NAVAL SURFACE WARFARE CENTER
INDIAN HEAD EOD TECHNOLOGY DIVISION

NAVSEA
WARFARE CENTERS
Indian Head EOD Technology Division

2019
YEAR IN REVIEW

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Command Mission: *To research, develop, test, evaluate, manufacture and provide in-service support of energetics and energetic systems. Provide Soldiers, Marines, Sailors and Airmen with information and technology to detect, locate, access, identify, render safe, recover, exploit and dispose of explosive threats.*

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COMMANDER'S ASSESSMENT

Before offering an assessment of our command for this past year, let me start with the axiom, "know thyself." Over the years, I have taken a number of personality profile tests that have taught me many things about myself. Perhaps one of my more notable characteristics relevant to this assessment is that I tend to be a perpetual learner. Said differently, I am prone to be dissatisfied with the status quo and always looking to improve. With that as an upfront admission, I reflected on the year of momentum and progress that we accomplished, working towards the goals we set forth in our command's Guidance and Priorities for 2019. I also looked out on the new horizon that is 2020 and pondered our challenges and opportunities and how we must relentlessly press on towards our goals.

As you will recall, our overarching intent for 2019 was to act with ever-increasing unity and instill a greater sense of urgency in our collective cause. Throughout last year, and in the context of the Great Power Competition, the Technical Director and I consistently emphasized the need for calculated risk-taking. Furthermore, we advocated effective communication, shared purpose and disciplined initiative — everyone!… always!… with a bias for action! In this regard, in light of our challenges and achievements, I consider us to have built a strong foundation. To illustrate this, I want to mention a few examples.

In our pursuit to reactivate the Quad City Cartridge Case Facility (QCCCF), our command united, worked synergistically across departments and provided a singular effort to actualize this one-of-a-kind facility. This collaboration accomplished a critical effectiveness, allowing QCCCF to reach its first major milestone in production. Together we invigorated a facility that will provide not only for our warfighters but for our allies as well.

This past year we also began to reassert ownership of our infrastructure and the upkeep of our facilities as it became clear that the status quo was not in line with our mandate to provide on-time delivery of exceptional products and services. With this new self-reliance will come better quality and reliability in our facilities and utilities, further enabling our command's vital work on behalf of our great nation.

In 2019, we successfully executed phase 1 of the Chemical Biological Radiological Division transfer from Naval Surface Warfare Center Dahlgren. This intentional move quickly proved itself a tremendous advantage to our organization. As we look ahead to 2020 and the arrival of more of this cadre, and as we assimilate and integrate their renowned expertise, I know that they will promptly and continuously make us better.

With the introduction of Indian Head University (IHU) and the completion of several inaugural courses, we saw evident progress in our People V2 initiatives — enhancing our employees' development and knowledge. As IHU continues to grow and offer more courses and classes, our employees will be able to remain current on certifications, expand their subject matter expertise and grow their leadership skills. I am excited to see IHU truly take off in 2020.

I would be remiss if I failed to highlight the tremendous effort our Human Resources Division made in driving us forward as we seek to grow our workforce by 400 work-years. As our target moves closer, they demonstrated the requisite sense of urgency and were exceptionally diligent as we welcomed aboard many new faces across the command. That was no small feat and the credit goes to our people who aligned with our vision and pursued advantages outside the norms; using creative thinking and forging ahead to accomplish an incredible push to get quality people for our team in support of our mission. And there were many other noteworthy accomplishments that spanned our organization — simply too many to detail!

I also do not want to irresponsibly convey that we were purely successful in everything we attempted. As I assess our performance, I acknowledge our shortcomings and view them as learning opportunities. At our All Hands in November, I think we candidly and collectively confronted these areas in order to hold ourselves accountable and refocus our efforts.

Likewise, looking ahead, I do not presume smooth sailing. Assuredly, we will face challenges and adversity in 2020. As we move forward, we will evoke a dogged and tenacious relentlessness, reevaluating and formulating new plans to achieve our priorities. We will build upon the foundation we have laid, steel our resolve and rededicate ourselves, one and all.

