchange Meeting, held at Naval Surface Warfare Center, Carderock Division in West Bethesda, Md.

**5** Naval Surface Warfare Center, Carderock Division engineers explore some projects created using additive manufacturing at the AM Technical Action Team kickoff held at Carderock's headquarters in West Bethesda, Md., March 29, 2017.

# Cultivating Our Workforce

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**1** Dr. John Fiore (left), technical director for Naval Surface Warfare Center, Dahlgren Division, listens as Harry Whittaker (right), the team lead for NSWC Carderock Division's Sailor Performance Support Technology, and Kevin Lin, a member of Carderock's Disruptive Technologies Lab, demonstrate prototypes created for the Big Area Additive Manufacturing Test Article of the Optionally Manned Technology Demonstrator during the 3-D Print-a-Thon, an event hosted by the Navy at the Pentagon on March 15, 2017.

**2** Garry Shields (right), director of Carderock's Disruptive Technologies Lab, tells visitors about the Optionally Manned Technology Demonstrator during the Sea-Air-Space Exposition on April 4, 2017, at National Harbor, Md.

**3** Kevin Lin (left), an electrical engineer and member of Naval Surface Warfare Center Carderock Division's Disruptive Technologies Lab, stands with Ricky Moore from NSWC Dahlgren Division at their booths April 4, 2017, during the Sea-Air-Space Exposition.

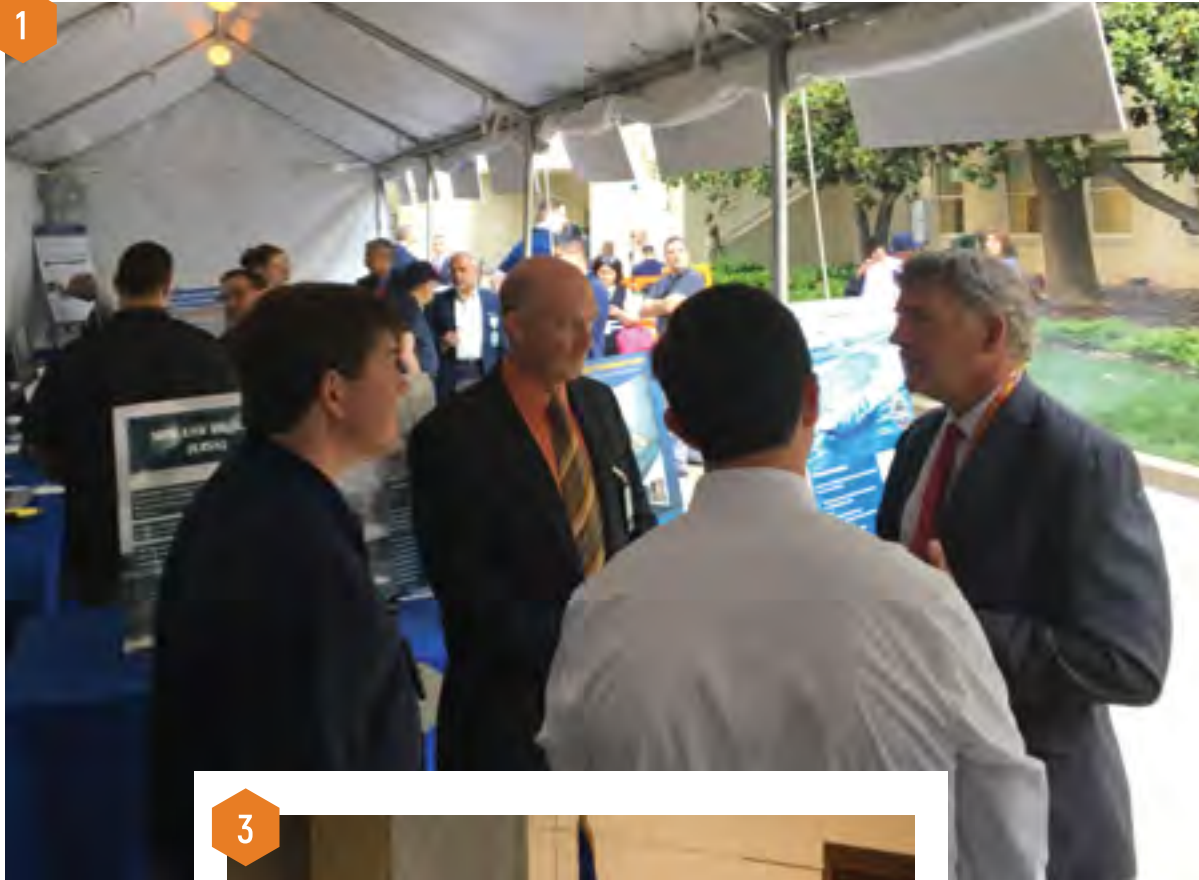
**4** Danielle Kolber (right), an engineer with NSWC Carderock Division's Center for Innovation in Ship Design, speaks with Kevin Cochran, a mechanical engineer with NSWC Indian Head Explosive Ordnance Disposal Technology Division's Systems Engineering Department during the Sea-Air-Space Exposition, April 4, 2017.



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# Cultivating Our Workforce

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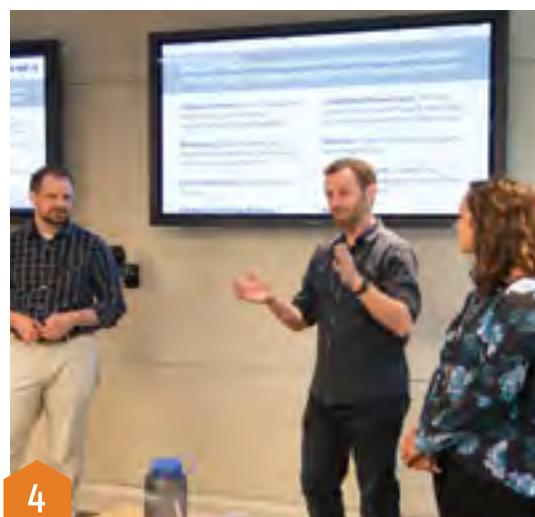
**1** Dr. John Burrow (right), deputy assistant secretary of the Navy for research, development, test and evaluation, talks with Combatant Craft Division's John Phillips (back to camera), Scott Petersen (left) and Dennis Danko during the DOD Lab Day 2017 on May 18 at the Pentagon courtyard. The CCD team represented Naval Surface Warfare Center, Carderock Division at the biennial event.

**2** Mary Miller, acting assistant secretary of defense for research and engineering, meets Combatant Craft Division's (from left) Scott Petersen, John Phillips and Dennis Danko during a pre-event walk-through May 17 for DOD Lab Day 2017 at the Pentagon courtyard May 18.

**3** Reid McAllister, Naval Surface Warfare Center, Carderock Division's director of unmanned vehicles and autonomous systems, discusses high-velocity learning during a brown bag at Carderock's West Bethesda, Md., headquarters Aug. 9, 2017.

