

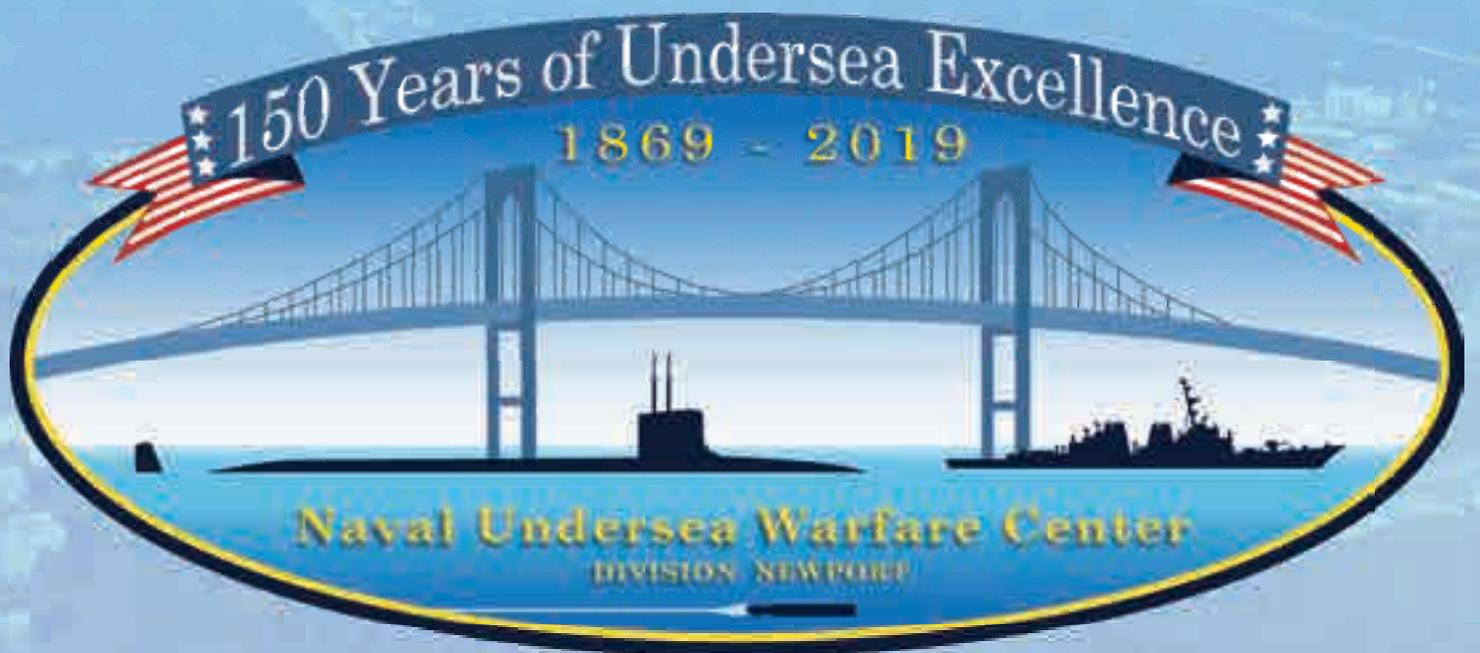
# NAVAL UNDERSEA WARFARE CENTER DIVISION NEWPORT





ANNUAL  
2019  
OVERVIEW

A graphic featuring a red circular border with the word "ANNUAL" at the top and "OVERVIEW" at the bottom. A blue ribbon with the year "2019" is draped across the center. The background is a light blue gradient with a pattern of small white stars.



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### Front Cover:

Top: 150th Celebration Included 5K Race

Left: Engineer Gathers Data for Research and Development Project

Right: In-Water Test Team

# WELCOME LETTER

The Naval Undersea Warfare Center Division Newport is pleased to present our 2019 Annual Overview!

It was a special year for many reasons. First and foremost, we celebrated our 150th anniversary as a Command. Since our days as a Torpedo Station until now as an Echelon Four warfare center, Division Newport has provided technology, services, solutions, and innovation to the Navy – yesterday, today, and tomorrow!

In 2019, Rear Adm. Eric Ver Hage took over as commander of the Naval Surface and Undersea Warfare Center divisions. The Division Newport workforce got an opportunity to meet him at an All Hands assembly in Chafee Auditorium where we learned about his priorities, his philosophy, and his plans for the future of the warfare centers.

Commander, Naval Sea Systems Command, Vice Adm. Thomas Moore and Under Secretary of Defense for Research and Engineering Dr. Michael Griffin were two of the high-profile Navy leaders who paid a visit to Division Newport. When these visitors share their experiences and wisdom, our workforce gets a great perspective on purpose and priorities.

Division Newport continued to lead the way in technological innovation with its 5th Advanced Naval Technology Exercise, also known as ANTX. The event grows larger every year and as a result of our efforts we are beginning to see numerous success stories from our departments, our ANTX partners, and the Navy.

Also in 2019, the NavalX Tech Bridges were established with Division Newport leading the way in connecting with local industry and academia with the 401 Tech Bridge. We will find safe, effective solutions for the warfighter quicker when we work together.

It was an eventful year but in the end, our success is due to our amazing workforce. Their hard work, ingenuity and dedication are the backbone of our Fleet. In these pages, we have highlighted some great photos of the Division Newport team at work, Expanding the Advantage, and living up to our 150th Anniversary theme of Undersea Superiority: Yesterday ... Today and Tomorrow!



A handwritten signature in black ink, appearing to read "M. R. Coughlin".

CAPT Michael R. Coughlin  
Commanding Officer



A handwritten signature in black ink, appearing to read "Ronald A. Vien".

Ronald A. Vien, SES  
Technical Director







Rear Adm. Eric Ver Hage

**R**ear Adm. Eric Ver Hage, commander of both the Naval Surface and Undersea Warfare Centers, visited Division Newport in April, the first stop on his tour of all 10 warfare center divisions after his appointment to his new position. As commander of both the Naval Surface and Undersea Warfare Centers, Rear Adm. Ver Hage intends to lead with a blend of confidence and humility. “In the best people I’ve worked for there’s usually an awesome blend of the two,” Ver Hage told a capacity crowd at Division Newport. “You have to be confident enough to make a decision and be able to maybe change your mind if you got it wrong. That’s where humility comes in. Humility is asking for help if you need it.”

**A** change of command ceremony was held at Division Newport’s Atlantic Undersea Test and Evaluation Center as Cmdr. Michael A. Woodcock assumed responsibility as officer in charge of the Naval Undersea Warfare Center Division Newport Atlantic Undersea Test and Evaluation Center (AUTEC). In February in a ceremony held on Andros Island in the Bahamas, Woodcock relieved Cmdr. Craig Shillinger, who has been officer in charge at AUTEC since 2016. Cmdr. Woodcock’s most recent duty was as the Weapons Repair Officer at Trident Refit Facility, King’s Bay, Georgia, from September 2016 to November 2018.

