

NAVAL UNDERSEA WARFARE CENTER

DIVISION NEWSPORT



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WELCOME LETTER

The Naval Undersea Warfare Center Division Newport is pleased to present the 2021 Annual Overview!

2021 challenged us to move forward and stay on task and we did just that! Here are just a few highlights of our efforts to ensure Undersea Superiority for the Fleet:

- As a Command, we continued to drive affordability, technology development, and integration efforts to support Columbia fleet introduction on schedule and on budget. The Columbia-class will be the largest, most capable, and most advanced submarine produced by our nation, ensuring continuous sea-based strategic deterrence into the 2080s.
- The Virginia-class submarine is the most advanced submarine in the world today. It combines stealth and payload capability to meet demands in this era of strategic competition. The first Block IV ship, USS Vermont was delivered to the Navy in 2020. Block V introduces our Virginia Payload Module, which expands the Virginia-class payload and weapons capability.
- For the FY22 budget, the Navy requested \$98 million for the research, development, test and evaluation of a new fast-attack submarine platform, SSN(X), and Division Newport is already playing an integral role in this next generation submarine.
- Unmanned systems continue to play a key part in future integrated Distributed Maritime Operations as we field affordable, lethal, scalable, and integrated capabilities. Division Newport continued to equip our forces with the right mix of capabilities to enhance operational readiness and meet the challenges of a complex and competitive maritime environment.
- Our expertise in the undersea domain is essential to the success of Project Overmatch, the Navy's implementation of Joint All-Domain Command and Control, a Department of Defense-wide effort to connect sensors and shooters across the services and generally improve networking and data capabilities.

As you can see, there's a lot of work to be done and Division Newport is at the forefront of essential Fleet engineering and research.

In these pages you will find the visitors, special events, innovations, and of course the workforce that comprised 2021 and our campaign "Celebrating Our Mission, Appreciating Our People."



Chad F. Hennings

CAPT Chad F. Hennings
Commanding Officer,
NUWC Division Newport

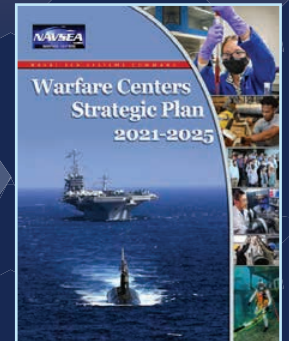
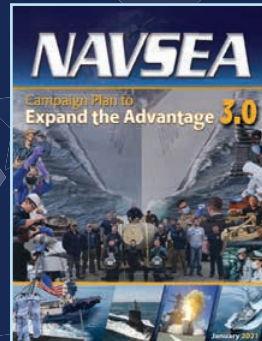
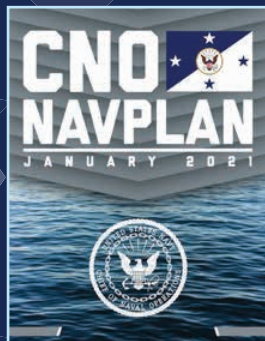


Ronald A. Vien

Ronald A. Vien, SES
Technical Director
NUWC Division Newport

COMMAND PROFILE

Higher-level Navy Strategic Guidance



NAVSEA WARFARE CENTERS NEWPORT

NUWC Division Newport Strategic Alignment

Undersea Superiority Today and Tomorrow

We research, develop, engineer, integrate, analyze, test, evaluate and deliver undersea warfare capabilities to expand United States Navy readiness

PEOPLE	PROCESS	RESULTS
<i>Empower our diverse team of world-class professionals</i>	<i>Optimize speed, agility, and rigor of our technical and business processes</i>	<i>Ensure fleet readiness today and innovate for next generation systems tomorrow</i>
Workforce and Leadership Development	Mission-Aligned Strategies at the Division Level	Technical Innovation and Excellence
Warfare Center Strategic Plan		
NAVSEA - Expand the Advantage 3.0		
Deliver Combat Power	Transform Digital Capability	Build a Team to Compete and Win
CNO Navigation Plan		
Readiness	Capabilities	Capacity
Sailors		

Advancing the Navy's state-of-the-art in undersea warfare through innovation, collaboration, and demonstration



LEADERSHIP CHANGES

SIX COLLEAGUES TOOK ON NEW LEADERSHIP ROLES



Marie Bussiere was selected as the Digital Transformation Executive for the Deputy Assistant Secretary of the Navy for Research, Development Test and Engineering. This is a key leadership position in the Naval Research and Development Establishment dedicated to facilitating rapid digital transformation to address naval operational gaps and needs identified by Navy and Marine Corps operational forces. Bussiere will oversee world-class experts in the execution of the Navy's warfighting portfolio focused on threat engineering, digital modeling and mission engineering and analysis.



Pat Eno was selected as Head of the Sensors and Sonar Systems Department. In this role, Eno is responsible for technical leadership across the full spectrum of naval research, development, engineering, and acquisition to deliver state-of-the-art sensors and sonar systems for naval platforms, off-board sensors, and unmanned systems.



Rebecca Chhim was selected as Head of the Undersea Warfare Combat Systems Department. In this role, she provides technical leadership and personnel management for the development of submarine combat systems throughout the acquisition lifecycle, helping to shape the next generation of USW systems and ensuring the U.S. Navy's command of the undersea battlespace.



Dr. Andrew Greene was selected as Senior Technologist for Undersea Warfare Tactical Oceanographic Sciences. In this role, Greene will be the Navy's conduit between submarine wardrooms and the at-ter anti-submarine warfare watch floors and the scientific, technical and acquisition communities. He will develop programs in tactical oceanographic sciences that are inclusive of both the scientific and warfighting development communities.



David Pistacchio was selected as Senior Technologist for Acoustic Signal Processing in the Sensors and Sonar Systems Department. In this role, Pistacchio is the primary Navy advisor and consultant in the discipline of active and passive acoustic signal processing applied to research and development programs nationally and internationally.



S. Bradford (Brad) Doyle was selected as Senior Scientific Technical Manager for Non-Traditional Sensing and Non-Acoustic Undersea Warfare (USW) in the USW Weapons, Vehicles and Defensive Systems Department. Doyle will lead the development and implementation of non-traditional sensing for novel warfare capabilities and efforts to monitor environmental conditions for submarine non-acoustic vulnerability assessment and mitigation. He is dual-hatted as Program Officer for the Office of the Chief of Naval Operations Submarine Security Programs (OPNAV N975) for hydrodynamic non-acoustics.

Secretary of the Navy toured Division Newport

Secretary of the Navy Carlos Del Toro visited Division Newport in November for a series of tours that demonstrated the next evolution in undersea warfighting. Del Toro toured Division Newport's unmanned undersea vehicle (UUV) laboratory, where he interacted with scientists and engineers about improvements in torpedo capabilities and the next generation of UUVs. Del Toro heard about some of the efforts underway to advance the undersea warfare aspects of this Navy-wide project. This was followed by a description of the Snakehead Phase 1 Large Diameter Unmanned Undersea Vehicle (LDUUV). When finished, it will be the Navy's largest submarine-launched unmanned system to de-risk and inform future acquisitions, as well as Navy LDUUV concepts of operations. Division Newport led a team comprised of warfare center, academia, and industry partners to execute the Snakehead Phase 1 effort.



Acting Secretary of the Navy, U.S. Sen. Jack Reed toured UUV facility

Acting Secretary of the Navy Thomas W. Harker and U.S. Sen. Jack Reed, chairman of the Senate Armed Services Committee overseeing the U.S. Department of Defense, visited Division Newport in April and toured the unmanned undersea vehicle (UUV) workspace. Topics covered by several departments included bio-inspired research projects and collaborative work with Brown University; the Submarine-Launched Unmanned Aerial System; the Kingfish UUV, a project completed 18 months ahead of schedule and \$2.5 million under budget; the Marine Mammal Modeling and Monitoring Program and the Navy Acoustic Effects Model help maintain the Navy's reputation as stewards of the sea by studying how sonar influences the behaviors of marine mammals; and the Command's long history of developing torpedoes for the Navy.

Division Newport hosted Deputy Secretary of Defense, RI congressional delegates

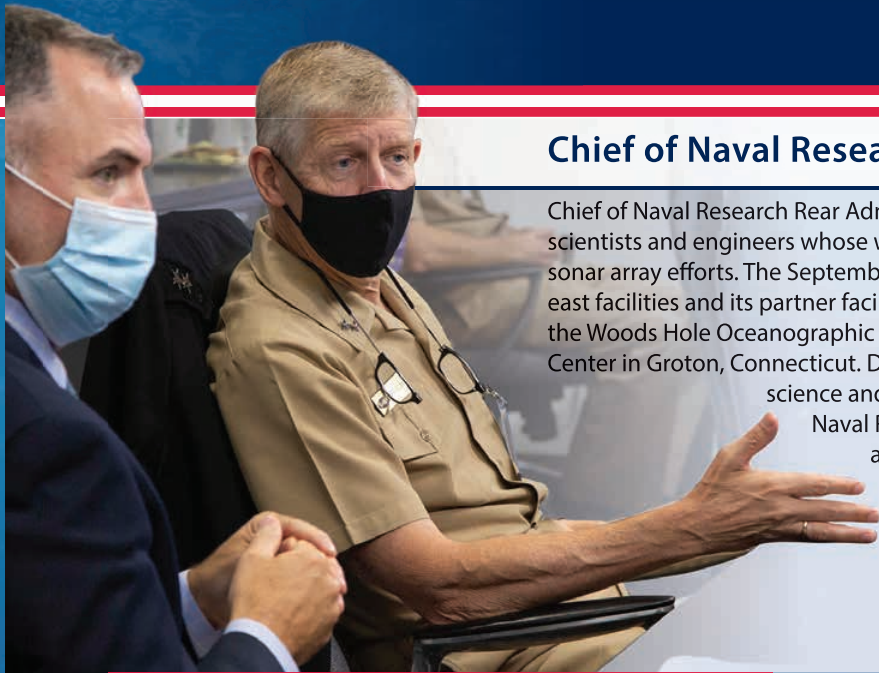
In November, Deputy Secretary of Defense Dr. Kathleen Hicks joined U.S. Sens. Jack Reed and Sheldon Whitehouse, and U.S. Rep. David Cicilline for discussions on Division Newport's mission and impact. They heard about how the warfare center is working to advance the state of the art in the undersea domain with topics that included unmanned undersea vehicles, systems engineering, workplace development, and collaborations with industry and academia.



Chief of Naval Operations briefed on unmanned vehicles

In June, Chief of Naval Operations Adm. Mike Gilday toured Division Newport as part of a visit to several commands at Naval Station Newport. This included a tour of an unmanned undersea vehicle (UUV) lab and briefings on a variety of efforts through a poster session, including the Snakehead large diameter UUV, the Submarine Launched Over the Horizon Buoy, weapons engagement and lethality, cybersecurity, the digital engineering transformation, and Live Virtual Constructive Naval Sandbox initiatives.