**4** Dr. Tom Marino, an engineer in Carderock's Corporate Business Office, discusses HVL at his second brown bag on the subject in West Bethesda, Md., May 16, 2017.

# Cultivating Our Workforce



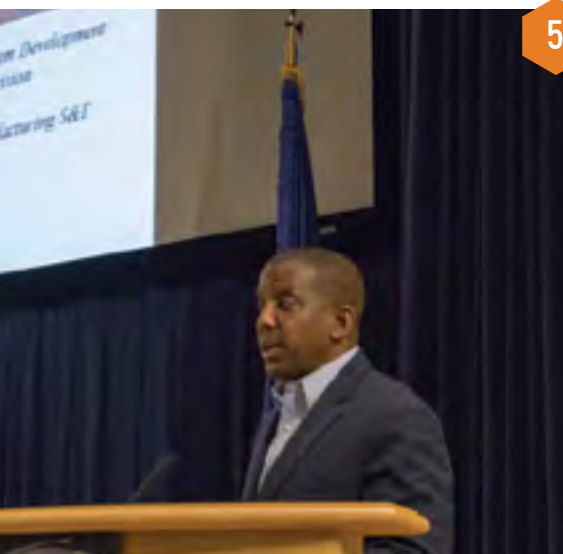




**1** Dr. Jenn Wolk, a program officer with the Office of Naval Research; John Carney, director of the Navy Manufacturing Technology Program; and Dr. Jason Jouet, manager of the High Energy Materials Branch at Naval Surface Warfare Center, Indian Head Division, listen to project presentations from engineers and scientists at Naval Surface Warfare Center, Carderock Division during the third phase of the Technical Director's Innovation Challenge, April 3, 2017.

**5** Johnnie Deloach, Naval Surface Warfare Center, Carderock Division's Materials and Manufacturing Technology Division head, presents his and Dave Sudduth's "Shark Tank" type approach to funding innovation during the Technical Director's Innovation Challenge outbriefs in West Bethesda, Md., June 1, 2017.

**6** Garth Jensen (right, front), Naval Surface Warfare Center, Carderock Division's director of innovation, briefs Carderock employees interested in taking part in the Technical Director's Innovation Challenge during a brown bag in West Bethesda, Md., May 11, 2017.



**2** Members of the Naval Surface Warfare Center, Carderock Division fiscal year 2018 Leadership Education and Development Program listen as some of Carderock's senior leaders talk about their career experiences during a mentor-matching session Nov. 15, 2017, at the West Bethesda, Md., headquarters.

**7** Graduates of the fiscal year 2017 LEAD Program and members of fiscal year 2018 class at Naval Surface Warfare Center, Carderock Division pose after planning this year's activities in West Bethesda, Md., Oct. 2, 2017. From left: Manik Anand ('18), Eric Silberg ('18), Chris Calvitto ('17), Lauren Hanyok ('18), Michael Britt-Crane ('18), Danielle Paynter ('17), Jonathan Hopkins ('17), Matthew Jeffries ('18), Nathan Hagan ('17) and Ryan Hanyok ('17). Not pictured from LEAD fiscal year 2017 class: Adam Kurkoski and Dr. Morgan Parker. Not pictured from LEAD fiscal year 2018: Ben Testerman.

**3** Dr. Elissa Trueman (left), a materials research engineer with Naval Surface Warfare Center, Carderock Division's Corrosion and Coatings Engineering Branch, uses an umbrella to demonstrate the negative effects of leaky pipes as part of her presentation of "Passivation Process for Copper Nickel Tubing" during the third phase of the Technical Director's Innovation Challenge in West Bethesda, Md., April 3, 2017.

**4** Scientific technical videographer and LEAD cohort member Ryan Hanyok (center), shares his experience to potential applicants for fiscal year 2018 program along with other class members Nathan Hagan and Danielle Paynter during a brown bag in West Bethesda, Md., June 22, 2017.



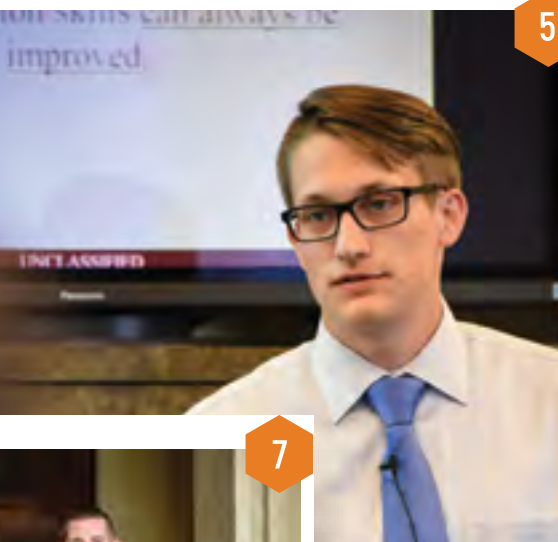
# Cultivating Our Workforce







**4** Alisha Tyer, Wallace “Gator” Czapla and Eric Shields, all employees at Naval Surface Warfare Center, Carderock Division, use human-centered design techniques to propose methods of maintaining Carderock’s culture of safety during the Communications Community of Interest “Un-conference” in Carderock’s Maritime Technology Information Center, Feb. 21, 2017.



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**1** Representatives from the American Society of Naval Engineers meet with employees at Naval Surface Warfare Center, Carderock Division during the command’s Professional Societies Day, May 3, 2017.

**2** Dr. Tim Arcano (standing at the computer), technical director; and Capt. Mark Vandroff, commanding officer of Naval Surface Warfare Center, Carderock Division, host an iNFusion chat about compliance with the Carderock workforce, June 8, 2017.



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**3** Sandra Clifford, deputy director of the Small Business Administration’s Small Mentor-Protégé Program, briefs industry partners about the program during Naval Surface Warfare Center, Carderock Division’s Industry and Outreach Day on May 1, 2017, in West Bethesda, Md.

**6** Angel Rodriguez, management and program analyst for Naval Surface Warfare Center, Carderock Division’s Corporate Business Office, speaks to the Branch Head Community of Interest meeting March 9, 2017, about the April Naval Sea Systems Command Inspector General inspection.

**7** Carderock Division Leadership Team, July 10, 2017: Front row from left: Mike Brown, Dr. Tim Arcano, Larry Tarasek, Ross Hempel, Capt. Mark Vandroff. Middle row: Kathy Bonturi, Kathy Stanley, Dr. Paul Shang, Eric Stone. Back row: Tamar Gallagher, Rita Terhaar, Lou Carl, Neaclesa Anderson. Not pictured: Tariq Al-Agba, Jack Templeton.

# Cultivating Our Workforce

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# Employee Appreciation Day



**1** Employees from Naval Surface Warfare Center, Carderock Division enjoy Employee Appreciation Day on Aug. 24, 2017, in West Bethesda, Md. The annual event included a barbeque and games, and recognized all staff personnel on base for the job they do.