Cmdr. Michael Woodcock



Dr. Michael Griffin

**D**r. Michael Griffin, Under Secretary of Defense for Research and Engineering, held a briefing in Chafee Auditorium during his visit to Division Newport in July. “If the United States is going to win the great power competition that is ongoing in the world today, government, industry, and academia are going to need to work together just as they did in helping this country triumph in World War II and the Cold War.” That was the message Griffin delivered to a capacity crowd of NUWC Division Newport employees and dignitaries.



Vice Adm. Thomas Moore

**N**aval Sea Systems Command (NAVSEA) Commander Vice Adm. Thomas Moore visited Division Newport in April, where he toured lab spaces, met engineers and scientists, and delivered an inspiring, standing-room only All Hands address.

**I**n honor of Memorial Day, Division Newport paid tribute to 34 employees who died in the line of duty while in service to our country. The remembrance ceremony in May, featured Rear Adm. David Goggins, Program Executive Officer for Submarines. "As we build the Navy we need for our nation, the agility in our forces and our workforce, it's very important to reflect on the civilians who lost their lives for our nation," said Goggins. "They're also warfighters, in my opinion, and have done a great service for our country."

Memorial Day



Rear Adm. David Goggins

**W**hen Admiral Goggins visited the Command for its Memorial Day ceremony, he also toured Division Newport's lab spaces.

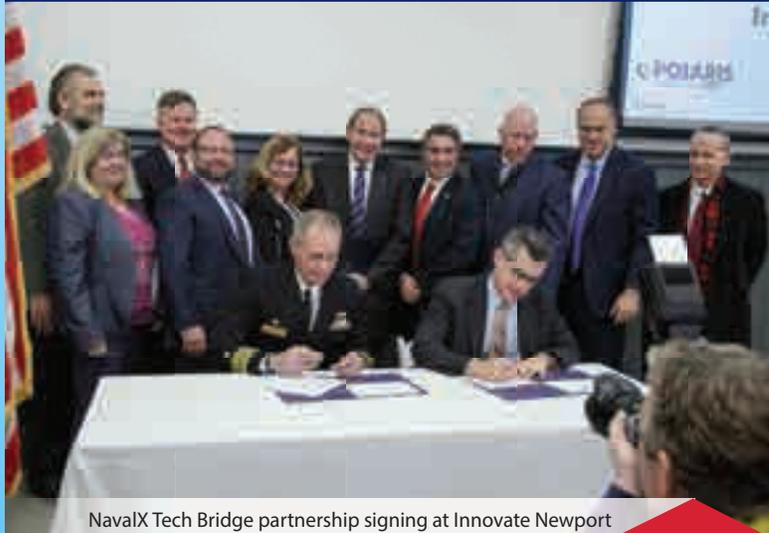


Vice Adm. Raquel Bono

**V**ice Adm. Raquel Bono, director, Defense Health Agency, visited Division Newport in May to discuss “Leadership and Mentorship in a Modern Military,” as part of Division Newport’s celebration of Asian American and Pacific Islander Heritage Month.

**A**dm. James Caldwell, director of the Naval Nuclear Propulsion Program, met with leadership and staff during a visit to Division Newport in January. He also held an All Hands where he discussed the need to learn and adapt with velocity in order to produce high-speed outcomes.

Adm. James Caldwell

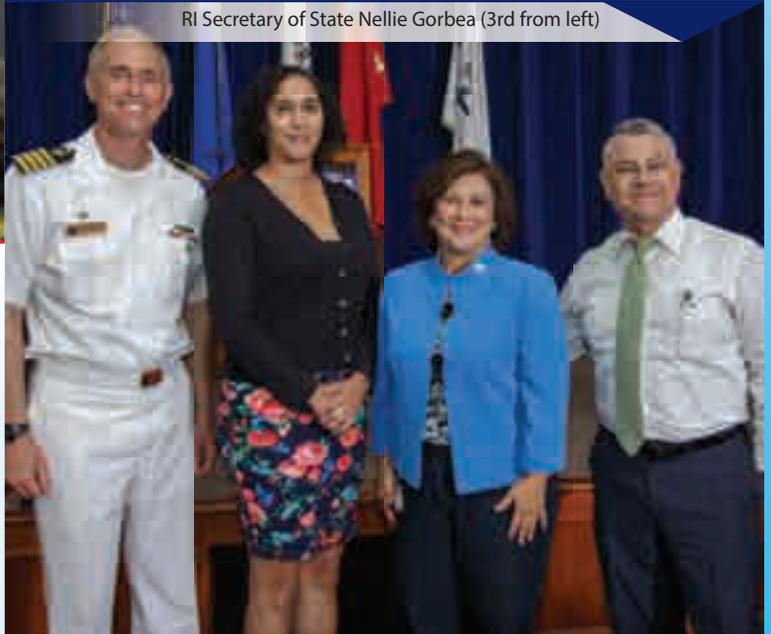


NavalX Tech Bridge partnership signing at Innovate Newport

**I**n an effort to improve knowledge and capabilities, Division Newport reached out beyond traditional Navy partners to include small businesses and educational institutions under the construct of the 401 Tech Bridge, one of six tech bridges that are part of NavalX. Through Polaris Manufacturing Extension Partnership, Division Newport now teams with the University of Rhode Island, the Composites Alliance of Rhode Island and the R.I. Textile Innovation Network to connect to businesses and educational institutions. This will allow cooperative research and development to solve Navy problems with small business innovation.

**A**dvocacy, cybersecurity, gender inequality, and Hispanic heritage were among the many topics Secretary of State Nellie Gorbea discussed with members of the Division Newport workforce in September as part of the center’s celebration of the National Hispanic Heritage Month. Gorbea, who has served in her position since 2015, is the first Hispanic to win statewide office in New England.

RI Secretary of State Nellie Gorbea (3rd from left)



# DIVISION NEWPORT - 150TH ANNIVERSARY



Monument unveiling

**D**ivision Newport was honored on 29 July for 150 years of service to the U.S. Navy in a ceremony that included Division Newport Capt. Michael Coughlin, Commanding Officer; Technical Director Ron Vien, Senior Executive Service (SES); Sen. Jack Reed, the ranking member of the Senate Armed Services Committee; Don McCormack, SES, Executive Director, NAVSEA Warfare Centers; Rear Adm. Eric Ver Hage, Commander, NAVSEA Warfare Centers; Rep. Jim Langevin, member of the House Armed Service Committee and House Committee on Homeland Security; and Sen. Sheldon Whitehouse. Together, they revealed the monument commemorating Division Newport's 150th anniversary. About 500 employees, dignitaries, and alumni attended the event in support of the command's historic accomplishments since its inception in 1869 as the Naval Torpedo Station.



Command Picnic



Bowling Competition



5K Fun Run

# DIVISION NEWPORT - 150TH ANNIVERSARY



The Knot: 150th Anniversary Edition



Golf Tournament Winners!



Division Newport Veterans

**A** weeklong celebration of NUWC Division Newport's 150th anniversary featured events that appealed to employees of all ages, including a run/walk around the campus, a day of food and games, a movie screening, and a bowling competition, with the theme "Undersea Superiority: Yesterday ... Today and Tomorrow!"