Chief of Naval Research briefed on current, future projects

Chief of Naval Research Rear Adm. Lorin Selby visited Division Newport to hear updates from scientists and engineers whose work ranges from digital transformation to transduction and sonar array efforts. The September visit was part of Selby's tour of some of the Navy's Northeast facilities and its partner facilities including Electric Boat, the University of Rhode Island, the Woods Hole Oceanographic Institution and the Undersea Warfighting Development Center in Groton, Connecticut. Division Newport's Chief Technology Officer detailed a broad

science and technology (S&T) portfolio and noted that the Office of Naval Research remains the command's biggest sponsor of S&T with an investment of about \$30 million per year. S&T professionals currently make up about six percent of the Division's workforce. Selby was also briefed on Division Newport's outreach activities in programs such as the Naval Engineering Education Consortium; Science, Mathematics and Research for Transformation program; and congressionally sponsored collaborations with academia.

Partnership with Royal Australian Navy highlighted during tour by consul general

Nicholas Greiner, consul general for the Commonwealth of Australia in New York and Northeast United States, and political advisor Iona Main visited Division Newport in September to learn more about the partnership with the Royal Australian Navy (RAN). The Command's partnership with RAN centers on improving the Collins-class diesel submarine — updating its capabilities and managing its life cycle. The Joint Program Office for Australia and the U.S., located at Division Newport, includes two uniformed personnel from the RAN, two civilian staff from the Australian Public Service and two personnel from the Defence Science and Technology Group. Greiner's visit, along with a visit by Australian Ambassador Arthur Sinodinos in May, demonstrates the importance of the Australia/U.S. relationship.



Program Executive Office leadership welcomed for tours, briefings

Rear Adm. Edward Anderson and Michael McClatchey, the leadership of the newly organized Program Executive Office for Undersea Warfare Systems, visited Division Newport in September for tours and briefings covering a wide spectrum of Division Newport's operations. The U.S. Navy recently reorganized its entire submarine acquisition and sustainment enterprise — sometimes referred to as Team Sub — resulting in three Program Executive Offices in the new organization. Topics briefed included involvement in submarine acoustic systems, maritime surveillance systems, and imaging and electronic warfare as well as undersea weapons, undersea defensive warfare systems, cybersecurity, submarine combat and weapons control, and some of Division Newport's "moonshot" investment efforts. Their tour included the Naval Array Technical Support Center, Periscope and Antennas Facility, Electronic Warfare Systems Laboratory, Submarine Combat Support Center and Combat Control Systems Laboratory.



Naval War College President shared mission and opportunities

Rear Admiral Shoshana Chatfield, president of the U.S. Naval War College at Naval Station Newport, spoke to employees in July as part of the Distinguished Lecture Series. Chatfield, a career helicopter pilot, reinforced the vision laid out by college founder Admiral Stephen B. Luce in 1884 and shared the college's mission to educate and develop future leaders by building strategic and cultural perspective and enhancing the capability to advise senior leaders and policymakers. She also highlighted opportunities for Division Newport employees, such as the Dr. William F. Bundy Warfare Center Scholar Program, and described the importance of wargaming to both the college and the nation.



Engineers toured PCU USS Daniel Inouye, the Navy's newest destroyer

In October, a group of Division Newport engineers toured the pre-commissioning unit USS Daniel Inouye, the Navy's newest guided missile destroyer. The Arleigh Burke-class destroyer pulled into port at Naval Station Newport (NAVSTA) en route to a December commissioning ceremony in Pearl Harbor, Hawaii. It was the first U.S. Navy vessel to visit NAVSTA since the fall of 2019. Arleigh Burke-class destroyers are multi-mission ships able to hold targets on land, at sea, in the air and under water with a suite of sophisticated weapons and sensors, and Division Newport's engineers and scientists build and support the U.S. Navy's fleet of ships and combat systems. The engineers were not the only ones who benefitted from the port visit, as six crew members from the PCU USS Daniel Inouye visited the Division Newport campus for laboratory tours and demonstrations.



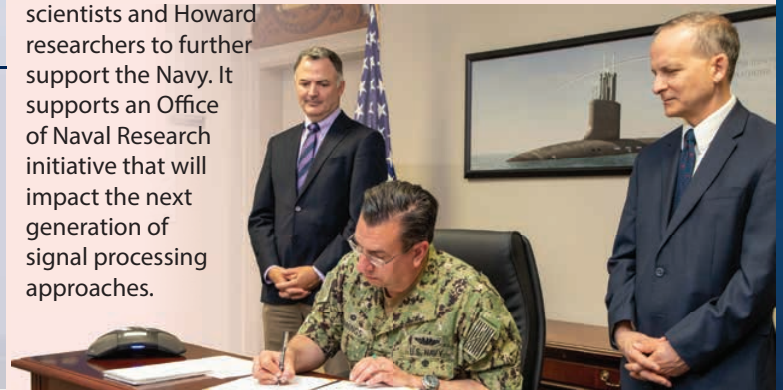
Change of charge ceremony held at AUTECH

Commander Michael Fasano assumed duties as officer in charge of Division Newport's Atlantic Undersea Test and Evaluation Center (AUTECH) range detachment, in a change of charge ceremony held on Andros Island in the Bahamas in May. Fasano relieved Commander Michael Woodcock, who has been officer in charge at AUTECH since February 2019, and will report to the USS Frank Cable to serve as the executive officer. Division Newport Commanding Officer Capt. Chad Hennings attended the event and presented Woodcock with a Meritorious Service Medal.



Cooperative research and development agreement signed with Howard University

In May, Division Newport and Howard University in Washington, D.C. announced a cooperative research and development agreement (CRADA), which combined 154 years of advanced mathematics expertise at Howard University, whose math department was established in 1867, with the 152 years of undersea technology expertise at Division Newport. The CRADA expanded areas of collaboration, included student participation in joint research, and developed a training ground for the next generation of both Division Newport scientists and Howard researchers to further support the Navy. It supports an Office of Naval Research initiative that will impact the next generation of signal processing approaches.



Inventors showcased cutting-edge tech at the University of Rhode Island

Division Newport technologists shared information on undersea warfare-inspired inventions during the Technology Commercialization, Research and Development Showcase held in December at the University of Rhode Island. Attendees received presentations about exciting new technologies that have a broad range of potential commercial applications. Topics included photonics and laser technology, advances in the field of composites and fabrics, and breakthroughs with antennas.

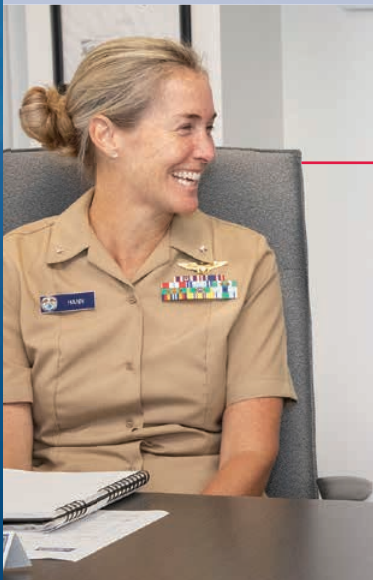
Governor served as keynote speaker at Memorial Day ceremony

Rhode Island Governor Dan McKee spoke with solemn reverence to an outdoor crowd of more than 100 people at a Memorial Day remembrance ceremony held in May at Division Newport. In quoting the late President Ronald Reagan, McKee spoke of the tremendous cost of freedom and the reverberations created by those American patriots that have made the ultimate sacrifice. After McKee finished speaking, he joined Division Newport Technical Director Ron Vien to lay a wreath at the base of a monument that honors the 34 men who died in service to their country while working at Division Newport's predecessor organizations — the Naval Torpedo Station, Naval Underwater Ordnance Station, and Naval Underwater Weapons Research and Engineering Station.



Division Newport continued collaborative partnership with NOAA

In June, Rear Adm. Nancy Hann, acting director for the National Oceanic and Atmospheric Administration's (NOAA) Office of Marine and Aviation Operations, took the stage at Division Newport to share her group's mission and explain the important role NOAA plays in data collection. A new agreement is in the works for a direct partnership between NOAA and Division Newport, which would increase and improve knowledge sharing and allow for more real-time collaboration between the two entities.



Partnership with New Bedford Whaling Museum on full display

At the New Bedford Whaling Museum in Massachusetts, Division Newport marine mammal research and undersea bioacoustics devices remained on display to the public after a year of pandemic closures and uncertainty. The display highlights the Navy's critical role in the undersea domain and features videos, "The Science of Seal Tracking" and "Seal Whiskers," which are part of the Naval Horizons program to introduce high school students to cutting-edge science and technology topics that impact the U.S. Navy and Marine Corps, and unique naval challenges. Students are intended to watch the videos, and then submit an essay about how it inspired them to pursue careers in science, technology, engineering, and mathematics.



Employees participated in Leadership in a Diverse Environment Event

Twenty-nine employees from across Division Newport participated in the Naval Sea Systems Command (NAVSEA) Warfare Centers' third Leadership in a Diverse Environment Event in December. The two-day virtual event, "Unleashing the Power of Inclusion and Engagement through Intentional Leadership at All Levels," featured remarks from Secretary of the Navy Carlos Del Toro; Robert D. Hogue, performing the duties of Assistant Secretary of the Navy for Manpower and Reserve Affairs; NAVSEA Commander Vice Adm. William Galinis, and NAVSEA Executive Director Giao Phan. Attended by more than 200 employees, the event focused on empathetic leadership and emotional intelligence needed to guide organizational evolution.

CELEBRATING OUR MISSION

Columbia-class Air Turbine Pump shock qualification submitted

The Columbia Mark 19 Mod 2 Air Turbine Pump (ATP) and Air Firing Valve (AFV) Shock Qualification was submitted to the Columbia-class Program Office for approval in October. This effort was the result of many years of work from the ejection system, launcher system shock, launch analysis, and testing subject matter experts. The shock qualification includes the shock test of the new muffler developed by Division Newport for the Columbia Mod 2 ATP, the paddle wheel shock test of new mechanical seal, shock extension for the AFV, and overall extension from the previous shock test accomplished in the 1980s.

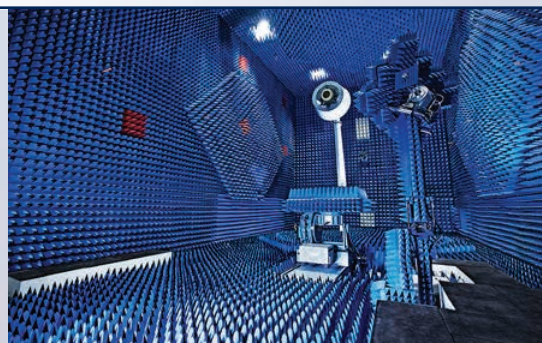


Encapsulated harpoon submarine launched at test event

In August, Division Newport participated in a successful Encapsulated Harpoon submarine test event by providing rider, shore-based, and remote support, which is part of the Navy's efforts for the reconstitution of Harpoon operational capability on Los Angeles-class submarines. As the Technical Direction Agent, In-Service Engineering Agent, System Integration Agent, and Design Agent for the Encapsulated Harpoon Weapon System, Division Newport serves as the subject matter experts to provide Harpoon integration and Encapsulated Harpoon Certification and Training Vehicle sea trials support, which is managed and funded by the Precision Strike Weapons Program Office.