**2** Capt. Mark Vandroff (right), commanding officer of Naval Surface Warfare Center, Carderock Division and Tariq Al-Agba, head of the Contracting and Acquisition Department, toss a water balloon during the activities at Employee Appreciation Day in West Bethesda, Md., Aug. 24, 2017.

**3-5** Employees participate in games during the Employee Appreciation Day at Naval Surface Warfare Center, Carderock Division in West Bethesda, Md., Aug. 24, 2017.

**6** Employees line up to fill their plates with picnic food during the Employee Appreciation Day at Naval Surface Warfare Center, Carderock Division in West Bethesda, Md., Aug. 24, 2017.

**7** Monica McCoy, head of the Graphics and Imaging Branch, takes a photo of employees of Naval Surface Warfare Center, Carderock Division during the Employee Appreciation Day on Aug. 24, 2017, at the West Bethesda, Md., headquarters.

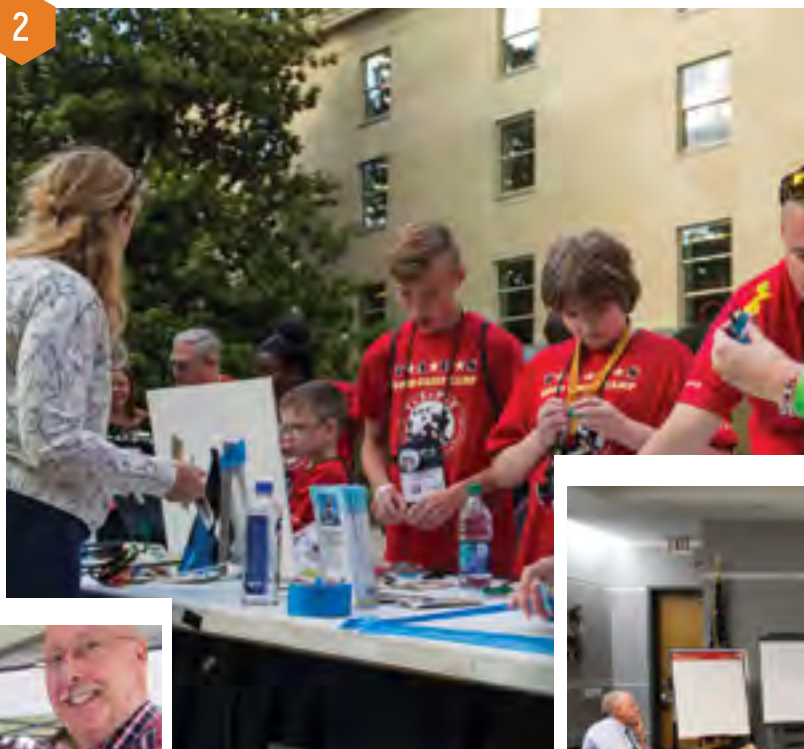


# Cultivating Our Workforce

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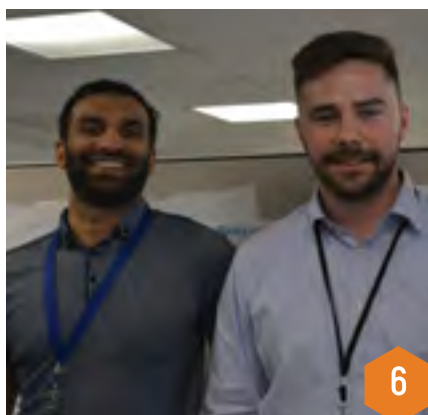
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**1** Naval Surface Warfare Center, Carderock Division employees tour the David Taylor Model Basin at the West Bethesda, Md., headquarters Sept. 12, 2017.

**2** Representatives from Naval Surface Warfare Center, Carderock Division, interact with members of the Tragedy Assistance Program for Survivors visiting the Pentagon, May 26, 2017.

**3** Members of the New Hire Bridge Employee Resource Group enjoy the annual cookie swap Dec. 5, 2017, at Naval Surface Warfare Center, Carderock Division in West Bethesda, Md.

**4** Petty Officer Helena Frye (far left) serves ice cream to Bruce Crock, Radio Frequency Systems Development Branch head (far right) at Naval Surface Warfare Center, Carderock Division's first ice cream social of 2017 in West Bethesda, Md., May 23, 2017.

**5** Pedro Muslera, a naval architect with the Ship Design Tools Branch, talks to members of Naval Surface

Warfare Center, Carderock Division's New Hire Bridge on Sept. 21, 2017, about his experience as a "Scientist to Sea" aboard USS John P. Murtha (LPD 26) in May.

**6** Kishan Bhudia (left) and Chris Greenhough are British graduate engineers on a rotation at Naval Surface Warfare Center, Carderock Division in West Bethesda, Md.

**7** Members of the New Hire Bridge Employee Resource Group met April 13, 2017, for the monthly general body meeting for roundtable discussions about program ideas, social events and communications. Employees also brought baked goods to share and voted on a new logo.

**8** Chris Jones, head of the Quality Management Office at Naval Surface Warfare Center, Carderock Division, gives a presentation at the New Hire Bridge Employee Resource Group's bimonthly general body meeting, June 13, 2017.

# Cultivating Our Workforce

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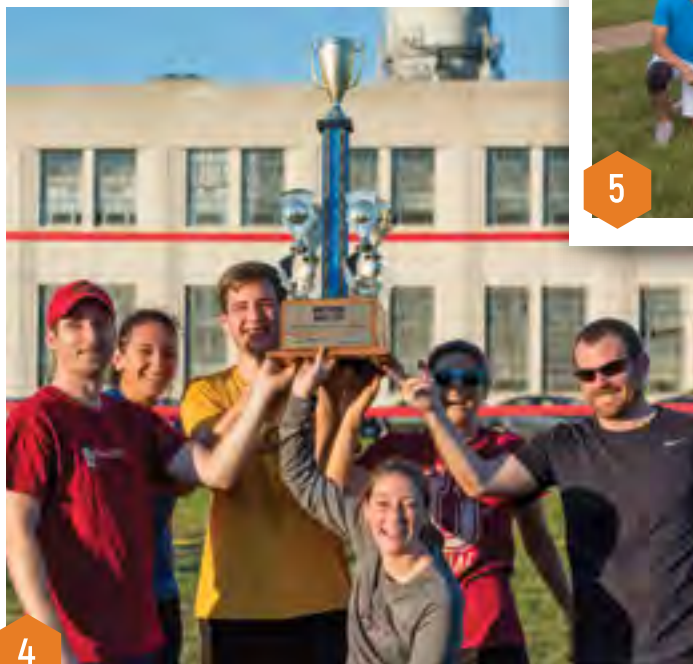
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# Morale, Welfare and Recreation

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scorers earning prizes during the award ceremony July 11, 2017. Front row from left: Brad Boyd, Dr. Tim Arcano, Matthew Houlahan, Katie Ellis-Warfield, Ross Hempel and Kristin Behrle; second row: Susan Fitzgerald, Susan Brewton and Kimberly Barker; third row: Andrew Alderfer, Emily Heisler and Drake Platenburg; back row: Amanda Blumenthal, Alex Gomes, Meg McConnell and Kevin Kimmel.