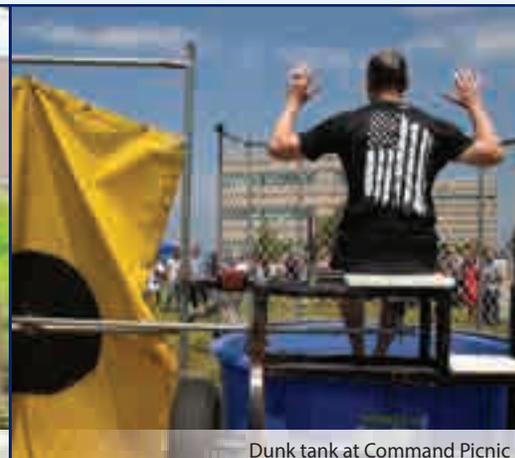
More than 350 employees participated in an inaugural 5K Fun Run/3K Fun Walk, as part of the celebration of Division Newport's 150th anniversary. There were a total of 182 runners and 169 walkers, who logged 866.6 miles on the 5K and 3K routes that took runners and walkers around the perimeter of the campus.



Command Picnic



5K Fun Run winners



Dunk tank at Command Picnic



Commanding Officer, Head of Technology Partnerships Office, Public Affairs Officer

**H**igh school students worked together during the Undersea Technology Apprentice Program Unmanned Underwater Vehicle Robotics Competition held in July at Division Newport. As part of a three-week paid internship program in underwater robotics, Rhode Island and Massachusetts teens learned about science and underwater electronics and worked alongside Division Newport scientists and engineers sponsored by the Command's Educational Outreach Program.

Educational Outreach



**D**ivision Newport leadership attended the October grand opening of the Fascitelli Center for Advanced Engineering at the University of Rhode Island. This 190,000-square-foot, \$150-million facility is a win for the school, state of Rhode Island, and Division Newport.

**E**mployees interested in becoming logisticians can find their path through the Naval Acquisition Development Program. These paid entry-level and journeyman internships offer the ability to rotate through different departments and positions with the added bonus of travel and rapid advancement for those interested in the acquisition, logistics, and technology programs that support of the Navy.

Logistics interns



URI Career Day

**R**ecruiters and engineers from Division Newport had a steady stream of job applicants visit their table throughout a Career Day in February at the Coastal Institute on the University of Rhode Island's Narragansett Bay Campus. A high level of curiosity and desire to innovate is essential to working at Division Newport. Scientists and engineers at Division Newport develop the technologies for tomorrow, as well as support the needs of the Navy today.



**D**ivision Newport welcomed three female submariners for a panel discussion as part of Division Newport's celebrations for Women's History Month.



Panel of Submariners



Federal Women's Program Meeting

**D**ivision Newport celebrated Women's History Month by highlighting the achievements of women here and nationally, while also keeping an eye to the future. Members of the Federal Women's Program (FWP) committee held a meet and greet to share information with the workforce. The committee provides recommendations on matters concerning women in the organization, coordinates and provides ideas for FWP activities, and is committed to the promotion of equal employment opportunity for all persons at Division Newport.



**L**GBT+A is one of three officially recognized Employee Organizations (EO) at Division Newport, along with Women in Science and Engineering and the New Professional Network. EOs are an important tool in helping to build a unified workforce, a topic NAVSEA Executive Director Jim Smerchansky addressed in a Town Hall meeting. "Our Inclusion and Engagement Council is identifying how we can truly build 'One NAVSEA.' Their on-going work will help create an inclusive workplace where employees see themselves being successful," said Smerchansky. "This requires the commitment from the entire workforce — from the most junior employee to the most senior, including all levels of management. We have a long way to go, but the movement I am seeing from the Inclusion and Engagement Council is impressive."



LGBT&A Welcome Meeting



Creating Community in a Diverse Environment

**W**orking to expand the advantage, the Division's Leadership in a Diverse Environment team and Special Emphasis Program Managers worked collaboratively to organize and successfully execute a multitude of activities/events throughout 2019 that showcase the Division's commitment to embrace diversity, inclusion and engagement. These events included two training sessions facilitated by Dr. Steve Robbins, two sessions of "The Loudest Duck" with Ms. Laura Liswood, several diversity sessions of "Lead Where They Are: Managing Social Styles", lean-in circles, "Knot" events, and the coordination of 14 EEO/ Special Emphasis Program Manager-sponsored speakers/events to provide employees tools to facilitate collaboration, teamwork, and support constructive resolution of conflict.



"Buoy Boys" Test Their Technology

In March, Division Newport hosted nine teams of college seniors from the University of Rhode Island and the University of Connecticut who were invited to present their Senior Design and Capstone Projects to each other and to their Division Newport technical mentors. Projects addressed real Navy needs including launching unmanned vehicles, machine learning, 3D printing in a dynamic environment, and variable buoyancy capsules. With the goal of recruitment, the Office of Naval Research funds the capstone projects as part of their Science, Technology, Engineering, and Mathematics initiative. The Division Newport mentors are able to collaborate with the universities through internal investment support.

Mentoring events at Division Newport bring together new professionals with seasoned professionals for advice, knowledge-sharing, and career support.



Speed Mentoring



Air Force Reserve EOP Director G. Lee Floyd

Air Force Reserve Equal Opportunity Programs director G. Lee Floyd emphasized introspection during a visit to Division Newport. Floyd, who is also the chief diversity and inclusion officer at Headquarters Air Force Reserve Command, spent two days at Division Newport as a part of the Command's celebration of Black History Month and held an All Hands in February to talk about cross-cultural communication as it relates to diversity and inclusion. Throughout his visit, Floyd emphasized the importance of dealing with people as individuals — accepting others for who they are and not simply tolerating them. "Mission readiness is the bottom line," Floyd said. "How we treat our folks greatly determines our ability to accomplish the mission."



Bring a Child to Work Day Chem Lab Demonstration

**B**ring a Child to Work Day is aimed at familiarizing children with careers in science, technology, engineering, and mathematics and has been held at Division Newport since 2000. The day includes presentations on unmanned undersea vehicles, periscope imaging, marine mammals, underwater acoustics, missile and torpedo operations, and other ways that Division Newport supports the mission of the U.S. Navy. Facility tours, science experiments, and virtual world and robotic demonstrations are some of the ways the children are engaged. In 2019, the event featured 35 unique demonstrations and exhibits with about 730 kids in attendance.



Brig . Gen. Kimberly Baumann

**A**ir National Guard Brig. Gen. Kimberly Baumann, the first female general in the state of Rhode Island, commemorated Veterans Day with a visit to Division Newport. During her presentation, she thanked her son, a computer scientist in Division Newport's Undersea Warfare Combat Systems Department for taking care of the household when she and her husband were deployed.