Command established Submarine Imaging Sensor National Maintenance Center

In response to Fleet and sponsor concerns about the complexity, costs, and repair turnaround time requirements, Division Newport's Undersea Warfare Electromagnetic System Department established a Submarine Imaging Sensor National Maintenance Center (SISNMC) for maintaining a healthy Photonics Mast (PM) imaging sensor inventory. A revised supportability plan identified the need to transition away from the traditional Naval Supply System Command Weapons System Support repair process and into a Fleet/sponsor-funded SIS NMC repair effort. This transition will greatly improve the Fleet's ability to move PMs around and more rapidly get them into repair. The NMC approach will aid to simplify the overall repair process, reduce the total repair turnaround time, and aligns the PM repair process with the way legacy periscope repairs are managed.



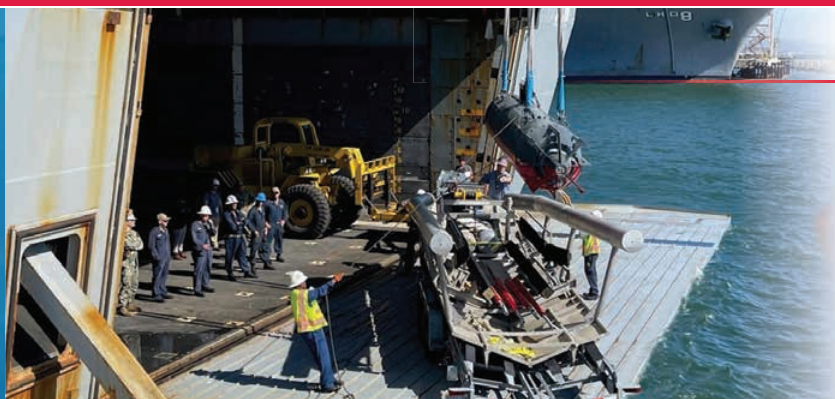
Deployable Surveillance Systems tested and integrated

The Topside Command, Control, and Communications (C3) Team completed end-to-end (E2E) testing and final integration for the Deployable Surveillance Systems (DSS) program of record headed by the Maritime Surveillance Systems Program Office. The Division Newport team worked diligently conducting integration and testing and communicating among the deployment team, the Glider Operations Center at Stennis Air Force Base and Commander Undersea Surveillance at Naval Air Station Oceana. The Division Newport team solved all issues and successfully proceeded with end to end checkouts. In the end, all integration testing was completed successfully on all devices.

Radar Team employed rapid prototyping

The Navigation Radar Team responded to a Fleet need by procuring a new commercial radar sensor and outfitting it with a specialized 3D-printed radome —designed and manufactured at Division Newport's rapid prototyping facilities. The quick prototype turnaround allowed for incorporation of Fleet feedback as well as environmental qualifications improvements in record time to meet Fleet needs. The Navigation Radar Team also championed the use of Model-Based Systems Engineering tools and techniques. The team conducted live system training and gathered valuable stakeholder feedback on the latest system upgrades.





Razorback vehicles delivered

The Razorback Team delivered Autonomous Undersea Vehicles (AUVs) to the Unmanned Undersea Vehicles Squadron (UUVRON-1) — the first mission-ready medium AUVs delivered to the squadron. UUVRON-1 conducted the first of several missions from a ship vessel in theater with two of the vehicles in fiscal year 2021. The remaining two vehicles were used for training and to gather remaining Objective Quality Evidence in preparation for the first Razorback Dry Deck Shelter installation.

Mission engineers delved into Navy's Arctic Strategy

The Arctic is a complex environment resulting in a wide variety of possible tactical situations that future submarines must be able to navigate in order to achieve necessary warfighting and peacetime objectives. Arctic studies to date have focused on environmental impact or high-level evaluation of strategic impact, but a more detailed characterization of the resulting tactical situations and their impact on anti-submarine warfare (ASW) is required to develop requirements for future submarines. Division Newport analysis conducted in 2021 identified and examined specific operational and tactical scenarios to determine ASW performance in the Arctic. Naval engagement modeling and simulation was used to generate measures of effectiveness for one-on-one submarine tactical engagements in multiple Arctic locations. This analysis provided a better understanding of ASW performance in the Arctic and formed the basis for analysis investigating performance characteristics for a future advanced submarine.



Live, Virtual, and Constructive components merged for multi-center exercise

Throughout 2021, Division Newport participated in a Naval Integrated Live, Virtual, and Constructive Exercises (LVC), known as NILEX 21, which featured notional operational vignettes involving coalition naval forces employing unmanned systems to execute various missions. LVC describes three types of components: (1) Live involves real people operating real systems (2) Virtual involves real people operating simulated systems and (3) Constructive involves fully simulated systems. NILEX 21.1 was composed of virtual and constructive components. Reliance on strictly live venues cannot serve the Navy's required pace for developing new capabilities in roles such as experimentation, test and evaluation, and mission engineering. Virtual and constructive components augment the relatively limited and constrained opportunities afforded by live venues -- giving stakeholders the ability to exercise many more "sets and reps" to facilitate and inform new capability development. NILEX 21 supported multiple stakeholders, including the Program Executive Office for Unmanned and Small Combatants, program management for unmanned maritime systems, and the Commander, Navy Meteorology and Oceanography Command.



Bilateral collaboration brought Israeli team to Division Newport

In October, Division Newport's Argus Maritime Defensive System Team welcomed engineers from the Israeli Ministry of Defense and Israeli company DSIT Solutions to the Narragansett Bay Test Facility for training on the PointShield Portable Diver Detection Sonar. DSIT Solutions, a high-tech company specializing in fiber-optic sensing, underwater security systems, sonar and acoustics, has been working with Division Newport to add detection capabilities to Argus harbor defense technology. The training event also allowed for a Navy-Coast Guard research and development limited-user evaluation of the Argus system with civilian engineers and active-duty Coast Guard security personnel. Future efforts include further integration into Argus, adding more DSIT sonars as well as Hammerhead unmanned vehicles to continue testing and evolve capabilities.



CELEBRATING OUR MISSION

AUTEC employees earned high praise for work aboard USS Cole

A surface ship radiated noise measurement (SSRNM) test event conducted aboard the USS Cole by representatives from the Atlantic Undersea Test and Evaluation Center (AUTEC) netted those who conducted the test some high praise. The SSRNM program measures and assesses acoustic signatures, and provides recommendations for improvement to all in-service cruisers and destroyers in support of undersea warfare certification. SSRNM also supports new construction surface ship acoustic trials. The program sustains, enhances, and improves SSRNM test processing and analysis capabilities at AUTEC, San Clemente Island in Southern California, Hawaii, and portable sonobuoy acoustic level test systems used for forward-deployed naval forces.

The team sent to the USS Cole was really spectacular. I really appreciated the time the team took to educate my Sailors and me," USS Cole Commanding Officer Cmdr. Vince Libasci said. "They were all very patient with my questions. We faced some challenges during the event, but the whole team was steadfast in their commitment to meeting the standard.



Facilities provided critical Fleet support

In fiscal year 2021, the Undersea Warfare Electromagnetic Systems Department Submarine High Data Rate (SubHDR) National Maintenance Center created 68 Ready-for-Issue SubHDR masts to meet the needs of the fleet and other stakeholders. The Submarine Extremely High Frequency Satellite Communications Integration Facility tested and delivered three Navy Multiband Terminals, completed 29 NAVSUP-related efforts, and supported multiple formal Advance Extremely High Frequency System over-the-air test events. Both centers also addressed 339 distance support or help desk calls related to system issues on Fleet platforms or related shore sites. In support of these systems, 158 training events were successfully conducted on Fleet submarine, ship, and shore sites.



Operational advancement achieved through live and virtual exercises

In 2021, the Undersea Warfare Combat Systems Department demonstrated the virtual submarine (vSUB) concept, a combination of Live, Virtual, and Constructive (LVC) modeling and simulation capabilities networked throughout the Division Newport campus to emulate the systems of a real submarine platform. In two separate events, the department teamed with the Undersea Warfare Weapons, Vehicles, and Defensive Systems Department to test new advancements to an advanced capability torpedo. In both tests, an instance of the vSUB was connected between the Weapons Analysis Facility and Combat Control Systems Lab, which hosted crews from both the USS Hartford and the USS Hyman G. Rickover, respectively. Their efforts helped mature the technology as well as the concept of operations. The department also used both virtual LVC and a live Fleet Exercises (or 'FLEX') event to mature its Submarine Launched Unmanned Aerial System (SLUAS) capability by executing two virtual vignettes. Live SLUAS launches were also conducted as part of Integrated Battle Problem (IBP) 2021, the first unmanned system-focused IBP, which was co-hosted by the Office of Naval Research and Commander, Pacific Fleet.





U.S. Navy photo by Michael H. Lehman

Division technology participated unmanned systems training exercise

The Expendable Mobile Anti-Submarine Warfare (ASW) Training Target (EMATT) team participated in the Unmanned Systems (UxS) Integrated Battle Problem (IBP) in April. UxS IBP 21 is a U.S. Pacific Fleet exercise designed to integrate manned and unmanned capabilities into operational scenarios to generate warfighting advantages. The week-long event involved surface, subsurface, and aerial unmanned assets, operating with littoral combat ships, guided-missile destroyers, guided-missile cruisers, submarines, and helicopter squadrons. Three Remora systems were successfully deployed from Range Support Craft; Remora is a hybrid of the Mark 39 EMATT and the Submarine Launched Device.

Department matured its cyber resiliency

The Undersea Warfare Combat Systems Department hosted the first Undersea Cybersecurity Action Board, co-chaired by Program Executive Office (PEO) Submarines and PEO Command, Control, Communications, Computers and Intelligence (C4I), designed to address root causes and improve accountability and establishment of effective cyber processes throughout the undersea enterprise for resolution of cyber vulnerabilities. In addition, the department's cybersecurity team completed the first cybersecurity insertion to the Fire Control Technician Maintenance Course, a cybersecurity curriculum designed to teach a submarine crew computing basics to cybersecurity principles and fleet application, which also includes a hands-on practicum.



Research Commons expanded services throughout Navy and beyond

Research Commons, the Command's online digital library platform and institutional repository, successfully completed a technical upgrade — Drupal 7 to Drupal 9; while users may not have noticed changes on the front end, the upgrade made the system faster. The library-based research services also increased its total users when the Naval Surface Warfare Center Crane Division expanded its subscription from 100 users to its entire command. Also joining the list of subscribers were the Naval Observatory and the Defense Threat Reduction Agency. The Division Newport-administered service has demonstrated that it is not just a warfare center resource. There is a high-level need for research information and research librarian expertise that links all Navy research and development communities.



Artificial intelligence efforts ramped up

In support of digital transformation and as the Navy increases the use of artificial intelligence (AI) to enhance capabilities, Division Newport introduced Ignite AI, a campaign to accelerate AI knowledge and proficiency. Goals of Ignite AI include informing Division Newport's change leaders and inspiring the workforce to take action in their daily tasks. As Ignite AI focuses on AI efforts across the Naval Research and Development Establishment, Department of Defense, industry and academia, the campaign aims to equip the workforce with higher levels of understanding and methods for use. To get the word out, Division Newport held AI Week in May and featured a variety of informational products to spark interest in Navy AI applications, including podcasts, reports and guides, and a one-year anniversary celebration of the Undersea Warfare AI Working Group.