**4** Team Redundancy Team members (from left) Joseph Ramsey, Amanda Blumenthal, Gregory Gorman, Carmen Morrow, Erica Scates and Eric Shields hold up the Carderock volleyball trophy after winning the championship Nov. 2, 2017, in West Bethesda, Md. Team members not pictured include Trisha Shields and Chad Eskridge.

**1** Melissa Berlo (front left), security division head and Ross Hempel (front right) Survivability, Structures, Materials and Environmental deputy department head lead a group of employees in a walk during the 2017 Carderock Fitness Challenge, April 11, 2017.

**2** Larry Tarasek, deputy technical director for Naval Surface Warfare Center, Carderock Division, swings the bat July 13, 2017, at the first softball scrimmage.

**3** Employees from Naval Surface Warfare Center, Carderock Division participated in the 2017 Carderock Fitness Challenge, sponsored by Morale, Welfare and Recreation. Those who completed the challenge received a certificate of achievement with the high-

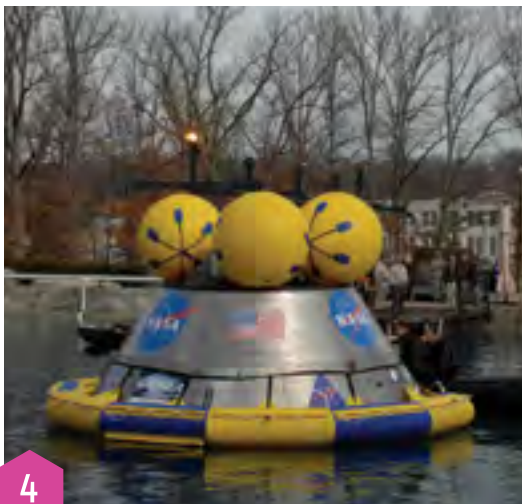
**5** Championship winners from the spring 2017 season of intramural volleyball at Naval Surface Warfare Center, Carderock Division pose with the trophy after the season's last game June 29, 2017, in West Bethesda, Md. Front row from left Johnny Ruffa, Chris Wong, Josh Yates and Tim McGee. Back row: David Shields, Dylan Beitzel, Daniel Plunkett and Greg Lawrence.

**6** Naval Surface Warfare Center, Carderock Division employees set out for fun and fitness during the Smiling while Mile-ing Fun Run at West Bethesda, Md., April 20, 2017.



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# History and Heritage





# Special Events for 2017



**3** David Diehl (left) and John Fregly, both employees from the Signatures Measurement Technologies and Systems Division of Naval Surface Warfare Center, Carderock Division, set up a solar eclipse viewer at the West Bethesda, Md., site Aug. 21, 2017.

**4** Naval Surface Warfare Center, Carderock Division engineers, along with a NASA test and evaluation team conducted initial post-landing Orion Recovery Test operations, March 23-27, 2009, of a full-scale model of NASA's Orion space capsule at Carderock's pentagon-shaped test pond in West Bethesda, Md. The Orion model was on display in Houston during the week leading up to Super Bowl LI.

**5** Former Secretary of Defense Donald Rumsfeld and Roxie Merritt, head of the Corporate Communications Division of Naval Surface Warfare Center, Carderock Division attend a commissioning event for USS Gerald R. Ford on July 21, 2017, at Naval Station Norfolk. Merritt was temporarily detailed to the commissioning committee in the months leading up to the ceremony. A retired Navy captain, Merritt was head of Pentagon press office under Rumsfeld.



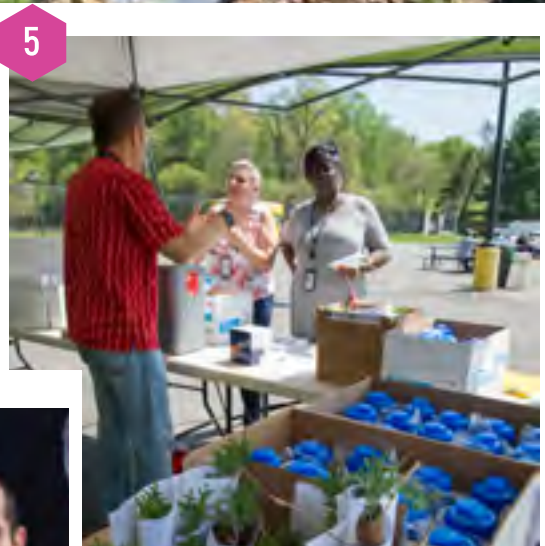
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**1** Capt. Mark Vandroff, commanding officer of Naval Surface Warfare Center, Carderock Division, points to some kangaroos during his trip to Australia the week of Jan. 23, 2017, to support data exchange agreements and briefings to the Royal Australian Navy and the Australian government on U.S. Navy program management and technical authority processes.

**2** State of Maryland staff members watch the solar eclipse with Capt. Mark Vandroff, commanding officer of Naval Surface Warfare Center, Carderock Division, on Aug. 21, 2017, in West Bethesda, Md., during Lt. Gov. Boyd Rutherford's visit to base.

**6** Kip Davis, site director of Naval Surface Warfare Center, Carderock Division's Combatant Craft Division, speaks to employees during CCD's 50th anniversary celebration picnic Oct. 14, 2017, at Joint Expeditionary Base Little Creek-Fort Story in Norfolk.

# History and Heritage







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**1** Naval Surface Warfare Center, Carderock Division celebrated National Engineers Week with a cake-cutting ceremony in West Bethesda, Md., Feb. 22, 2017. From left, Peter Starefos; Dr. Tim Arcano, technical director; Erin Berg; Dr. Ted Farabee, chief scientist, Signatures Department; and Capt. Mark Vandroff, commanding officer.

**2** Naval Surface Warfare Center, Carderock Division employees help Capt. Mark Vandroff, Carderock Division Commanding Officer, plant four trees on the command's West Bethesda campus during Carderock Division's annual Earth Day celebration April 20, 2017.

**3** Naval Surface Warfare Center, Carderock Division employees view a collection of writings and instruments on display at the Asian American Pacific Islander Heritage Month observance program on May 25, 2017, in West Bethesda, Md.

**4** Martin Weiss (center) lights a candle in commemoration of the six million lives lost during the Holocaust during a remembrance program April 13, 2017, at Naval Surface Warfare Center, Carderock Division in West Bethesda, Md. Weiss, a Holocaust survivor and U.S. Army veteran, was the guest speaker at the event. Also pictured (from left) are Wanda Jimenez- Barkdoll, deputy Equal Employment Office officer; and Andrew Alderfer with the Human Resources Division.