**F**or almost 40 years, Division Newport has been hosting blood drives with the R.I. Blood Center, helping more than 50,000 people in the process. Division Newport was an early partner of the R.I. Blood Center, established in 1979. The center conducted its first blood drive at Division Newport in March 1980, with 111 pints of blood donated at that event. "Since that first drive, 18,851 donations have been made, helping 56,553 patients," Sarah Perez of the R.I. Blood Center said. "NUWC hosts one of the largest blood drives in the state and is the only Rhode Island blood drive that averages more than 100 donations per drive, six times per year. At the February 2019 drive, 116 blood products were collected, which means that NUWC's drive accounted for more than half of the need that day and helped up to 348 patients!"

Blood Drive





Branch Head at Propel Training

**T**wenty new supervisors from across the warfare centers took part in a Propel course, held in January at Division Newport. Launched in 2017, Propel provides an introductory-level awareness of the warfare centers' expectations for supervisors. The five-day course is offered on a rotating schedule at various divisions. The program aims to provide relevant and practical tools and tips supervisors can implement immediately, as well as a better understanding of the rules and regulations that apply to supervisors in federal government. The curriculum is balanced between team management skills and warfare center-specific training topics, such as how the Navy Working Capital Fund works, the hiring process, and labor and employee relations.

**T**he Ranges, Engineering and Analysis Department brought their workforce together for a one-hour All Hands that detailed the department's global reach, featured an animation of what the department may look like in 50 years, and paid tribute to the personnel who help achieve their mission and goals.

Scientists Share the Stage During a Department All Hands Briefing



Field Team Panelists

**D**ivision Newport's Field Team office recruited, prepared, and deployed Technical Representatives to serve in temporary offsite rotational assignments with customer or stakeholder host commands that are closely aligned to the Command's mission. Division Newport's representatives served as the forward presence with undersea warfare decision-makers. Embedded in Commands, these representatives work as team members to identify issues and the critical needs of Navy stakeholders and facilitate the identification of solution options.



Guest Speaker Laura Liswood

Laura Liswood, Secretary General of the Council of Women, briefed the Division Newport workforce on “The Power of Networking.”

Naval Sea Systems Command Comptroller Karla Horn spoke with employees in the Division Newport’s Comptroller Department about financial management transformation in light of the 2018 Ernst & Young audit of the Department of the Navy, during a visit in October.

NAVSEA Comptroller Karla Horn (left)



With the backdrop of a showing of “Hidden Figures,” a true story about women who played a large role at NASA in the 1960s, a Division Newport manager presented a NUWC-version of women’s history in March as part of the command’s celebration of Women’s History Month.

Celebrating Women’s History Month



Lean Six Sigma Black Belts

In a warfare center-shipyard collaboration, Division Newport invited Norfolk Naval Shipyard’s master black belt practitioner to instruct 12 of its technical and business professionals in the tools and principles of Lean Six Sigma. The rigorous six-month course enabled the students to complete improvement projects for the Command and become change agents to bring forth ideas that will Expand the Advantage.





**D**ivision Newport employees tested a new training target at the Atlantic Undersea Test and Evaluation Center (AUTEC) in the Bahamas. A commercially available anti-submarine warfare (ASW) training target has the potential to save the Navy tens of millions of dollars. The target was evaluated as a possible replacement for the Mark 30 Mod 1 ASW training target that has been in service since 1974. ASW training targets acoustically and dynamically simulate submarines to provide sonar training for U.S. fleet forces.



Cyber Hacking Instructor

**H**ack Fridays spread cyber education at Division Newport. This summer, the cyber course kicked off in the Rapid Innovation Center with approximately 100 people in attendance for the introductory presentation. Throughout the summer, students learned new skills to hack into computer systems. This effort — considered offensive cyber operations — introduced novice hackers to tools training and helped reinforce methods for more experienced hackers. The course enforced NAVSEA's continuing efforts to grow cybersecurity awareness across all warfare centers.

**A** Division Newport engineer demonstrated the Command's fastest supercomputer at a machine learning presentation in March. Collaborating and sharing skills between Division Newport and communities of practice at other warfare centers are important goals for the advancement of machine learning.

Machine Learning Instructor





Rapid Engineering Experimentation Facility

**T**he addition of a new workspace and a new boat will improve researchers' abilities to gather data for a variety of projects requiring in-water testing. At the Rapid Engineering Experimentation Facility (REEF), a command and control/data collection center/workspace, researchers can rent space for six months or one year, depending on the length of their project. Teams can be transient on an as-needed basis or establish a more permanent presence in the facility.



UUV Course at University of Southern Mississippi

**D**ivision Newport engineers spent a month learning how to operate unmanned underwater vehicles at the University of Southern Mississippi's Marine Research Center in Gulfport, Mississippi. The broad curriculum covers topics such as the marine environment, ballasting of vehicles, digital logic, communications, sensors and payloads, navigation, working with bathymetry data, and building software code to operate gliders.

**D**ivision Newport signed an educational partnership agreement (EPA) with the International Yacht Restoration School (IYRS) of Technology and Trades, a trade school founded to teach students how to build and restore wooden sailboats. IYRS has added courses in composites technologies, digital modeling and fabrication, and marine systems to its curriculum. This EPA bolsters these opportunities by allowing Division Newport engineers and scientists to act as student advisors and for IYRS students to be able to work on Division Newport projects.

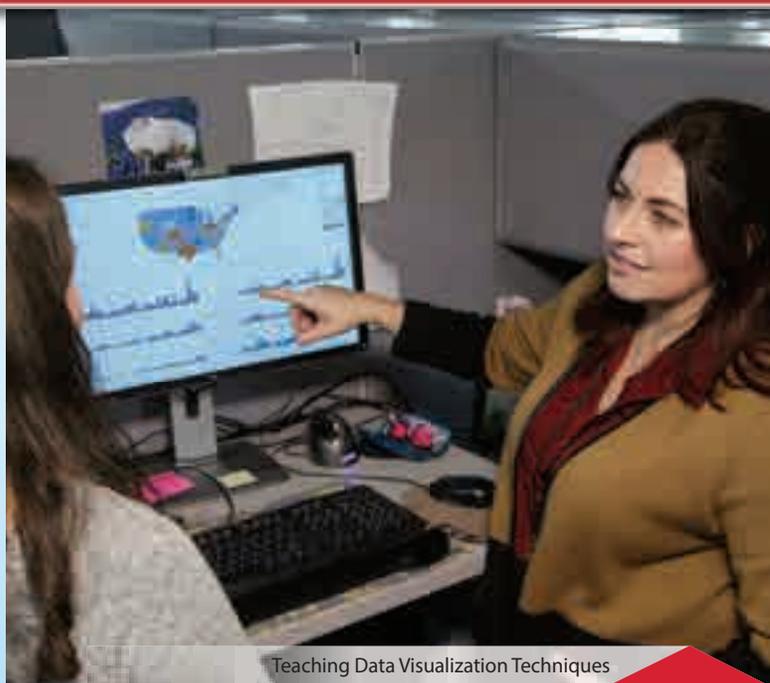
International Yacht Restoration School



**T**he Property Management Division focused its efforts on aligning with warfare center priorities in the area of property management to include ordnance, disposal, and wall-to-wall inventories. They have strengthened property management procedures through increased hiring and automation of additional requirements and collaboration with Division Newport's technical departments to understand their needs. As a result, a 100% ordnance inventory and a wall-to-wall inventory of general equipment was completed. In addition, 58,000 line items of materiel were identified for disposal. These efforts established the Corporate Operations Department as a leader in property management for the Warfare Center enterprise.