CELEBRATING OUR MISSION



Course offered deep dive into operators' experience

Developing technologies for humans requires an understanding of how humans interact with systems and then optimizing those systems for the users. Division Newport's Human Systems Integration (HSI) team worked to improve the effectiveness of the systems delivered to warfighters by providing user-centered design techniques, experimentation, and testing that is centered on the operator's contribution to system performance. To share that expertise with the workforce, Division Newport offered a NUWC University course in HSI with the goal of helping engineers and scientists in the early phases of their technology design process. The HSI team's goal was to not only teach Division Newport engineers HSI concepts that can be applied to their work, but also to let the workforce know that their team is available to help in all phases of projects.

'Cyber warriors' encouraged workforce to consider cyber careers

A group of "cyber warriors" shared stories of how they became involved in the Navy's cybersecurity efforts during a panel discussion held in September. The event was aimed at creating interest among the workforce in cybersecurity career fields. A recent survey with industry and the government about cybersecurity found that the biggest challenge faced is a limited talent pool of people who want to join their teams. Currently, there are 956,341 cybersecurity professionals in the United States and 464,420 open positions in cybersecurity fields. Despite this, the message from the panel was that opportunities in cybersecurity are endless, and cyber is a domain where everyone has something to contribute. The panelists shared unique paths to their current cybersecurity roles for the Navy and gave advice to the audience.



Range capabilities showcased during virtual open house

Three of Division Newport's test ranges — the Narragansett Bay Test Facility (NBTF), the Dodge Pond Acoustic Measurement Test Facility in Connecticut, and the Seneca Lake Sonar Test Facility in New York — were featured during an Open House held in March. Designed to inform the workforce on available test ranges, the event featured a presentation focused on "Three As" for testing — affordability, accessibility and availability. A question-and-answer session was followed by a tour of the NBTF facilities, boats, and workspaces, highlighting a variety of capabilities needed for a successful test event.



Command led efforts in ocean environment information gathering

Division Newport remained the focal point of multiple cross-enterprise efforts to enable the Fleet's effective exploitation of the ocean environment. The Command coordinated partnerships among the Fleet, Undersea Warfare Development Center, Tactical Analysis Group, Naval Oceanographic Office, and private research and academic institutions to ensure that relevant, timely, and correct environmental information are continuously available to submarine operators. Throughout 2021, Division Newport-led teams continued to develop a host of next-generation undersea sensing capabilities, processing pipelines, and information systems to transition to the Fleet for deployment aboard operational platforms.





The REEF Ribbon Cutting

Northeast Tech Bridge hosted directors for quarterly meeting

Division Newport's Northeast Tech Bridge team hosted the NavalX quarterly meeting of Tech Bridge directors at Innovate Newport in October. The meeting focused on Tech Bridge operations and collaboration among the newer and more established Tech Bridges. Meeting goals included sharing successful partnering agreements, defining the Tech Bridge organizational structure, and determining a path forward. The ultimate goal for this group of connectors: employing the Tech Bridge network as a means of evolving Navy technology.

At the close of the meeting, the Tech Bridge team held a ribbon-cutting for the Rapid Engineering and Experimentation Facility, or "REEF."

Prize Challenge provided solutions for waterside security

In July, Division Newport's Northeast Tech Bridge and the 401 Tech Bridge announced its second Prize Challenge: "Unmanned Surface Vehicle for Waterside Security." The kick-off information session was held at the 401 Tech Bridge's new facility in Portsmouth, RI. This \$50,000 challenge sought the creation of an expeditionary unmanned surface vehicle (USV) for security in harbors and ports that is modular and attritable. The Division Newport team displayed a towed array cable, a net-launching device, and bathymetric equipment to help company representatives visualize the payload requirements of the vehicle. This theoretical challenge that required only a written proposal brought in numerous solutions from industry partners.



Prize Challenge led to rapid design tool for advanced manufacturing

A Division Newport team of engineers identified the need to streamline a reverse engineering process. They selected an onboard component to use as an example — the handwheel, an item found on all ships. Ships may have hundreds of different variations of handwheels, which are used to open and close a wide variety of valves and can be made from a number of different materials. These factors create a challenge if one were to break because it is difficult to keep every type of handwheel on ships. This may result in critical equipment lying dormant in need of a particular part. To find a solution, Division Newport joined forces with the NAVSEA Technology Office (SEA 05T), Naval Surface Warfare Center Philadelphia Division, the NavalX Northeast Tech Bridge, and 401 Tech Bridge for the "U.S. Navy Challenge: Rapid Design Tool for Advanced Manufacturing." This Prize Challenge announced in May awarded \$30,000 to the company that developed software tools that would produce computer-aided design files for the needed handwheel. This solution allowed for on-demand and at-sea production of replacement parts as well as utilized the expertise of local industry partners.



CELEBRATING OUR MISSION

Investments propelled science and technology goals

Naval Innovative Science and Engineering (NISE) authority provided significant value to Division Newport's science and engineering (S&E) community by providing a mechanism to fund innovative basic and applied research, the transition of technologies into operational use, scientific equipment/infrastructure revitalization, and S&E workforce development. In fiscal year (FY) 2021, Division Newport focused 15% of its NISE portfolio on basic/applied research, 45% on technology transition with a focus on "moonshots" and accelerating capability to the Fleet, 32% on workforce development, and 8% on revitalization and recapitalization on equipment upgrades. Division Newport successfully accrued 100% of its NISE FY21 authority while funding 94 NISE projects, producing 109 technical papers, 10 technical presentations, and five invention disclosures. In addition, 40 advanced degrees were pursued with 12 degrees obtained. More than 500 Division personnel, Naval Research Enterprise Internship Program interns, and Science, Mathematics and Research for Transformation (SMART) scholars were mentored or gained experience in a technical area. Sixty-four percent of NISE projects reported collaboration with other warfare centers, Department of Defense organizations, academia, or industry. In addition to NISE, the use of FY21 Capital Investment Program (CIP) authority provided equipment and infrastructure needs for the revitalization of equipment, instrumentation, and facilities. Approximately 50% of capital authority was targeted at network upgrades, backup solutions, infrastructure, and modernized phone systems to promote improvements for the workforce. Approximately 25% was used to support construction projects to optimize space to perform current and projected future workload in optimized, modernized spaces. In addition, CIP was also used to procure the hardware required to address the high-performance computational processing and storage needs, to stand up a laboratory to test Non-Propulsion Electronic Systems for future submarines, and to procure a scanning underwater laser velocimeter to conduct sensor testing.



Center invested in new classified meeting space

Command leadership held a ribbon-cutting for a new classified meeting space on campus, which was part of a center improvement investment. The conference room provides the workforce with an additional option for collaborating in a secure environment — a common request from the workforce. The work space is equipped with all essential tools for meetings with up to 30 people.

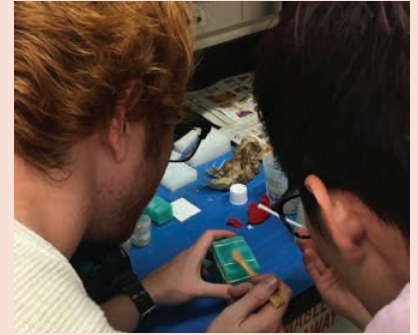
Innovation event explored Subsea Seabed Warfare

In September, a cross-department group of more than 30 scientists, engineers, and reservists gathered in the Rapid Innovation Center for a multi-day innovation event designed to explore the technology possibilities related to Subsea and Seabed Warfare (SSW). The event focused on learning about new capabilities and threats, brainstorming future systems, and understanding Division Newport's place in the big picture. Innovation breakout sessions tackled new and challenging mission sets that the Navy will face over the next several decades. The event also generated interest among the participants to pursue projects related to SSW technologies in the future and now the Command has an informed cadre of scientists and engineers who can engage with stakeholders across the SSW enterprise. The innovation event, which gave the workforce an opportunity to influence the future, was briefed to the SSW Community of Practice and Division Newport leadership.



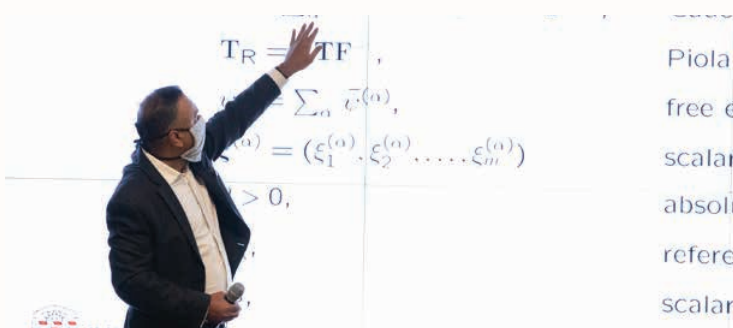
Command increased partnerships with academia

The Naval Engineering Education Consortium (NEEC) attracts trained professionals into the various and broad technical fields associated with Navy ships and submarines, e.g., naval engineering. The purpose is to increase and maintain a knowledge base for the increasingly sophisticated technologies critical to the design and operation of U.S. Navy's complex, interrelated systems. NEEC employs project-based research at colleges and universities to target the Navy's technology needs by cultivating a world-class science and engineering workforce via active student participation. NEEC supports research and development at academic institutions to actively engage professors and their students, along with knowledgeable personnel at Division Newport who serve as technical mentors. In FY21, Division Newport collaborated with faculty and students at Virginia Tech, University of Rhode Island, University of Tennessee at Knoxville, Michigan Technological University, and Baylor University.



The SMART Scholarship-for-Service Program focuses on the need to support the education of America's future scientists and engineers. To help achieve this, the SMART program is part of a concentrated effort to improve the flow of new, highly skilled technical labor into Department of Defense facilities and agencies and to enhance the technical skills of the workforce already in place. SMART offers scholarships to undergraduate, masters, and doctoral students who have demonstrated ability and special aptitude for excelling in STEM fields. In FY21, Division Newport welcomed a cohort of 10 SMART scholars who interned onsite during summer breaks and pursued their research during the school year. Upon graduation, they convert to full-time government employees and join the Division Newport team.

The Massachusetts Institute of Technology (MIT) Industrial Liaison Program (ILP) is a membership-based program for large organizations interested in long-term, strategic relationships with MIT. In FY21, Division Newport resumed participation in this program with a kick-off field trip attended by members of Division Newport's Human Factors group. They visited the Affective Computing Group at MIT Media Labs, and MIT Lincoln Labs, to make connections with researchers in areas that will augment the Navy's needs in research and development for Human Systems Integration.



Division Newport's Chief Technology Office hosted the University Research Lecture Series, which enhanced communication between local faculty and the Navy's subject matter experts working in related areas of naval interest. In FY21, multiple faculty from other local universities participated by briefing the Command's science and technology community on their research, including Brown University, URI and its Graduate School of Oceanography, University of Connecticut, and UMass Dartmouth.

In FY21, Division Newport had 38 active educational partnership agreements (EPA) with various schools and educational organizations, concentrated on local and regional universities; these EPAs encourage and enhance study in scientific disciplines through collaborative research.



APPRECIATING OUR PEOPLE



The “Celebrating our Mission, Appreciating our People” campaign, a series of onsite events designed to celebrate the undersea warfare mission and Division Newport employees, was kicked off in early summer. The events were designed to showcase and expand workforce awareness, recognize its accomplishments, and show appreciation for the workforce. They also provided an opportunity for employees — both new and experienced — to make connections to foster collaboration and innovation. In addition to the events shown here, other opportunities for employees to get involved and reconnect included a food truck on campus, mentoring events, new professional events, speaker events, and more.