**5** Mike Phillips, an environmental engineer, hands out live tree plugs, water bottles and informational pamphlets at Naval Surface Warfare Center, Carderock Division's Earth Day celebration in West Bethesda, Md., April 20, 2017.

**6** Dr. Tim Arcano (center), technical director at Naval Surface Warfare Center, Carderock Division, addresses attendees during Carderock's National Day of Prayer observance at the West Bethesda, Md., headquarters May 4, 2017. Commanding Officer Capt. Mark Vandroff is in the foreground.



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# History and Heritage





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**1** Marco Robledo, a disabled combat veteran and federal employee, speaks at Naval Surface Warfare Center, Carderock Division's combined observance for National Hispanic Heritage Month and National Disability Employment Awareness Month in West Bethesda, Md., Oct. 12, 2017, with his service dog, Chuck Diesel.

**4** Naval Surface Warfare Center, Carderock Division Technical Director Dr. Tim Arcano (left), Commanding Officer Capt. Mark Vandroff and Lt. Cmdr. Jon Burrow lay a wreath in honor of those who have died in service of their country during a Memorial Day ceremony May 30, 2017, at the West Bethesda, Md., headquarters.

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**2** Capt. Mark Vandroff, Carderock's commanding officer, explains the significance of a naval sword and introduces the video about Rear Adm. David W. Taylor, Carderock's founding father, during the celebration of the Navy's 242nd birthday, Oct. 13, 2017.

**5** Naval Surface Warfare Center, Carderock Division Commanding Officer Capt. Mark Vandroff closes the Veterans Day observance Nov. 8, 2017, after retired Command Master Chief Lee Larson spoke to the group.

**3** Capt. Mark Vandroff (center), Carderock's commanding officer, cuts the cake for the Navy's 242nd birthday, with employees attending the ceremony Oct. 13, 2017, from left: the newest civilian employee present, Dr. Ted Worden – two weeks; the longest serving civilian employee, Steve Ouimette – 37 years; the newest Sailor, Operations Specialist Third Class Senait Harris – one year; and the longest-serving Sailor, Yeoman Chief Jerri Andrew – 17 years.

# History and Heritage

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**3** James Harrison, division director for Expeditionary Warfare Ship Division at Naval Sea Systems Command, presents “Nobody Does That Anymore” at his sixth brown bag Oct. 31, 2017, at Naval Surface Warfare Center, Carderock Division in West Bethesda, Md.

**4** James Harrison, division director for Expeditionary Warfare Ship Division at Naval Sea Systems Command, presents “Land Ho! All Ashore Who’s Going Ashore” on Jan. 31, 2017, to employees at Naval Surface Warfare Center, Carderock Division in West Bethesda, Md.

**5** Dr. Larrie Ferreiro, former employee of Naval Surface Warfare Center, Carderock Division and 2017 Pulitzer finalist for History for his book “Brothers at Arms: American Independence and the Men of France and Spain Who Saved It,” speaks to Carderock employees and student interns at Carderock about his book during a presentation in West Bethesda, Md., July 26, 2017.

**6** Dr. Kostas Spyrou, a professor at the School of Naval Architecture and Marine Engineering for the National Technical University of Athens, Greece, gives a lecture Nov. 13, 2017, at Naval Surface Warfare Center, Carderock Division, as part of the Weinblum Memorial Lecture series, named for Georg Weinblum.



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**1** James Harrison, division director for Expeditionary Warfare Ship Division at Naval Sea Systems Command, discusses one-off ship classes during his presentation of “I Like it! We Should Buy One. But Just One” on Aug. 2, 2017, at Naval Surface Warfare Center, Carderock Division in West Bethesda, Md.

**2** James Harrison, division director for Expeditionary Warfare Ship Division at Naval Sea Systems Command, gives a brown-bag presentation, “That’s Not My Sister, That’s My Cousin,” at Naval Surface Warfare Center, Carderock Division, March 16, 2017, in West Bethesda, Md.

# History and Heritage

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**1** Carderock Division Commanding Officer Capt. Mark Vandroff (third from left) unveils West Bethesda's goal thermometer board to officially kick off the 2017 Combined Federal Campaign season in West Bethesda, Md., Oct. 19, 2017. Carderock's 2017 goal was \$233,088. From left: Matt Gammill, CFC co-coordinator; Kathy Pellici, CFC co-coordinator; Vandroff; Travis Scott, keyworker; Renard Walker, keyworker; and Angelica Rodriguez, keyworker.

**2** Employees of Naval Surface Warfare Center, Carderock Division, enjoy the annual Carderock holiday reception Dec. 14, 2017, in West Bethesda, Md.

**3** Friends and family members of late federal employee Danny Gordon display his car in his honor at Naval Surface Warfare Center, Carderock Division's 2017 Fall Motorsports Show-and-Shine Invitational kick-off event for the CFC in West Bethesda,

Md., Oct. 19, 2017. Carderock employees displayed their vehicles and shared baked goods and other food to spread awareness of CFC at the annual event. Gordon passed away after more than 35 years of dedicated service in the command's Model Fabrication Facility.

**4** Laurel Martin (right), an electrical engineer with Naval Surface Warfare Center, Carderock Division and a veteran, pushes a cart full of toys to load into a truck Dec. 15, 2017, with fellow Carderock employees and veterans Angel Rodriguez and Kevin Mook close behind. Carderock's Veterans Employee Resource Group teamed up with the U.S. Marine Corps Reserve program in collecting toys this holiday season. Hundreds of brand new toys were generously donated by Carderock employees for less-fortunate children in the community.

# Cultivating Our Future Workforce

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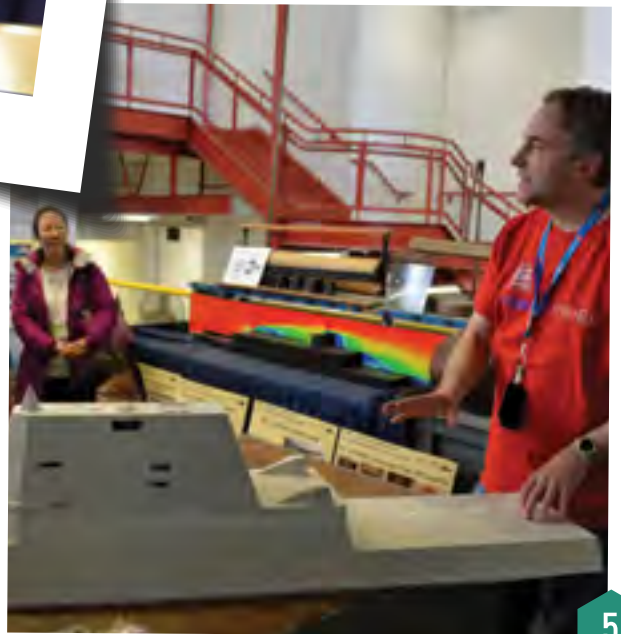
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# Carderock Math Contest



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**4** Prof. Arthur Benjamin, the Smallwood Family Professor of Mathematics at Harvey Mudd College in Claremont, Calif., and a “mathemagician,” calls on a student during his interactive mental math presentation during the Carderock Math Contest in West Bethesda, Md., March 24, 2017.