Warehouse Facility





Teaching Data Visualization Techniques

To support workforce development, Division Newport developed Submarine Electromagnetic Maneuver System-based training curriculum. The focus of the training was to develop “101”-level course content to be taught as part of the NUWC University Curriculum. Subject matter experts in the areas of Submarine Communications Imaging and Electronic Warfare developed course content focusing on the basic operations of submarine warfare in these respective mission areas. The content focused on “learning objectives” designed to give an introductory view of the communications, imaging and electronic warfare systems. The content will be part of the NUWC University fiscal year 2020 Curriculum.

NUWC University



Division Newport workforce has another tool for their desktops — Tableau. From a workforce perspective, this data visualization tool can help assess technical and business data. From a Navy perspective, data visualization tools can assist with information science and aiding decision-making. Division Newport purchased an enterprise server last FY and Tableau reader software will be deployed to desktops in FY20.



Virginia-Class Submarine

Division Newport’s chief technology officer championed an innovation cell in an effort to improve undersea environmental situational awareness. The cell included representatives from the Department of Defense research centers, warfare centers, academia, as well as shipbuilding industry partners. Through various modeling and simulation as well as environmental analysis, improvements were recommended and accepted for incorporation into the Virginia-class submarine shipbuilding program. Diverse backgrounds and expertise brought forward by the various organizations were critical to success, recognizing the contribution of the Virginia-class shipbuilding partners for bringing key aspects of ship design into the solution space. Given the success of this innovation cell, follow-on cells are being planned to tackle that next challenge across the undersea domain.



Wargaming

**D**ivision Newport's Mission Engineering & Analysis Department executed a robust portfolio of activity throughout 2019, facilitating and providing expertise in 15 tabletop exercises, wargames, and undersea warfare-related workshops that examined both current and future operational challenges and emerging technological concepts. Customers and partners included Fleet commands and task forces, warfighting development centers, naval education institutions, naval science and technology organizations, acquisition offices, advanced capability and security assessment offices, industry, and analytical organizations. The predominant technological area explored was the application of autonomy and artificial intelligence to undersea warfare challenges, but events ran the gamut from present day tactical options to far future technology opportunities. As undersea warfare visions and operational challenges continue to emerge and evolve, Division Newport will continue to apply analytical rigor and tabletop exercise, wargame, and workshop techniques, to generate knowledge that can inform critical undersea warfare decisions.



Recruiting Event

**T**he Recruiting Staff and the Public Affairs Division worked together to create a digital engagement process linking recruiting actions with stronger social media and advertising. These efforts have resulted in 196 on-the-spot offers and 26 recruitment events. In addition, 353 recruitment actions were submitted to the Office of Civilian Human Resources (OCHR), including vacancy announcements, new interns, and conversions with one job announcement on Facebook reaching more than 8,200 people.

**C**orporate Operation Department's Infrastructure Division began using multiple acquisition processes authorized by National Defense Authorization Act Section 233 Authority to award facility construction projects. This resulted in the successful design, award, and construction starts of approximately \$11 million in major repair program projects and \$14 million in capital investment program projects. Division Newport is setting the standard among warfare centers for internal facilities/construction-related awards.



Construction Project



Department Head Marie Bussiere and Deputy Technical Director Don Aker Record Their Podcasts

**C**ommunications staff at Division Newport created NAVSEA's first podcast series called the One Team Podcast. The first episode, released in March, featured a Division Newport computer scientist talking about machine learning. Many more episodes followed, including an interview with NAVSEA Commander Vice Adm. Thomas Moore during his visit to Division Newport. Since then, episodes have been released on a regular, almost weekly, basis with publicly releasable episodes available on SoundCloud with topics ranging from operational urgency to continuous process improvement to corrosion.



Testing New Undersea Vehicle Technology

**T**he National Institute for Undersea Vehicle Technologies is a university-industry partnership that collaborates with the Navy to advance the capabilities of the next-generation U.S. undersea Fleet by training innovative workforce and by accelerating the research, development, and transition of key enabling technologies. It is a partnership among the University of Connecticut, University of Rhode Island, and General Dynamics Electric Boat to enhance performance and reduce costs of the shipbuilding process while ensuring that advanced technologies are implemented into the next generation and next platform of undersea vehicles.



ANTX Closing Ceremony

**M**ore than 800 attendees saw 70+ technologies during Division Newport's fifth Advanced Naval Technology Exercise (ANTX) held at the Narragansett Bay Test Facility in August. The event was attended by Navy leadership, politicians, industry and academic partners, subject matter experts, and the Division Newport workforce. The goal of ANTX continues to be the rapid experimentation of naval systems and to serve as a catalyst for collaboration, innovation, and high-velocity learning. For ANTX 2019, the focus was on technologies and future concepts that explore and interact with the maritime domain, connecting assets from the seafloor to space and ensuring their security, in order to bring data home. More specifically, ANTX 2019 pursued two aspects of undersea security: the exploration of the maritime domain and the security of maritime assets.



Historical Exhibition



CMWR Store

In-Water Testing



Briefing the Fleet Operators



Corporate Operations Team at ANTX



NEEC Day

**S**tudents and mentors showed off research on practical Navy problems at the Naval Engineering Education Consortium (NEEC) Day in July. The NEEC program employs project-based research and development at American universities to target the Navy's technology challenges and to cultivate the next naval engineering minds. The event featured the work of students and professors from throughout the country.



Inspection Readiness

**T**he Command participated in the triannual NAVSEA Inspector General (IG) inspection and received a clean sweep, satisfactorily passing all 20 areas of inspection. The IG concluded that the cybersecurity program was the best across the warfare centers. Also receiving special accolades were the Environmental and Security Programs and the Workforce Development Team. The Product Data Reporting and Evaluation Program was recognized as a best practice and more robust than any other NAVSEA program. Division Newport's Records Management essential records structure was so impressive that the IG will use it as a template for other warfare centers.

**A** significant effort undertaken by the Chief Technology Office, with support of Division Newport personnel, was the Undersea Warfare Naval Innovation Process Adaption Challenge, sponsored by the Office of Naval Research. This effort supported warfighter training and readiness by seeking to improve marine mammal prediction models through improved knowledge of the ocean environment, which aligns with Task Force Ocean initiatives. The work enhanced the understanding of the undersea acoustic environment while exploring the integration of modern problem exploration, leading to rapid and iterative solution development. The products developed under this initiative spanned nearly every department at NUWC, as well as integration of scientific talent from Naval Research Laboratory, Stennis Space Center. This collaboration is planned to extend into fiscal year 2020 and further results demonstrated at ANT-X 2020.