Division Newport celebrated employees with ice cream social, leadership meet & greet

The “Celebrating our Mission, Appreciating our People” campaign kicked off with an ice cream social in July. Attended by approximately 500 employees, the event was hosted by Commanding Officer Capt. Chad Hennings and Technical Director Ron Vien along with deputy technical directors and department heads. Part of a series of onsite summer events, the social provided an opportunity for networking and gave employees an opportunity to learn more about the Command’s support to the U.S. Navy.



Rear Admiral Kevin Byrne attends ice cream social



Sub Day expressed employee appreciation

The Civilian Morale, Welfare and Recreation (CMWR) Committee hosted a Sub Day for employees in September and, despite the rainy weather, a steady flow of employees attended. About 1,100 boxed lunches were distributed.



Employees hit the road for Fun Run/Walk

Nearly 150 Division Newport employees took to the campus roads in September for the second annual 5K Fun Run/3K Fun Walk, which also featured a Health and Wellness Fair. Rain greeted the participants at the starting line and persisted throughout the race, but did not dampen any spirits. The event also included a Health and Wellness Fair. The courses, 3.1 miles for runners and 1.86 miles for walkers, covered much of the Division Newport campus, including its coastal scenery and challenging hills.



Holiday season celebrated with tree lighting and carols

Almost 100 employees gathered to sing carols during a tree lighting ceremony held in December. Five Navy Band Northeast members played tunes for the festive gathering that included group sing-alongs, cocoa, hot cider and cookies. Technical Director Ron Vien talked about the mission focus on the Columbia-class submarine program and noted that the future SSN(X) is in the beginning stages of research and development. Vien urged employees to recharge during the holiday by “unplugging,” especially while on leave.



Bi-weekly livestream events connected workforce

Commanding Officer Capt. Chad Hennings and Technical Director Ron Vien held more than a dozen livestream events to keep employees updated and connected. The two leaders discussed a number of topics at each event, including the Division's alignment with NAVSEA, U.S. Navy and Department of Defense strategy, focus areas and initiatives, team highlights and accomplishments, diversity and inclusion, training opportunities, visitors and events, patents and awards, the latest COVID-19 guidelines, and other relevant and timely topics. Each event provided the opportunity for employees to ask questions in person or online.



APPRECIATING OUR PEOPLE

Employees underscored importance of determination

Tales of perseverance were the focus of the fifth edition of "The Knot" held in October. Five employees shared stories of overcoming challenges and obstacles, mostly as a result of the pandemic, ultimately doing everything they and their teams could to deliver on the Navy's mission.



The Knot



Chafee Auditorium - Wednesday, Oct. 6, 11 a.m. - no
Story Prompt: Perseverance



Bring a Co-worker to Work Day showcased capabilities

In September, more than 150 Division Newport employees registered for the annual "Bring a Co-worker to Work Day" event, and seven departments welcomed participants for 14 different tours and demonstrations. The event encouraged employees to see how other departments operate, created collaboration opportunities among departments, and provided employees awareness of the breadth of work done at the Command.





Sensors and Sonar Systems Department hosted networking events

From June through September, the Sensors and Sonar Systems Department hosted a series of "Division Days" as a way to connect newer professionals with the rest of the workforce and to showcase their work. An open house was held for each of division: Science and Technology; Advanced Concepts; Sensors and Arrays; Submarine Systems; Surface Ship and Aviation Systems; as well as the Deputy Department Head, Customer Advocates, Business Operations and Information Technology Operations. Employees shared their work through posters, project overviews, presentation, demonstrations, and lab tours.

Machine learning community hosted information session

In October, more than 100 employees learned more about the machine learning community of interest at Division Newport. Machine learning uses computer algorithms and models to perform tasks without using explicit instructions or rules. In this process, performance is improved by providing the model with more data, not more rules. It has been around since the 1950s, but only during the past 10 years has the concept has become a reality through the availability of large amounts of data and algorithms for successful software. Some machine learning topics being worked on at Division Newport include detection, classification, and video segmentation.



Employees honored for earning advanced degrees

Seventy-nine Division Newport employees were recognized for earning college diplomas at an Academic Degree Training Recognition Ceremony held in September. The honorees represent those employees who have earned advanced degrees since 2018. This includes six bachelor degrees, five graduate certificates, 62 master's degrees and six doctorates from 23 different institutions. Division Newport offers four different options for those seeking advanced degrees, each with different levels of compensation and time commitments. All candidates are competitively selected. Most of those who earned degrees participated in the part-time Academic Degree Training Program, which is for part-time students attending classes outside of duty hours and intended for those seeking associate, undergraduate, or graduate degrees, as well as certification programs. A few honorees received advanced degrees through the Fellowship Program, which is normally a one-year opportunity intended for master's and doctorate programs. More rigorously selected and typically only offered to a few applicants a year, Fellowship participants receive tuition allotment, travel and living expenses, and their salaries are paid while attending school full time. Also available to employees is an online-based program through the Naval Postgraduate School in Monterey, California, as well as other specialized academic programs.



APPRECIATING OUR PEOPLE



Air Force chief diversity and inclusion officer discussed Black History Month

G. Lee Floyd, chief diversity and inclusion officer of Headquarters Air Force Reserve Command at Robins Air Force Base in Georgia, was hosted at Division Newport in February as part of the Command's African American/Black History Month celebration. During his livestream talk, he said, "This is a time to highlight the contributions of Blacks to the growth of this country. Our history books don't talk very much about certain groups that are a part of our country. The purpose of these observances is to share with others these contributions."

Holocaust survivor recounted experience

In April, nearly 200 Division Newport employees attended a Holocaust Days of Remembrance livestream event featuring Peter Stern, a survivor of the Ravensbrück and Bergen-Belsen concentration camps.

"There is a belief among Jews that we all die twice: Once when our body no longer functions and again when no one remembers us," Stern said. "We have to remember all those people who have died — it's 50 to 60 million worldwide."



Pride Month celebration concluded with guest speaker

Division Newport punctuated its Pride Month celebration in June by welcoming guest speaker Lt. Cmdr. Blake Dremann for a talk that also was broadcast across Naval Sea Systems Command. More than 400 employees across 10 warfare centers tuned in for the event. Dremann, who currently is assigned as the ordnance audit program manager at Navy Supply Systems Command (NAVSUP) Ammunition Logistics Center at NAVSUP Headquarters in Mechanicsburg, Pennsylvania, discussed his experience as an LGBT sailor, including why he serves, speaks publicly, and celebrates Pride Month.

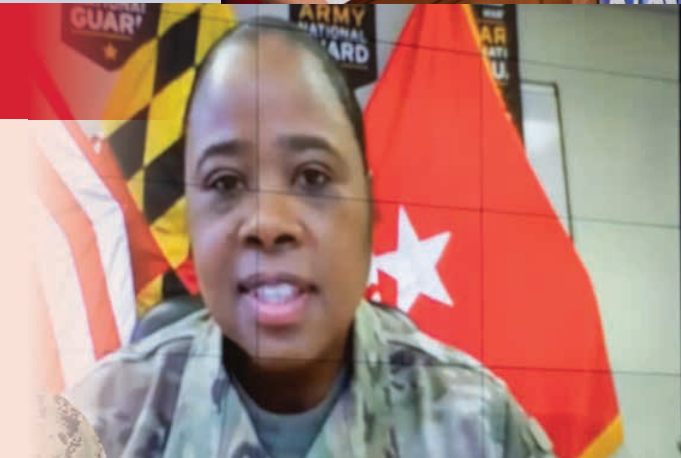
Commander shared key elements of leadership

Open communication is key to fostering a workplace based on respect and equality. Creating those open channels of dialect may not be the easiest thing in highly technical environments, though, Cmdr. Cindy Keating, lead of the Cyberspace Activities Portfolio at Navy Cyber Warfare Development Group, told a group of Division Newport employees in August. In discussing how to create those open lines of communication, Keating identified what she believes are four key principles of leadership – know your people and co-workers, care for your people and help them navigate through difficult situations, know yourself, and explain the "why."



Women's History Month speaker highlighted strong roots, resiliency

From Army Reserve Officer Training Corps cadet at Hampton University to commander for the Maryland Army National Guard, Brig. Gen. Janeen Birckhead has proven herself a devoted leader and public servant. Her personal story provided ample inspiration for a livestream broadcast in March. Honoring Women's History Month, Birckhead shared advice for leadership and spoke about women's equality, strength, and resiliency during tough times.



Nevada National Guard Major General shared wisdom on Veterans Day

Maj. Gen. Ondra Berry shared his knowledge on leadership and service in rapid fire during a livestream broadcast held in November. Berry, the Adjutant General for the Nevada National Guard, joined Division Newport's workforce, which includes many veterans, via video conference for his talk as a part of the command's celebration of the Veterans Day holiday.



Speaker told story of Narragansett tribe's history, resiliency

In November, Silvermoon Mars LaRose, assistant director of the Tomaquag Museum in Exeter, Rhode Island, visited Division Newport in celebration of National American Indian Heritage Month. LaRose, a member of the Narragansett tribe, spoke to the "Traditions and Lifeways of Indigenous Southern New England" with an emphasis on the local Narragansett tribe.



NAVAIR engineer shared journey to authenticity

Messages of authenticity, vulnerability, and inclusivity were shared with the Division Newport workforce during a talk about why an inclusive society benefits all in a presentation by Alana Spurling, a mechanical engineer at Naval Air (NAVAIR) Warfare Center Weapons Division China Lake in California, in July. As a transgender government employee, Spurling was invited to Division Newport by the Special Emphasis Project Management Office and the Equal Employment Opportunity Office to recognize and celebrate the importance of diversity and inclusion in the workforce.



Speaker encouraged 'expanding the circle' for people with disabilities

With a highly decorated 35-year career in the Department of Defense, almost entirely focused on equality, diversity and inclusion, Dr. Claiborne Douglass Haughton Jr., shared his personal story of living with disabilities during a virtual presentation to Division Newport's workforce in October. Haughton, who retired in 2002 as acting Deputy Assistant Secretary of Defense for Equal Opportunity, is now a motivational speaker and consultant. Division Newport hosted him as part of National Disability Employment Awareness Month, observed each October to recognize the contributions of people with disabilities to America's workplaces.



APPRECIATING OUR PEOPLE



Women in Science and Engineering group appointed new leads

Two co-leads and one vice lead were appointed to the Women in Science and Engineering (WISE) employee organization, which serves as a support system within Division Newport to expand and improve educational and professional opportunities for women in all fields of science, technology, engineering, and math by facilitating individual, institutional, and social change. WISE leaders include scientists and engineers from Mission Engineering and Analysis Department and the Undersea Warfare Combat Systems Department.

Combined Federal Campaign goal exceeded

Division Newport employees exceeded the Command's 2020 goal for fundraising for the Combined Federal Campaign by 116%, raising \$144,837 despite efforts taking a virtual approach. Along with exceeding its goal of \$125,000 in donations, employees also donated 280 volunteer hours. The total amount raised was \$17,803 more than in 2019, with 225 employees donating.