**5** Kevin Kimmel (right), an aerospace engineer with the Aviation and Aerospace Mechanics Branch, tells local students about the Subsonic Wind Tunnel as they tour Naval Surface Warfare Center, Carderock Division during a break between rounds at the Carderock Math Contest in West Bethesda, Maryland, March 24, 2017.

**6** Naval Surface Warfare Center, Carderock Division Commanding Officer Capt. Mark Vandroff poses with Sean Power from Chesapeake Math Program in Columbia, Md.; Joshua Fu from Basis Independent McLean in McLean, Va; and Fang Du from Roberto Clemente Middle School in Germantown, Md., who placed first, second and third, respectively, in the Carderock Math Contest, in West Bethesda, Md., March 24, 2017.

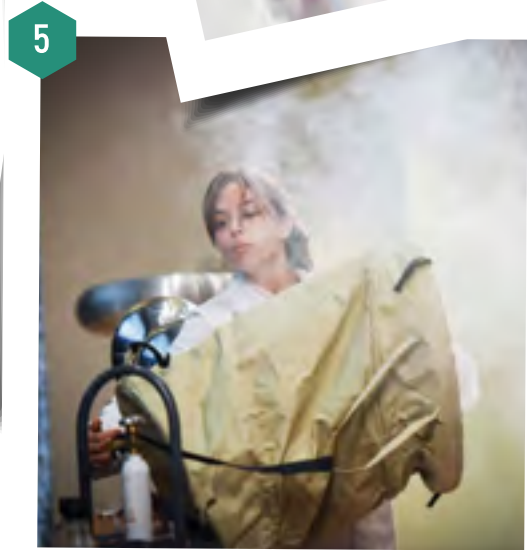
**1** Sean Power from Chesapeake Math Program in Columbia, Md., celebrates his moment of victory as the winner of the Carderock Math Contest Countdown Round in West Bethesda, Md., March 24, 2017.

**2** Students solve timed math problems during the written portion of the Carderock Math Contest in West Bethesda, Md., March 24, 2017.

**3** Naval Surface Warfare Center, Carderock Division Commanding Officer Capt. Mark Vandroff poses with some of the 2017 Carderock Math Contest volunteer employee committee members during the event in West Bethesda, Md., March 24, 2017.



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# ur Daughters and Sons to Work Day

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**3** Children of employees at Carderock Division's Acoustic Research Detachment in Bayview, Idaho, get a walking tour of the models, April 27, 2017, as part of the annual "Take our Daughters and Sons to Work Day." The day began with a kick-off introduction in the main conference room with ARD Site Director Alan Griffiths (far right).

**4** The Science Siblings, Kinsey, Gavin and Dan, bring children on stage to be a part of their show during Naval Surface Warfare Center, Carderock Division's "Take Our Daughters and Sons to Work Day" event, April 27, 2017.

**5** "Kinsey Science," an electrical engineer assigned to Naval Surface Warfare Center, Panama City Division, performs feats of science to entertain children during Carderock Division's "Take Our Daughters and Sons to Work Day" event April 27, 2017.

**6** Lincoln Hoy, grandson of Large Scale Vehicle engineer Doug Vetsch, visits Naval Surface Warfare Center, Carderock Division Acoustic Research Detachment in Bayview, Idaho, for their annual "Take Our Daughters and Sons to Work Day," April 27, 2017.

**1** "Dan Science," a physicist assigned to Naval Surface Warfare Center, Panama City Division, mixes chemicals to create different colors and reactions during Carderock Division's "Take Our Daughters and Sons to Work Day" event April 27, 2017.

**2** Chris Greenhough, a marine engineer with Naval Surface Warfare Center, Carderock Division's Center for Innovation in Ship Design, teaches ship design and buoyancy principles during Carderock's "Take Our Daughters and Sons to Work Day" in West Bethesda, Md., April 27, 2017.

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**7** Children of employees at Carderock Division's Acoustic Research Division watch a ballast tank demonstration as part of the annual "Take Our Daughters and Sons to Work Day," April 27, 2017, in Bayview, Idaho.

# Cultivating Our Future Workforce

## 14th Internatio

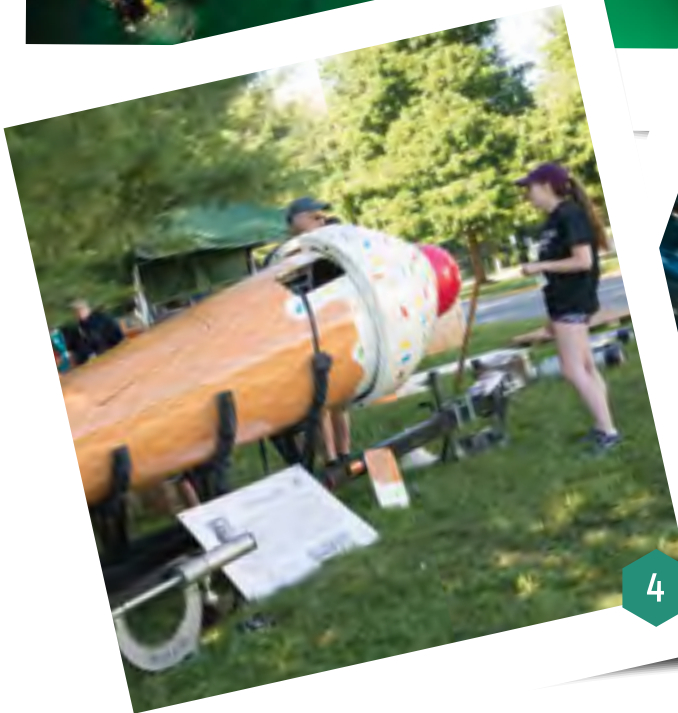
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# 14th International Human-Powered Submarine Races



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**3** Teams ready their submarines in the holding area prior to participating in the 14th International Human-Powered Submarine Races in the David Taylor Model Basin West Bethesda, Md., June 25-30, 2017.

**4** Navy Diver 1st Class Stephen Eide, assigned to Navy Experimental Diving Unit, talks to U.S. Rep. Rob Woodall of Georgia and U.S. Rep. Tom Rice of South Carolina about his responsibilities during ISR at Naval Surface Warfare Center, Carderock Division, in West Bethesda, Md., June 26, 2017.

**5** UMPTYsquatch 8, a submarine designed and built by students from Sussex County Technical School in Sparta, New Jersey, on display opening day of the 2017 ISR held June 25-30 at Naval Surface Warfare Center, Carderock Division's David Taylor Model Basin in West Bethesda, Md.