Contracts Department

**D**ivision Newport's Contracts Department was on the move with new leaders, new tools, and new solutions sustaining the proven record of mission execution with more than \$700 million in obligations and 2,792 completed contract actions. A High Velocity Learning Team made great strides with updated conference room technology, reduced printing and paper usage, and hands-on applied training. Eight additional initiatives included quality assurance process improvement, subject matter expert training, and sample document repository. A large pilot effort involved switching to electronic files for three major contract actions. The Source Selection Evaluation Board report process also was revised, breaking the report submission and review into phases, allowing for more focus on the critical aspects of the report and reducing the overall touch time, speeding up completion time of the report. Additionally, the department adopted NAVAIR's Acquisition Management System replacing the Acquisition Tracking System and the Acquisition Workload Planning Tool. This new system facilitates effective contract process management by providing a common set of data to all participants with cutting-edge visualization tools.



Premier Acoustic Metrology Center

**R**esearch of ocean sciences plays a large role in the development of new technologies for the submarine fleet. Numerous research projects include the use and exploration of composite materials in the undersea realm. In the past few years, collaborations among Division Newport's technical departments and academic institutions have led to significant advances in composites research as it applies to blast/shock loading, low-temperature conditions, self-healing, non-destructive evaluation, and the effects of material aging.

**D**ivision Newport's Underwater Sound Reference Division (USRD) is the Navy's premier acoustic metrology center, responsible for maintaining several different acoustic test facilities for conducting underwater acoustic calibrations, tests, and evaluations as well as supporting the installation and in-service support of a specialty acoustic system on U.S. submarine platforms. The USRD has expanded its workforce and increased the work accomplished by the 30-person team by more than 30 percent. The Division has since secured National Institute of Standards and Technology (NIST) ISO 17025 certification for USRD and will soon obtain NIST Designated Institute status for USRD, which will allow USRD to represent the United States, on behalf of NIST, Consultative Committee for Acoustics, Ultrasound and Vibration held at the International Bureau of Weights and Measures.



Platform Payload Integration Team Members

**U**ndersea Warfare Electromagnetic Systems Department in-service agent programs continued the timely support of Fleet units by responding to 218 casualty reports, 91 hotline calls, 6 technical assists, and 15 installations. The Communications Antenna Systems team continued to provide critical support to the Fleet via the Radio Frequency Distribution and Control System and Antenna Repair Depots. This year the program supported 138 Naval Supply Systems (NAVSUP) requisitions, 15 System Operational Verification Test repairs, 12 antenna repairs and 7 antenna grooms, and 26 government acceptance tests. In addition, the Submarine High Data Rate (SubHDR) National Maintenance Center created 45 Ready-for-Issue SubHDR masts and shipped 32 masts to U.S. Fleet submarines. The Submarine Extremely High Frequency Systems Integration Facility (SESIF) delivered 10 Navy Multiband Terminals and completed 31 NAVSUP related efforts. Also, both work centers resolved 360 Distance Support or help desk calls related to system issues on Fleet platforms or related shore sites. Finally, in support of these NAVWAR PMW/A 170 systems, 110 training events were successfully conducted on Fleet submarine, ship, and shore sites.

Maintenance Support Team



Torpedo Recovery Team

**I**n September, a group of 10 Division Newport engineers and scientists made their way to the former Brooklyn Navy Yard to compete in Hack the Machine, a two-day, Navy-sponsored event attracting students, industry professionals, and subject matter experts across the Navy Research & Development Enterprise to help the Navy solve its foremost digital challenges. More than 600 people competed for cash prizes in three different tracks: data science, cyber hacking, and digital manufacturing challenges. By the end of the event, Division Newport employees made significant contributions on winning teams from the cyber and data science tracks.

Hack the Machine Participants



**D**ivision Newport's Torpedo Recovery Team traveled the world to support torpedo recovery operations. This diverse and highly skilled team provided a vital service to the Fleet. In order to maintain readiness, the team follows a robust training program designed to maintain and enhance the skills and knowledge necessary for safe and effective operations. In 2019, the Torpedo Recovery Team was recertified and supported a Mark 48 torpedo exercise 121 miles off the coast of Southern California. The skills qualify the team for a variety of torpedo recovery exercises including shipboard, small boat, pierside and helicopter recovery; and tasks such as flushing, data extraction and containerizing.



The Division Newport Team in Gulfport



The Argus Team Executes Successful Testing

**E**ngineers and scientists at Division Newport developed a system of complementary technologies that meet the challenge of countering unmanned underwater vehicles (UUV) in harbors and restricted waterways. In a partnership with the Naval Meteorology and Oceanography Command in Mississippi, Division Newport successfully demonstrated the system's latest iteration at the Port of Gulfport in Gulfport, Mississippi. The Argus Counter-UUV Harbor Protection System provides an end-to-end, detect-to-defeat capability against small and mid-size UUVs. Named "Argus" after the all-seeing watchman in Greek mythology who had 100 eyes, this expeditionary system is designed for deployment in harbors anywhere in the world to provide the protection of high-value assets and critical infrastructure against surface and subsurface threats.



Hardware and Software Testing for Torpedoes

**D**ivision Newport adopted a software development strategy that employed something called the Modular Open Systems Approach, or MOSA, which allowed for greater modularity and conformance to open systems standards in the development of torpedo systems software. MOSA allowed for greater flexibility for the contribution of algorithms from government, industry, and academic partners. By leveraging improvements in software development practices, Division Newport was able to field the software early. This strategy change paved the way for providing the Fleet with a much-needed capability approximately 15 months ahead of schedule.



**T**hroughout 2019, 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:

**DoD High Performance Computer Modernization Program Award**

Dr. Joseph Ambrico

**DoN Information Management-Information Technology Award**

Strategic Systems Programs Systems Integration Team - Steve Masterson, Janice Burke, Christopher Crogan, Richard Halcisak, Pros Reun, Rebecca Chhim

**IEEE Harry Diamond Award**

Dr. Donald Steinbrecher

**DoN Meritorious Civilian Service Awards:**

Betty Jester, Tom Perron, Mike Knecht, Adam Macksoud, Joanne Aker, Paul Cavallaro, Will Roman, Edward Rishmany, Peter Roy, Jeffrey Feaster, Vicki Comeau

**2018 Thompson-Ravitz Award for Public Affairs Excellence -**

Digital Engagement Public Affairs Office

**Providence Business News Woman to Watch**

Catherine Anders

**Federal Library and Information Network/ FedLink Award - Best Small Library**

Research Commons

**ASN Dr. Delores M. Etter Awards Top Scientists and Engineers of the Year**

Daniel Corbett

**National Contracts Management Association Award**

Acquisition Workload Planning Tool Version 2.0 Team (Ryan Lord, Noel Roberts, Kelly Ross, Sofia Sinclair, Mark Snyder, Scott Wentzel, Deb Young, Steve Zbyszewski)

**Women of Color Technology Rising Star**

Diana Rivera-Rodriguez

**Women of Color Technology Rising Star**

Kendra Spencer

**Warfare Center Award - Collaboration**

Power and Energy Community of Interest Team (Dr. Joseph Fontaine)