Engineers won gold at Digital Olympics event

Eight Division Newport engineers from the Sensor and Sonar Systems Department's Surface Ship and Aviation Systems Division medaled in the first Program Executive Office for Integrated Warfare Systems (PEO IWS) Digital Olympics competition held from February to March. They took home gold, silver, and bronze medals in individual competitions and gold in the team competition. Participants learned more about digital engineering principles while also applying them to their daily tasking from PEO IWS. The competition leveraged a gamification format and was designed to measure knowledge gained and skill growth — as well as prepare for the next phase of digital transformation.

Employees vaccinated through partnership with Naval Health Clinic

In early 2021, when coronavirus vaccines were being rolled out in phases and harder to obtain, more than 1,200 Division Newport employees were vaccinated through short-notice opportunities at the Naval Health Clinic New England located on Naval Station Newport. Government, military, and contractor employees were allowed to receive Moderna or Pfizer vaccine doses that were in danger of being discarded because they were already opened and intended for someone who canceled an appointment. Within hours of notification of available doses, the Command was able to reach out to employees and get them signed up for the vaccine that day.



Participants detailed experiences in Employee Rotational Program

In August, engineers and scientists participating in Division Newport's Employee Rotation Program, briefed leadership and colleagues on what they've learned throughout the program. The 18-month rotation provides an opportunity for journey-level employees to work in various departments to expand their knowledge base by exposing them to other aspects of the Command's operations. Those selected rotate across up to three departments in track categories that include test and evaluation, cybersecurity, combat systems, analysis, and payload integration. After program overviews, previous rotation participants discussed their experiences in the program and encouraged attendees to apply.

Three female leaders offered advice in honor of Women's Equality Day

Seize opportunities, speak up and take charge of your career, accept career paths that are unexpected, and don't hold yourself back were the major themes of a Women's Equality Day panel discussion with three female department heads held in August. The speakers, Vicki Comeau, head of the Corporate Operations Department, Denise Brown, head of the Undersea Warfare Engineering and Analysis Department, and Pat Eno, head of the Sensor and Sonar Systems Department, talked about their challenges and experiences during the event hosted by the Equal Employment Office and the Federal Women's Program. The panel shared details about their careers that began in the 1980s and the paths that led to each becoming head of a department.

Courses helped employees develop leadership skills

A leadership competency training curriculum was developed to cultivate competent and successful leaders within the Division Newport team. The curriculum utilized multiple training methods, such as LinkedIn Learning, NUWC University and vendor-provided training. Multiple training opportunities were offered in July and August, including the "Everything DiSC Agile EQ" leadership development course, a one-day pilot course on self-leadership and a NUWC University pilot class titled "Self Leadership and Communication," and each is geared toward an employee's career and leadership paths. In November, the inaugural Propel Launch Lite course was held. The one-day class covered a breadth of topics, such as communication, giving feedback, dealing with conflict, employee engagement, strength-based leadership and situational leadership.

Biomimicry workshop expanded ideas

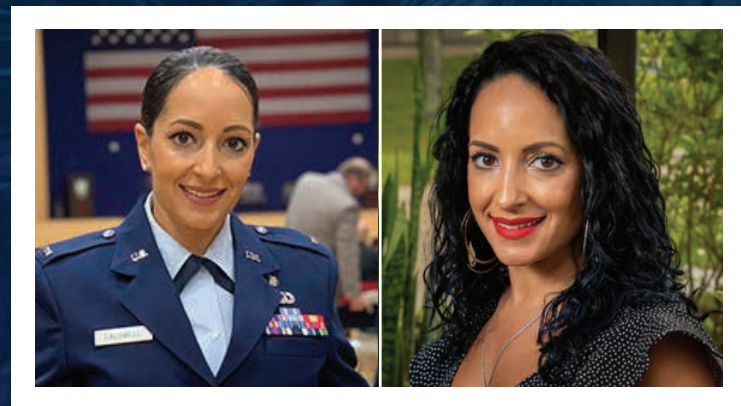
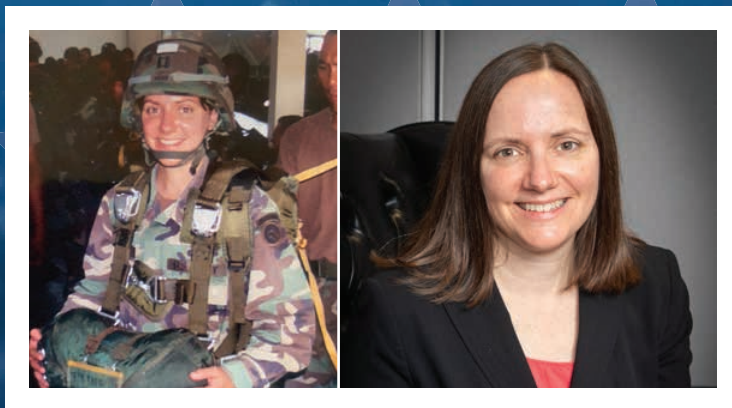
In November, a group of Division Newport professionals gathered for the Biomimicry Design Challenge: Undersea Awareness in an effort to apply biomimicry thinking to maritime technology challenges. Participants considered situational awareness at certain points in the ocean and explored what could be borrowed from nature. How could cues from nature help with detection, classification, localization, and tracking in a GPS-denied environment? Ideas needed to be also sensitive to deployment and recovery concerns, enhance the safety of operators, and improve situational awareness (e.g., collision avoidance). The event successfully produced nine concepts that were excellent candidates for future development and potential invention disclosures.

APPRECIATING OUR PEOPLE

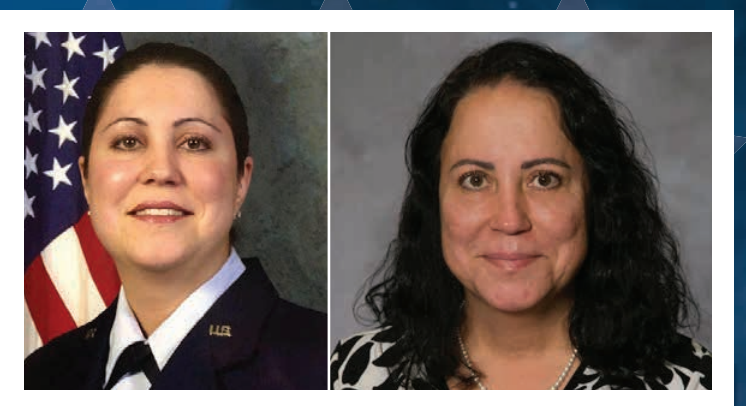
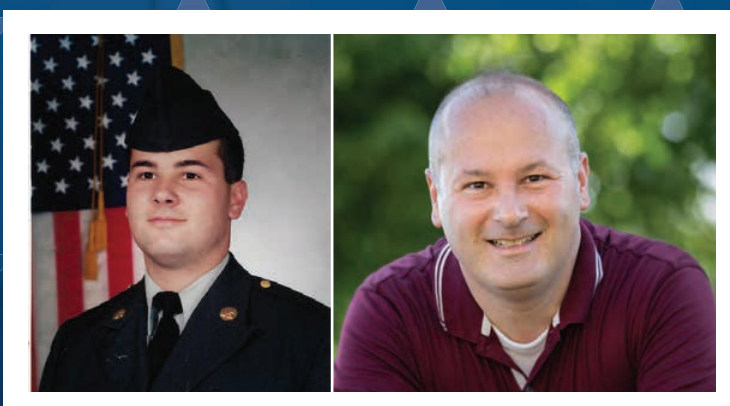
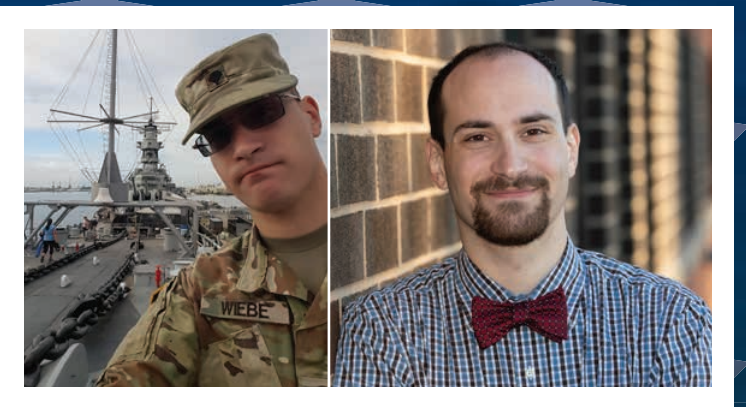
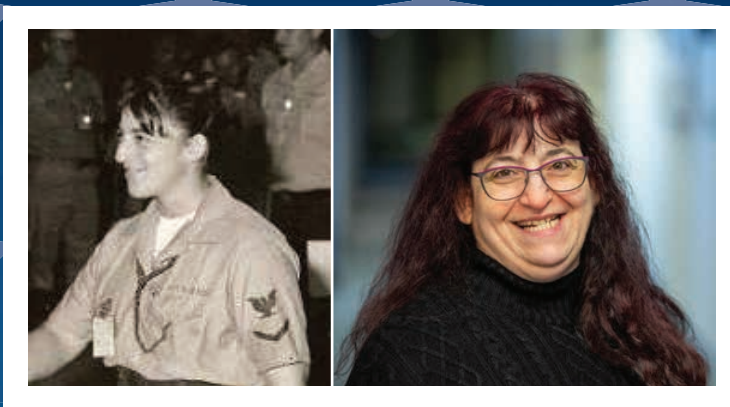
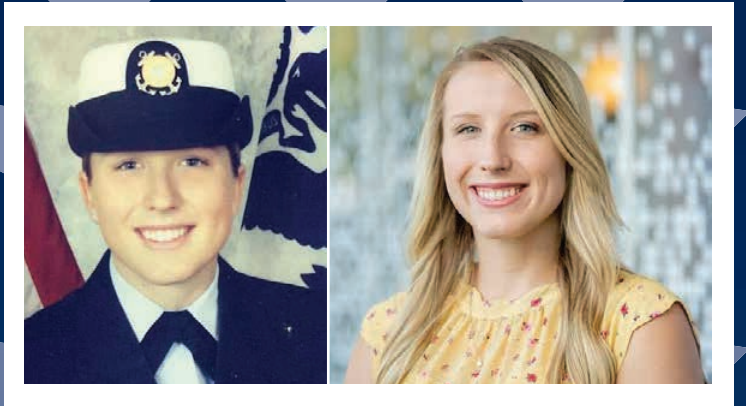


CELEBRATING DIVISION NEWPORT VETERANS

Each month throughout the year, Division Newport featured an employee who has served in the military. Profiles included details about their time in the service, their careers at Division Newport and photos. In November, veterans were invited to gather in the Collaboration Center for a 'Cuppa Joe' in honor of Veterans Day. Attendees represented their branch of the military by wearing ship, squadron or company ball caps and patches, and shared stories about their service.



VETERANS



APPRECIATING OUR PEOPLE

Command honored top achievements at in-person ceremony

After a one-year hiatus because of the coronavirus pandemic, the Division Newport Annual Awards ceremony returned to an in-person, two-day event to honor more than 600 award winners in July. Recognized for outstanding contributions during 2020, the winners showed tremendous versatility in fulfilling the mission of undersea superiority while adapting to the pandemic, said Technical Director Ron Vien. There were 360 different nominations for a total of more than 1,200 nominees up for awards, which were judged by a selection committee comprised of 200 colleagues. The 2020 Annual Awards were held as a part of the "Celebrating our Mission, Appreciating our People" campaign.