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**1** Naval Surface Warfare Center, Carderock Division hosts the 14th International Human-Powered Submarine Races in the David Taylor Model Basin in West Bethesda, Md., June 25-30, 2017, featuring 21 teams from universities and high schools. Sponsored by the Foundation for Underwater Research and Education, ISR is the capstone science, technology, engineering and mathematics outreach event at Carderock and has hosted thousands of young men and women from around the world to design, build and race human-propelled submarines on the basin's underwater course.

**2** Team members in scuba gear prepare to launch their submarine during the 14th International Human-Powered Submarine Races in the David Taylor Model Basin in West Bethesda, Md., June 25-30, 2017.

**6** A human-powered submarine begins to submerge during the 14th International Human-Powered Submarine Races in the David Taylor Model Basin in West Bethesda, Md., June 25-30, 2017.

**7** Mass Communications Specialist 1st Class Cliff Davis and Heather Brown from the Naval History and Heritage Command pose with an artifact found from the remains of USS Housatonic, which was sunk during combat by the submarine H.L. Hunley on Feb. 17, 1864. Davis and Brown staffed an information table at the 2017 ISR.

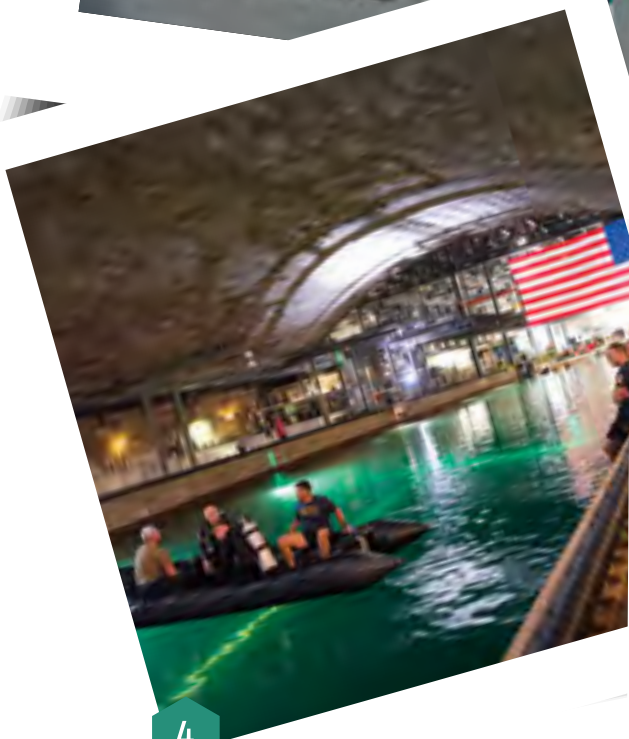
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# onal Human-Powered Submarine Races



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**1** Participating teams and support pose in front of the David Taylor Model Basin during the 14th ISR at Naval Surface Warfare Center, Carderock Division in West Bethesda, Md., June 29, 2017.

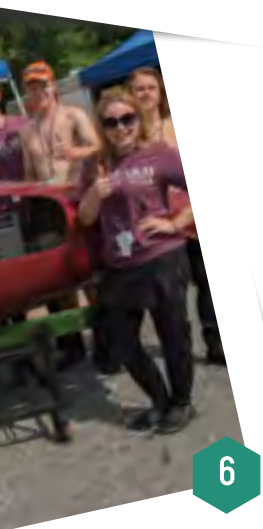
**2** Navy Gold Star Families and staff are greeted by Carderock Division Commanding Officer Capt. Mark Vandroff (right) during their visit to base June 29, 2017, to watch the submarine races and tour the woodshop and Maneuvering and Seakeeping Basin.

**3** Four of Carderock Division's commanding officers gather for a photo at the end of the David Taylor Model Basin, June 29, 2017. From left: retired Capt. Charlie Behrle, president of the foundation that sponsors the submarine races; retired Capt. Heidemarie Stefanyshyn-Piper, a judge at the races; retired Capt. Rich Blank; and current Commanding Officer Capt. Mark Vandroff.

**4** Sailors assigned to Navy Experimental Diving Unit stand by to assist in the David Taylor Model Basin during the 14th ISR at Naval Surface Warfare Center, Carderock Division in West Bethesda, Md., June 28, 2017. NEDU and supporting dive-qualified Sailors in the National Capital Region help ensure a safe competition between the students at Carderock racing human-powered submersibles they designed and built for the biennial event.

**5** Team Universidad Veracruzana from Mexico prepares to race for their first time at the 14th ISR in the David Taylor Model Basin at Naval Surface Warfare Center, Carderock Division in West Bethesda, Md., June 29, 2017. Due to shipping issues the sub for Universidad Veracruzana never made it to the races however, the team was able to borrow Sub Taxi from another team as their vessel in order to participate in the races, a reflection of the spirit of cooperation and learning during race week.

**6** Rear Adm. Charles "Chip" Rock (center), commandant of Naval District Washington and a graduate of Texas A&M University, poses with his fellow Aggies around the "TAMU Shamu" Aggie submarine, June 29, 2017.



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# Cultivating Our Future Workforce

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the ocean. Students then competed to see who could fly their seaplane the farthest by tossing it from the stage and clearing rows of seats in the auditorium as a measure of distance.

**2** Arthur Elefante, from Naval Surface Warfare Center, Carderock Division's Acquisition Programs Branch, offers advice to students designing a fully-functional catapult for their Advanced Placement physics class at McLean High School in McLean, Va., March 10, 2017.

**3** A team of students test their final product during Naval Surface Warfare Center, Carderock Division's LEGO Robotics Competition in West Bethesda, Md., April 21, 2017.

**4** Caroline Scheck, a mechanical engineer with the Additive Manufacturing Project Office, tells middle- and high-school students with the Washington, D.C., Girls in Technology program about the Manufacturing, Knowledge and Education Lab, Naval Surface Warfare Center, Carderock Division's 3-D printing space for workforce development and science, technology, engineering and math outreach in West Bethesda, Md., March 29, 2017.

**5** Susan Levitt (far right in blue), an environmental protection specialist with the Environmental Branch at Carderock Division's Bangor detachment, demonstrates principles of water movement and pressure to students at the Kistap Water Festival, in Kitsap, Wash., April 18, 2017.