**Warfare Center Award - Collaboration**

UK Tomahawk Weapon Control System Team (Scott Aubuchon, Gail Genora, Joseph Janton, Peter Paranzino, Christopher Plezia, Steven Rebello, Joseph Rheume, Concepcion Vazquez)

**Warfare Center Award - Collaboration**

Electronic Warfare USW and High Energy Lasers Campaign Collaboration Team (David Abdow, Patrick Bordner, Edward Dunn, Jeffrey Hebert, Charles McSoley, Eric Spigel)

**Warfare Center Award - Collaboration**

Undersea Encapsulation Technical Capability Demonstration Team (Dr. John Castano, Steven Fultz, Matthew Haley, Joseph Helger, Dr. Jason Kane, Gary Kim, James Pianfetti, Zachary Richards, Nicholas Rommel, Trevor Whitney)



**Warfare Center Award -  
Information Security Award**

Rebecca Chhim

**Warfare Center Award - Knowledge Sharing**

Research Commons Team (Elizabeth Peimer)

**Warfare Center Award - Knowledge Sharing**

People's Integrated Essential Resource (PIER) Team  
(Jason Benda and Nicolina Kelly)

**Warfare Center Award -  
Technical Support Services**

Division Newport Operation Steadfast Team  
(Brian Alexander, Robert Angelini,  
Vincent Benfeito, Joshua Carter, Adam Carvalho,  
Troy Christiansen, Mickey Correll, David Gimple,  
David Giroux, Gregory Kocab, Benjamin Lessard,  
Joshua Ricketts, Kristin Riddle, Nicole Rodrigues,  
William Rolla, Bailey Wandyg, Brian Woomer)

**Presidential Early Career Award  
for Scientists and Engineers**

Dr. Robert Hernandez

**Providence Business News 25 Over 55 Awards**

Vicki Comeau

**Marine Technology Society Compass  
Distinguished Achievement Award**

Dr. David Rivera

**Excellence in Partnership Acquisition  
Excellence Award**

Other Transaction Authority Team, Newport  
members: Thomas Carroll, Beata Jones,  
Christopher Kenney, Tejal Patel, Kaitlin Simoes,  
and Robert Turnbull

**Excellence in Partnership  
Excellence in Innovation Award**

Division Newport (Command) named winner;  
team members: Christopher Hebert,  
Kerry Hotopp, Christopher Kenney, Stephen  
Lamb, Michelle Estaphan Owen. From NUWC HQ:  
Denise Abraham and Dr. Vitorrio Ricci

**Modern Day Technology Leader Award**

Dr. Victor Evora

**Office of Naval Research  
Vice Admiral Harold G. Bowen Award  
for Patented Inventions**

Dr. David Tonn and Mr. Jean-Paul Nasser

**International Test & Evaluation Association  
Special Achievement Award**

Mk48 Heavyweight Torpedo Test Team Division  
Newport winners: Michael Alice, Samuel Carroll,  
Ryan Dropek, Charles Lury, Robert Murphy,  
Claire Ryan and Melissa Suursoo



John C. Mickey Collaboration Award



Technical Support Services Award

# COLLAGE



Holiday Party



Bring a Child to Work Day



Launcher Lab Tour



Halloween Costume Contest



RDML Leonard C. "Butch" Dollaga addressing a crowd at Chafee Auditorium



Cookout



Toy donations



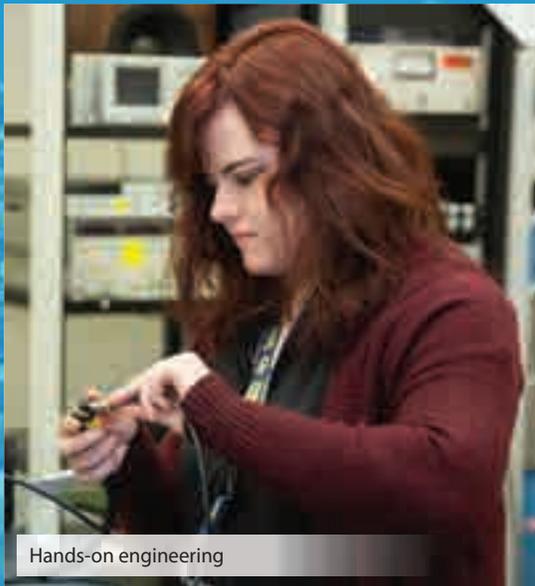
RPG of the Sea Team



International Day



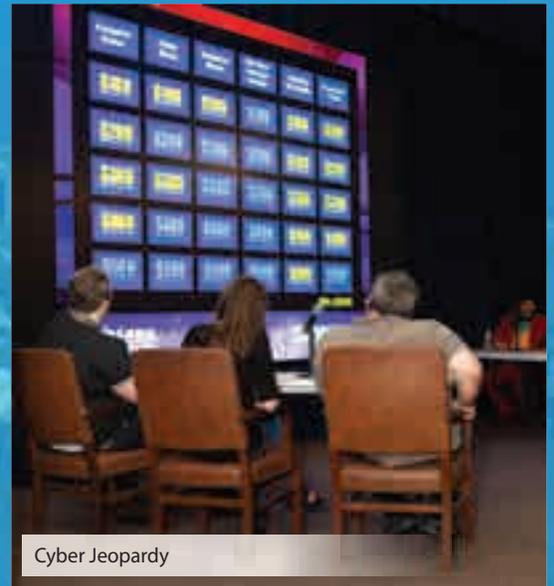
Ride Your Bike to Work Day



Hands-on engineering



Dive Team at the Newport Parade



Cyber Jeopardy



Health Fair



Comptroller Department



Sensors and Sonar Systems Workforce

# BALANCED SCORECARD

## Financial Perspective

		Target	Results
<b>Sustain Business Excellence in Working Capital Fund Management</b>	Actual \$ Direct (New Orders) (\$M)	\$816	\$798
	Total Direct Workyears	2488	2597

## Customer/Stakeholder Perspective

		Target	Results
<b>Ensure Regulatory Compliance</b>	Federal Information Security Management Act Certification and Accreditation	0	0
	Information Assurance Vulnerability Management	0	0
	Environmental Spills	0	0
	Security Violations	0	>0
	Electronic Spills	0	>0
<b>Ensure Strategic Awareness and Communications</b>	% Available Mission Critical Field Team Positions Filled	100%	100%
<b>Execute Technical Commitments as Promised</b>	Customer Survey Overall Satisfaction Rating	90%	96%