'Wall of Innovation' recognized Division Newport's advancements in science, technology

A "Wall of Innovation," featuring patents, journal articles, and technology transitions that originated from Division Newport's workforce was unveiled in a ribbon-cutting ceremony held outside the Integrated Display Center in September. To make that idea a reality, the Chief Technology Office partnered with the Visual Information and Imaging Branch to research and select the content, which will be updated regularly with new patents, technology transitions, and journal articles written by Division Newport personnel that have been published in professional journals. The wall also features an explanatory diagram of the technology transfer process by which inventions and other technology products are moved into the Fleet, academia and private industry.



Division Newport inventors honored

In February, a patent awards ceremony was held to honor 16 Division Newport inventors who earned patents in 2020 that spanned the problem-solving gamut — from a catapult launcher and device that harvests resonant wave energy to a method for determining the instantaneous polarization of propagating electromagnetic waves. Hosted by the Patent and Chief Technology offices, the livestream event was aimed at demystifying the patent process for potential Division Newport inventors.



Shark Tank



Patent Ceremony

APPRECIATING OUR PEOPLE

Throughout 2021, members of the Division Newport workforce won 48 awards as part of the External Awards Program. The program's success is a result of sustained commitment from the senior leadership team to ensure the workforce and command are recognized for outstanding performance at every level. Here are some highlights from the award winners:

Dr. Delores M. Etter Top Scientists and Engineers for the Year Awards

Dr. David Tonn, Dr. Simon Freeman
Lightweight Low Cost
Conformal Array Team

Russell Egnor Navy Media Awards

Kerri Spero

Warfare Centers Awards

High Altitude Antisubmarine
Warfare Capability Team
Hispanic Heritage Observance
Committee
Force Level Analysis Working Group
Information Technology
Infrastructure Plan Team
NUWC University Team
Phantom Chariot Team
Rat Trap Team

Acquisition Management System Team
NAVSEA Live, Virtual, Constructive Team

Risk Management Framework
Tiger Team

Rotational Program Team
Torpedo Flushing Team
AN/BYG-1 Combat Systems
Hardware Team

Department of Navy Superior Civilian Service Award

Patrick Kelley
Robert McGovern
Mark Snyder

Department of Navy Meritorious Civilian Service Award

Martin Moebus
Dr. Kimberly Cipolla
Dennis Tierney
Rebecca Chhim

**Department of Navy Meritorious
Civilian Service Award (cont.)**

Cheryl Robinson
James Manton, Jr.
Tammi McCarraher
Jeffrey Prater

**Department of Navy Civilian Service
Achievement Medal**

Sravanthi Bodana
14v19 At-Sea Test Team
Adam Gwaltney
Dr. Chidambar Ganesh (Nautica Model
Based Systems Engineering)

**National Defense Industrial
Association Bronze Medal**

Mark Snyder

**Women of Color Technology
All-Stars and Technology
Rising Stars**

Alexandra Sanz-Guerrero
Paula Farina

System Safety Society Awards

Dan Foley
Systems Safety Team

**CNO Awards For Achievement I
Safety Ashore/Large Non-Industrial**

Naval Undersea Warfare Center
Division Newport

**Program Executive Office Integrated
Warfare Systems Excellence Award**

Contracts Team (Newport)
14v19 At-Sea Test Team
Dr. Chidambar Ganesh (Nautica Model
Based Systems Engineering)
Shanna Fontenot

**National Defense Industrial
Association Lt Gen Thomas R.
Ferguson, Jr. Systems Engineering
Excellence Award**

Mark 48 Mod 7 Advanced Processor
Build Team

**Black Engineer of the Year Award
Science Spectrum Trailblazer**

Mason Cooper
Darryl Mensah

**Black Engineer of the Year Award
Modern-Day Technology Leaders**

Guilherme Fernandes
Soutongonoma Zongo

**Department of Defense Workforce
Recruitment Program Awards**

Michelle Eddy

Providence Business News

Rebecca Chhim

WORKFORCE METRICS




3,579
Federal Civilian



28
Military



2,930
Contractor

\$107K 
average gov't civilian salary

72% of workforce are scientists and engineers

54% of workforce has Bachelor's degrees as their highest degree (1,945 total)



31% of scientists and engineers have Master's degrees as their highest degree (957 total)

156 employees have PhDs as their highest degree

85% of workforce has a four-year degree or higher



Veterans make up **14%** of the workforce

Reservists make up **4%** of the workforce

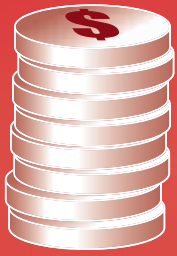
Age Breakdown of Workforce

20-29.....	23.48%
30-39.....	21.29%
40-49.....	17.19%
50-59.....	23.76%
60-69.....	13.34%
70+.....	0.95%



(Government Personnel Only)

ECONOMIC IMPACT



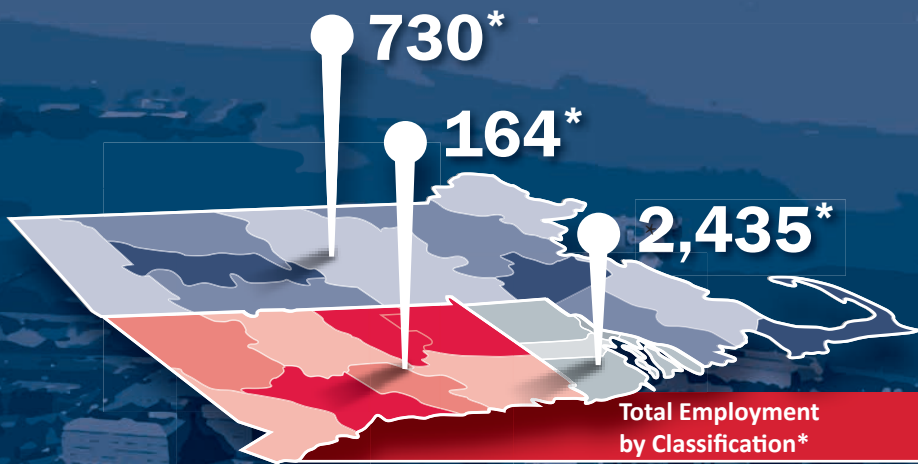
\$1.4 Billion
Total Funding



\$535 Million
Total Gross Payroll
for Payroll, Contracts, Construction, and Services Purchased

\$255 Million
in Small Business Obligations

68 New Partnership
Agreements Established



3,329

Civil Service Employees
in Southeastern New England

Rest of U.S. 250*

Total Employment by Classification*	Civil Service Employment	Contract Work-Years	Est Overall Employment
Engineering/Science	2,589	1,055	3,644
Technician	289	634	923
Information Technology.....	176	159	335
Professional Administrative.....	481	864	1,345
Administrative Support	24	134	158
Clerical	15	38	53
Wage Grade/Other	1	46	47
Students.....	4	0	4
Total	3,579	2,930	6,509

*These numbers reflect government civilians only.

Data as of 9/30/21

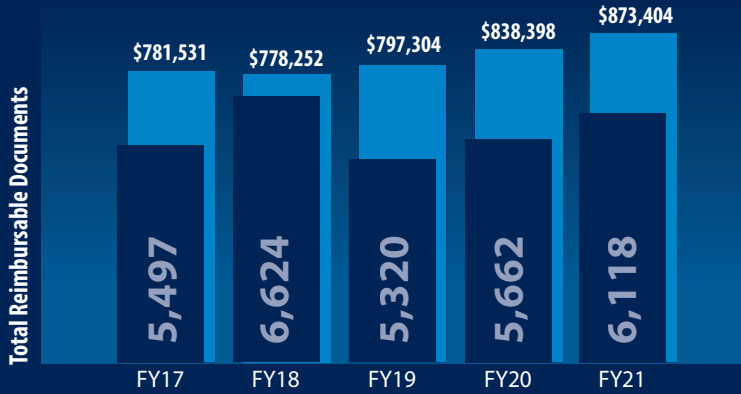
*Includes all detachments

ORGANIZATIONAL PERFORMANCE

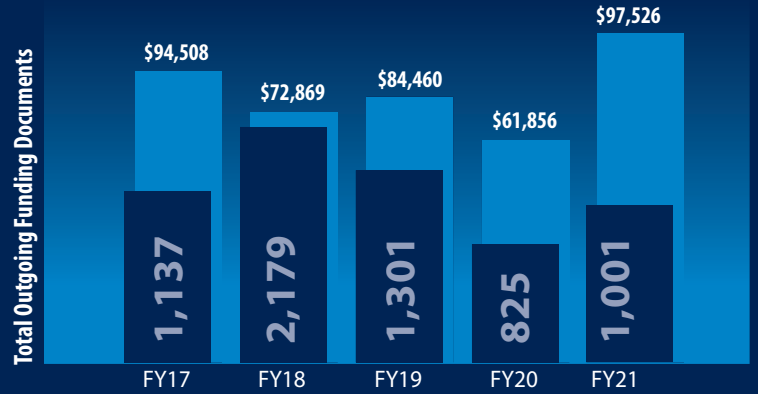
Incoming and Outgoing Funds



FY21 Reimbursable Orders Received
\$873,404,000

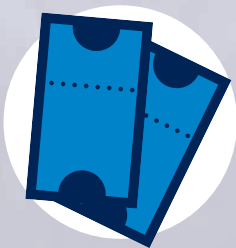


FY21 Outgoing Funds
\$97,526,000



Financial Improvement and Audit Readiness efforts continued

The Division Newport Financial Improvement and Audit Readiness (FIAR) Team continued to support the Department of Defense and the Navy's massive effort to achieve audit readiness. The first full financial statement audit began in 2017 when the Navy contracted an independent public accountant. To date, Division Newport's FIAR Team responded to and supported multiple on-site and virtual audit reviews, thousands of audit sample requests, corrective actions and findings with 100% on-time delivery of data. In fiscal year 2021, the FIAR Team concentrated efforts on internal testing of various financial areas such as Civilian Pay, Travel, Financial Statement Reporting, and Property. The Navy's goal is to achieve a positive audit opinion by 2027 at which time Division Newport can maintain a constant state of audit readiness by having business processes that are sustainable, traceable, and repeatable.



Vouchers Processed
3,632

Travel Orders Processed
4,439



Contracts team won PEO IWS Team Excellence Award

A Division Newport contracts team won a Program Executive Office Integrated Warfare Systems Team Excellence Award in fiscal year 2020. The team was recognized for their swift action and coordination to ensure seamless operation of the Naval Array Technical Support Center (NATSC) towed array facility. The team "demonstrated a high degree of proficiency and resourcefulness in responding to a protest of a support contract." The Government Accountability Office put a stay on the contract until a protest was resolved, which presented a critical situation in the number of hours remaining on the contract. The team worked through existing processes to keep the work on schedule with no interruption to the Fleet. "This near-impossible task required unparalleled effort and diligence from the contracts team and will result in avoidance of a stop-work situation for personnel supporting Intermediate Maintenance Activity (IMA) capabilities at multiple fleet sites in the U.S. and overseas," the award states. The IMA capabilities supported by NATSC include: array shipboard on-loads/off-loads; worldwide casualty report response; intermediate level array/module testing, maintenance and replacement; spares and repair material procurement; and pierside handler refurbishments.