**1** Visiting students pose on the stage of Naval Surface Warfare Center, Carderock Division's Melville-Taylor Auditorium in West Bethesda, Md., with model seaplanes they built as part of Carderock's Seaplane Challenge on March 31, 2017. The Challenge is one of the many activities Carderock hosts to promote science, technology, engineering and math. Using paper, tape, drinking straws and some 3-D printed parts, students built their seaplanes modeled after Carderock's founding father Rear Adm. David Taylor's design for the U.S. Navy's NC (Navy Curtiss) flying boats, the first aircraft to cross

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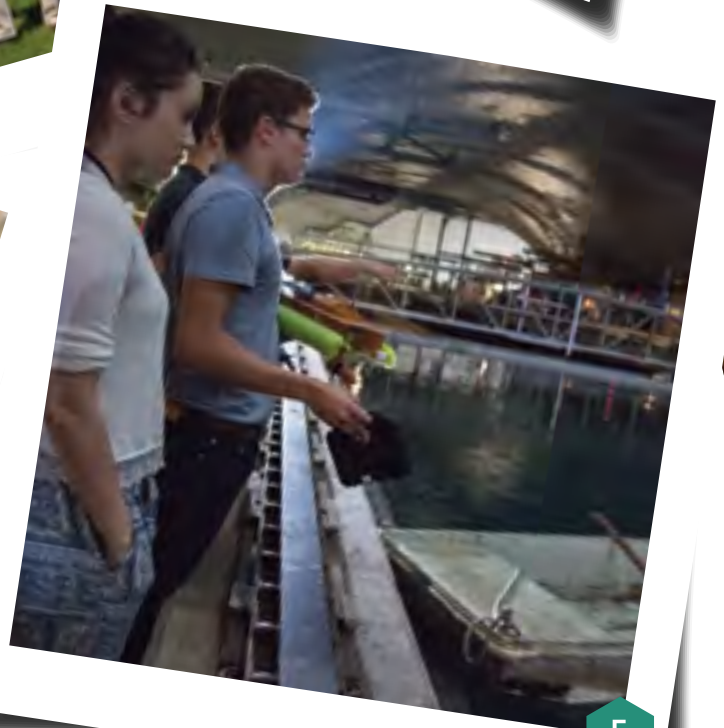
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**2** Naval Research Enterprise Internship Program and Science and Engineering Apprenticeship Program interns enjoy their lunch on a sunny afternoon at the Naval Surface Warfare Center, Carderock Division pavilion in West Bethesda, Md. on June 29, 2017, for the annual intern picnic.

**3** Summer interns with the SEAP at Naval Surface Warfare Center, Carderock Division prepare to race their additively manufactured boats in the David Taylor Model Basin on Aug. 10, 2017. The students were working in the Center for Innovation in Ship Design at Carderock Division's headquarters in West Bethesda, Md.

**4** Rachel Meyerhofer and Jeffrey Banghart, student interns temporarily assigned to Naval Surface Warfare Center, Carderock Division's DTL, work with Lt. Brian Hart under the supervision of DTL Deputy Director and mentor Harry Whittaker to stream video from one Microsoft Hololens augmented reality heads-up display to another as part of a project they are working on for the next version of the OMTD in West Bethesda, Md., July 21, 2017.

**5** Student interns assigned to Naval Surface Warfare Center, Carderock Division under the SEAP prepare to launch their 3-D printed boat Optionally Manned SWATH Collection Vehicle during the second annual Additive Manufacturing Challenge in West Bethesda, Md., Aug. 10, 2017.

**6** Adrian Teter (right), a student intern assigned to Naval Surface Warfare Center, Carderock Division, makes adjustments to his 3-D printed boat Clear As Mud just before the second annual AM Challenge in West Bethesda, Md., Aug. 10, 2017.

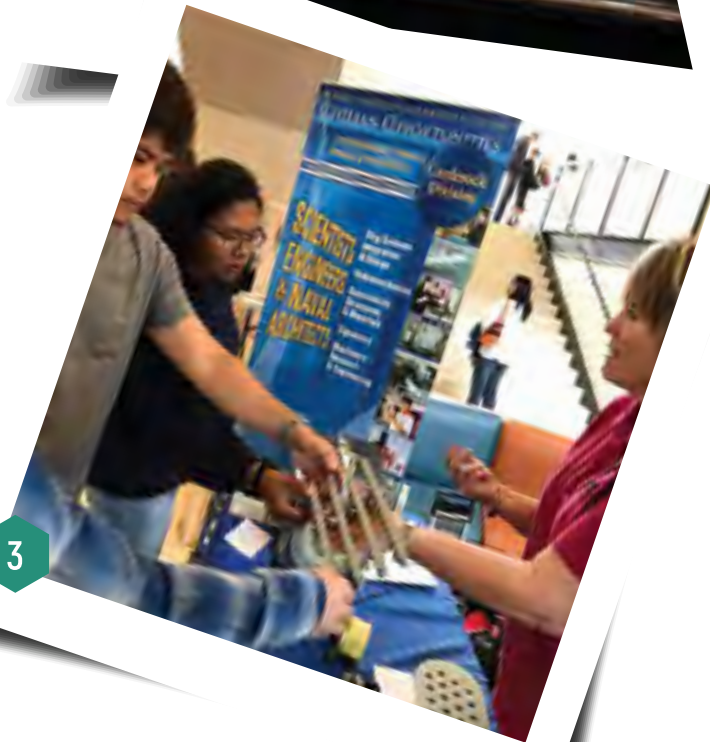


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**1** Harry Whittaker, far left, and Garry Shields, far right, both members of Naval Surface Warfare Center, Carderock Division's Disruptive Technologies Laboratory, say farewell to this year's group of summer interns in front of the flagpole at Carderock's West Bethesda, Md., headquarters Aug. 9, 2017. The interns (from left to right: Xavier Arguello, Will Delano, Julia Webber, Rachel Meyhofer, Madison Wagner, Trevor Conklin and Evan Goldberg) worked with the DTL on the next version of the Optionally Manned Technology Demonstrator during their tour this year.

# Cultivating Our Future Workforce

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**1** Naval Surface Warfare Center, Carderock Division Commanding Officer Capt. Mark Vandroff and Technical Director Dr. Tim Arcano sign an Educational Partnership Agreement with the University of Maryland, Baltimore County, in West Bethesda, Md, July 27, 2017. (Seated left to right) UMBC Vice Provost for Academic Affairs Dr. Antonio Moreira, Vandroff and Arcano. (Standing left to right) Carderock Director of Strategic Relations Dr. John Barkyoub, UMBC Assistant Vice President for Research Dr. Don Engel, Carderock mechanical engineer Caroline Scheck, UMBC Vice President for Research Dr. Karl Steiner and Carderock mechanical engineer Jonathan Hopkins.

**2** Melanie Zajic, chemical engineer at Naval Surface Warfare Center, Carderock Division, presents the SeaPerch model and Carderock's STEM outreach programs to teachers on a tour with the Missile Defense Agency on July 20, 2017.

**3** Dr. Maureen Foley (right) an engineer at Naval Surface Warfare Center, Carderock Division, speaks with students about careers with the Navy during a STEM day at Northern Virginia Community College in Loudoun County, Va., Sept. 30, 2017.

**4** Naval Surface Warfare Center, Carderock Division, hosts retired Vice Adm. Mel Williams (front row, left) and several other faculty members and students from the Catholic University of America in support of continued collaboration efforts regarding advanced learning initiatives in West Bethesda, Md., Nov. 2, 2017.

**5** Naval Surface Warfare Center, Carderock Division employees and interns visit Naval Station Norfolk, June 13, 2017, for a Meet the Fleet tour of USNS Medgar Evers (T-AKE 13), USS Monterey (CG 61), PUC Gerald R. Ford (CVN 78) and USS Boise (SSN 764).

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