## Internal Perspective

		Target	Results
<b>Ensure Continuous Improvement</b>	FY19 Continuous Process Improvement Internal and External Savings	\$14,000	\$28,583
	FY17 CPI Event Validations	21	21
<b>Meet Commercial Acquisition Objectives</b>	% Competitive Contracts	85%	100%
	% Single Bid Contracts	<20%	21%
	% of Contract Obligated Funds Awarded to Small Business	27%	31%
<b>Steward Technical Capabilities</b>	% RDTE Current FY Authorized Funding	40%	38%
	% of Total S&T Workyears	8%	6%
	Number of S&T Direct Workyears	195	151
	Number of S&T Indirect Workyears (NISE)	60	77
	Refereed Open Literature Publications	75	105
<b>Foster Innovation and Collaboration</b>	Patent Applications Filed	35	23
	Invention Disclosures	60	50
	% of Externally Co-Authored Publications	>10%	12%
	Number of Active Partnership Agreements	216	223
	Number of Distinct Partners	149	202
<b>Optimize Internal Investment Portfolio</b>	Number of New Partnership Agreements Established	140	151
	% Investment Portfolio That are Collaborative With Other Activities	20%	32%

## Employee Perspective

		Target	Results
<b>Recruit and Retain High Caliber Workforce</b>	End Strength	3504	3477
	External Hires	346	372
	Retention Rate: 5+ Years	90%	86%
	External Awards Participation	7%	7%
<b>Train and Mentor Workforce in Mission-Critical Competencies</b>	Employees with Advanced Degrees (Total Workforce)	30% Masters; 6% PhDs	27%/5%
	Scientists and Engineers with Advanced Degrees	37% Masters; 7% PhDs	32%/6%
	% of Employees that are Compliant with DAWIA Field Certifications	100%	99%
	% of Employees that are Compliant with DAWIA Continuous Learning Points	100%	99%
	% of Employees on Track for Financial Management Certification	80%	91%

## Trend Data - Balanced Scorecard Measures

These measures represent a small sample of Division Newport's performance measurements.

**Total Direct Workyears**



Target: 2488

Results within performance parameters

**Actual \$ Direct (New Orders) (\$K)**



Target: \$816K

Results within performance parameters

**% Available Mission Critical Field Team Positions Filled**



Target: 100%

Results met performance parameters

**% Customer Survey Overall Satisfaction Rating**



Target: 90%

Results exceeded the target

**FY19 CPI Executive Planning Session Execution (\$K)**



Target: \$14K

Results exceeded the target

**% of Total S&T Workyears**



Target: 8%

Results within performance parameters

**RDT&E Current FY Authorized Funding %**



Target: 40%

Results within performance parameters

**External Hires**



Target: 346

Results met performance parameters

**Retention Rate: 5+ Years**



Target: 90%

Results within performance parameters

**% External Awards Participation**



Target: 7%

Results met the target

**\$751 Million** to Local Economy

for payroll, contracts, construction, and services purchased

**5,997** Total Work Years

(Government and Contractor Employees)



**\$1,207 Billion**  
Total Funding



**99%** of Employees

Are Compliant with DAWIA Field Certifications

**38%**

of Engineers and Scientists have Advanced Degrees

6% PhDs (140)

32% Masters (780)

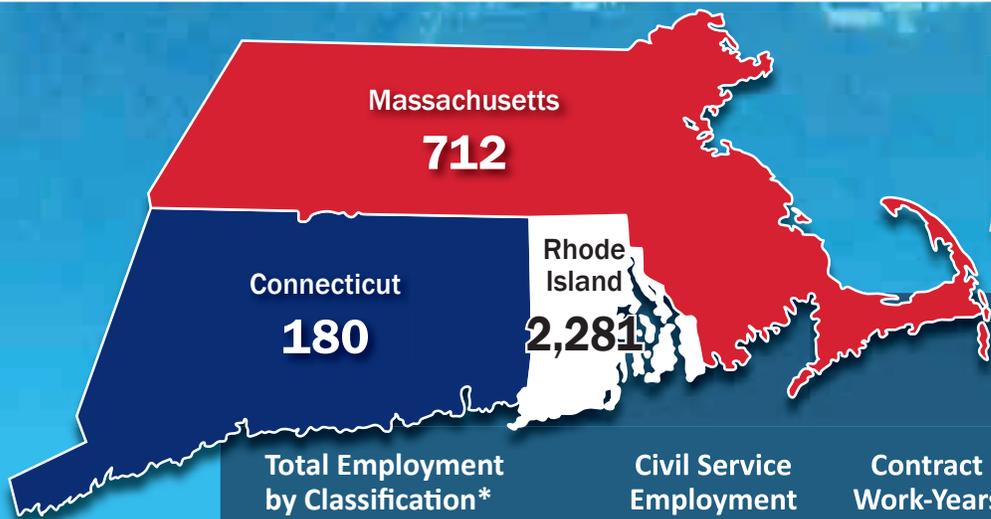
**151**

New Partnership Agreements Established



**372**

External Hires



**3,173**

Total Workforce in Southeastern New England

Total Employment by Classification*	Civil Service Employment	Contract Work-Years	Est Overall Employment
Engineering/Science .....	2,454 .....	833 .....	3,287
Technician .....	236 .....	605 .....	841
Information Technology .....	151 .....	118 .....	269
Professional Administrative .....	490 .....	761 .....	1,251
Administrative Support .....	33 .....	134 .....	167
Clerical .....	27 .....	40 .....	67
Wage Grade/Other .....	1 .....	33 .....	34
Students .....	81 .....	0 .....	81
<b>Total .....</b>	<b>3,473 .....</b>	<b>2,524 .....</b>	<b>5,997</b>

Data as of 9/30/19  
\*Includes all detachments



**W**ith the issue of the first version of the Tactical Submarine Evolution Plan in 2018, the Navy began to roll up their sleeves to examine the kinds of technologies and attributes to be considered for future submarines to add necessary capability against increasingly capable threats.

However, defining the context for what future submarines have to achieve is necessary to understand where technologies are needed and comparing concepts for these technologies is imperative for future success. Division Newport conducted several tasks aimed at helping to define this context and created methods for quantifying performance.

To that end, Division Newport supported the Undersea Warfare Futures workshop series in early 2019. This program conducted by the Naval War College, aimed at examining the nature of undersea warfare in the 2040s and beyond. These workshops considered a wide variety of future challenges, ranging from traditional submarine missions to those new missions that could emerge from growing academic and commercial opportunities from ocean and Arctic exploration. These workshops helped to define the driving trends for future undersea warfare and some key technology areas with needed capability.

To allow the Navy a firmer foundation for the assessment of technology and submarine attributes, Division Newport worked across the enterprise to develop unique and specific tasks that future submarines need to be able to succeed, and the specific threats and tactics they may face in that future. The result provides enough detail to support and align modeling and simulation efforts conducted by the submarine enterprise, and provides the operational context to the submarine designers to support new submarine concept development.

As future submarine design concepts are developed, Division Newport will continue to lead the way in concept development, research development, test and evaluation, as well as execution of new systems.

— *Division Newport's Mission Engineering & Analysis Department*

## Naval Undersea Warfare Center Division Newport 2019 Annual Overview

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A pdf version is available online at <https://www.navsea.navy.mil/Home/Warfare-Centers/NUWC-Newport/>

Back Cover:  
Top: Technical Expertise Supports a Variety of Systems  
Left: Systems Testing Aboard the Torpedo Retriever  
Right: Memorial Day Commemoration

# Undersea Superiority: Today and Tomorrow