BALANCED SCORECARD

Financial Perspective

		Target	Results
Sustain Business Excellence in Working Capital Fund Management	Actual \$ Direct (New Orders) (\$M)	\$888	\$873
	Total Direct Work-Years	2,687	2,709

Customer/Stakeholder Perspective

		Target	Results
Ensure Regulatory Compliance	Environmental Spills	0	>0
	Security Violations	0	0
	Electronic Spills	0	>0
Ensure Strategic Awareness and Communications	% Available Mission Critical Field Team Positions Filled	100%	75%
Execute Technical Commitments as Promised	Customer Survey Overall Satisfaction Rating	90%	92%

Internal Perspective

		Target	Results
Meet Commercial Acquisition Objectives	% of Contract Obligated Funds Awarded to Small Business	28%	34%
Steward Technical Capabilities	% RDTE Current FY Authorized Funding	40%	40%
	% of Total S&T Work-Years	8%	5%
	Number of S&T Direct Work-Years	169	146
	Number of S&T Indirect Work-Years (NISE)	75	81
	Refereed Open Literature Publications	65	47
Foster Innovation and Collaboration	Patent Applications Filed	48	35
	Invention Disclosures	60	31
	Number of Active Partnership Agreements	120	141
	Number of Distinct Partners	165	234
	Number of New Partnership Agreements Established	103	68
Optimize Internal Investment Portfolio	% Investment Portfolio Collaborative With Other Activities	40%	61%

Employee Perspective

		Target	Results
Recruit and Retain High Caliber Workforce	End Strength	3,541	3,579
	External Hires	264	305
	Retention Rate: 5+ Years	90%	86%
	External Award Nominations	107	178
Train and Mentor Workforce in Mission-Critical Competencies	Employees with Advanced Degrees (Total Workforce)	30% Masters; 6% PhDs	26%/4%
	Scientists and Engineers with Advanced Degrees	37% Masters; 10% PhDs	31%/5%
	% of Employees that are Compliant with DAWIA Field Certifications	100%	100%
	% of Employees that are Compliant with DAWIA Continuous Learning Points	100%	99%
	% of Employees on Track for Financial Management Certification	80%	80%



Arbor Day



Special Emphasis Program Manager



Hack Fridays



Heading to VIP Brief



The Dark Side



Briefing in Chafee



Warfare Center Leadership



Warfare Center Moment



Touring Facilities



Marine Biology Week



UUV Development



Mentoring



Machine Shop



Brief on World War II



Food Truck



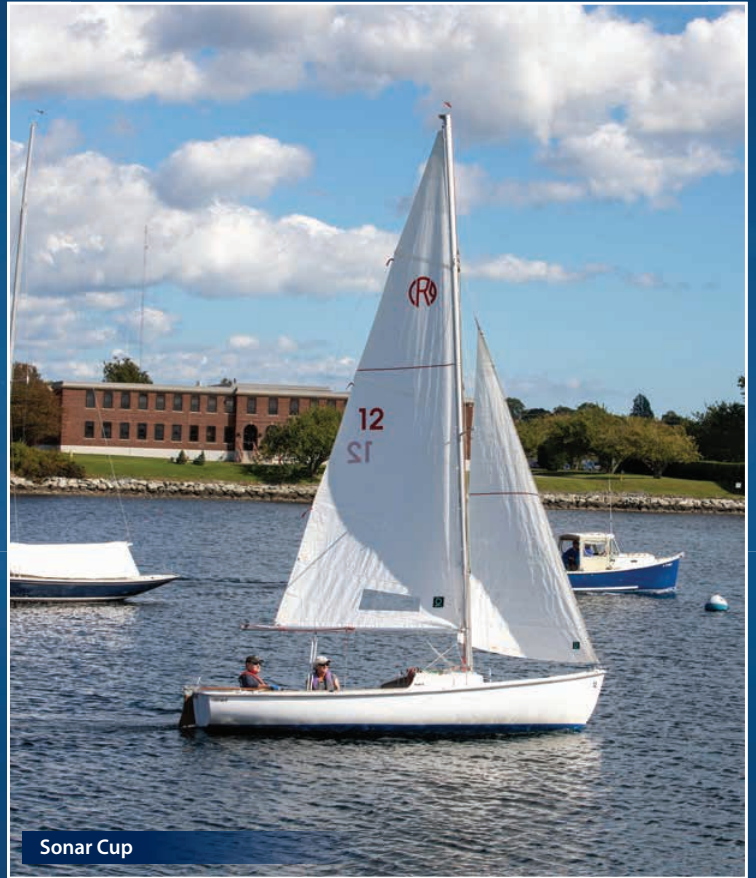
USRD Lab



3D Printing



Toys for Tots



Sonar Cup



Halloween Dilbert

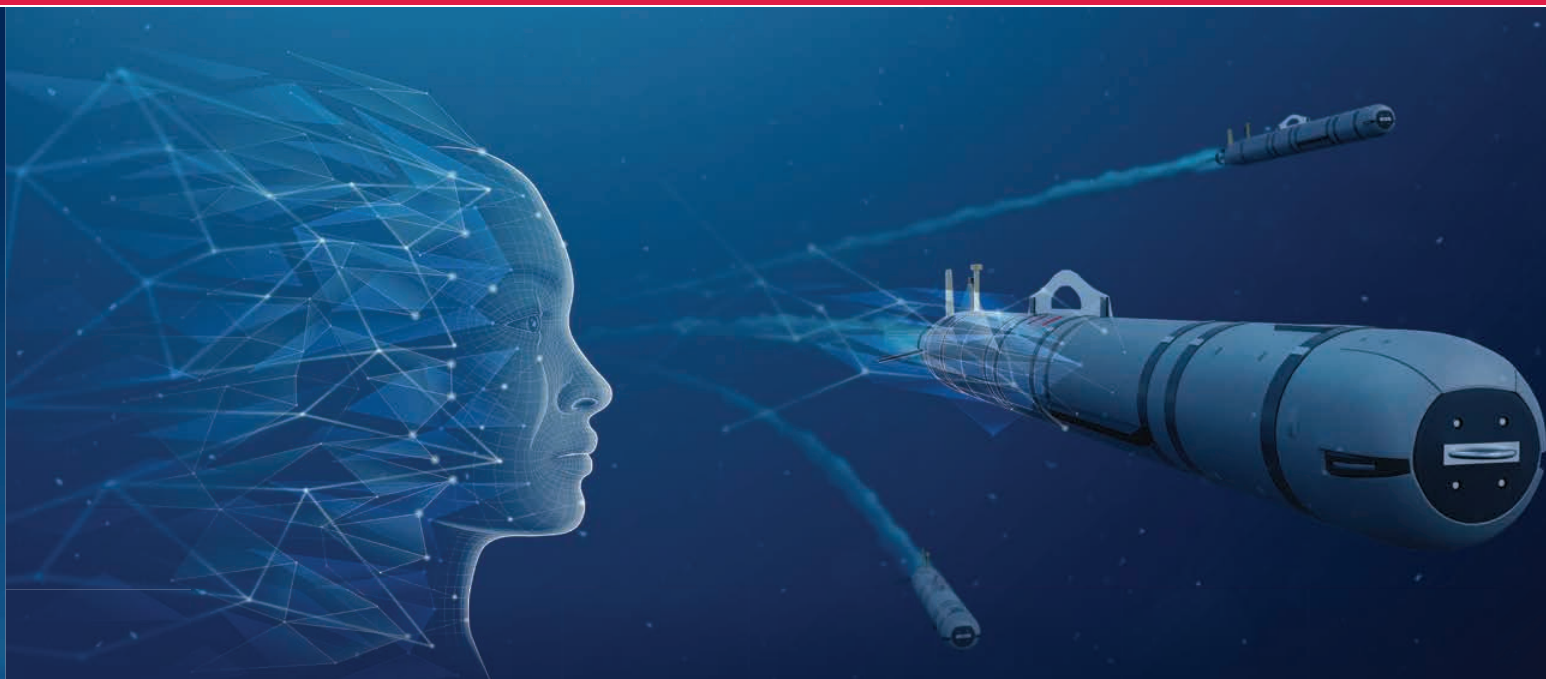


Cyber Escape Room



Common Access Cards

A LOOK AHEAD: DIGITAL TRANSFORMATION



"The Department of the Navy (DON) must change in order to improve how it delivers timely and effective capability to our warfighters. This requires altering how the DON designs, develops, validates, delivers, operates and sustains warfighting systems. This is not a choice; it is an imperative requiring immediacy and a sense of urgency."

United States Navy and Marine Corps Digital Systems Engineering Transformation Strategy, 2020

As we at NUWC Division Newport are the technical stewards of bringing new advances in undersea warfare technology to the Fleet, it is critical for us to respond to this call to action with immediacy and urgency. We must understand and fully commit to these new ways of doing business and achieve Digital Transformation across the organization.

This will continue to be a key focus for the Division into the future and presents an exciting opportunity to tackle the challenges associated with bringing about the adoption of these new digital processes and products within our organization.



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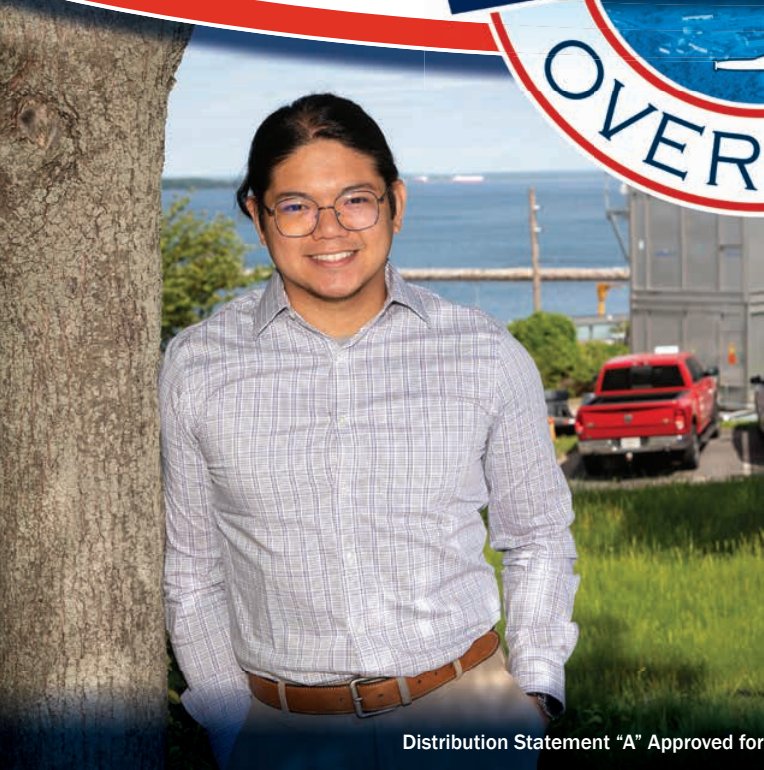
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2021



ANNUAL 2021 OVERVIEW



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