In the coliseum, in the face of the fiercest of enemies, Maximus exhorted his fellow, "Whatever comes out of these gates, we've got a better chance of survival if we work together. If we stay together; we survive. Come together! Lock your shields! Stay as one!"

NSWC Indian Head EOD Technology Division, together — as one, with shields locked, we provide decisive advantage to our warfighters — that is our solemn duty. I am exceptionally proud and privileged to be your commanding officer. I look forward to another exciting, challenging and successful year and, together, adding the 130th year to our storied legacy.

Capt. Scott Kraft
Commanding Officer
Naval Surface Warfare Center
Indian Head EOD Technology Division

STRATEGIC PLAN UPDATES

In 2014, NSWC IHEODTD Technical Director Ashley Johnson challenged command senior leaders with a vision: By 2025, NSWC IHEODTD will grow 400 work-years stronger by reshaping our industrial complex; capturing research, development, test and evaluation opportunities in energetic systems; and providing reliable, quality and affordable products and services. Over the course of the last five years, the command has made great strides in realizing those goals. For 2019 the command completed and implemented a large number of actions:

Goal 1: **Modernize, restore and/or reshape NSWC IHEODTD facilities, utilities and infrastructure to ensure mission achievement and fiscal sustainability.**

- **1.1.1 River Water Fire Suppression System Modernization:** The command's river water lines feeding the explosive operation fire suppression systems have reached their useful life and need repair. In 2019, the command hired an architectural and engineering firm to review the two top ideas for remediation. The firm provided a recommendation on what they determined was the most feasible solution with the least recurring costs as part of a concept study.

1.1.4 Potable Water Distribution System Modernization: The command's potable water distribution system is at the end of its useful life. Naval Support Activity South Potomac, the host command for Naval Support Facility Indian Head, secured three of four Military Construction Projects needed to design and repair the water mains.

1.1.8 Organic HVAC/IDS Maintenance: The command is taking control of the Heating, Ventilation and Air Conditioning/Integrated Dehumidification System (HVAC/IDS) preventative maintenance of the explosive operating buildings. The command hired HVAC experts and anticipates the preventative maintenance process will begin in January 2020.

- **1.2.1 Explosive Safety Compliance:** The command is improving explosive safety by siting (fully describing hazards associated with an explosive operating building) in accordance with NAVSEA OP 5 Volume 1 by 31 December 2021, and approved by the Department of Defense Explosives Safety Board (DDESB). The command has 430 explosive facilities: 279 facilities have a site approval with another 151 facilities waiting to be site approved. Of the 151 explosive facilities that require site approvals, 48 site approvals have been submitted to Naval Ordnance Safety and Security Activity, 50 site approvals are in progress and 53 facilities are awaiting action.
- **1.2.4 Annual Business Viability Assessment (ABVA):** We are on the seventh annual financial execution analysis of our industrial, engineering and support complexes. This break-even analysis assesses the annual revenue and costs for each complex to determine the complex's contribution to the overall command Net Operating Result. Based on this analysis, along with available workload (demand), the command assessed the financial condition and health of each complex to identify measures to improve their financial viability.

1.2.6 Divest Excess Contaminated Buildings/Equipment: This initiative is our five-year plan to reduce risk to the command regarding environmental impact, explosives safety and cost reduction through footprint reduction. The command spends more than $3 million annually to complete these efforts. A side benefit of this process was the recycling of 429,710 pounds of decontaminated metal in 2019.

- **1.3.6 Construction Contracting Authority:** New authorities in 2019 are permitting the command to award construction contracts to avoid delays encountered by Naval Facilities Engineering Command.

1.3.7 Industrial Complex Internal Maintenance Capability: The command determined it was best to conduct its own industrial facility maintenance. The process began with grounding and bonding testing and maintenance in June, and command maintenance personnel are working seven days a week to perform tests and make repairs. The command also hired personnel to perform explosive building fire protection preventative maintenance.

Goal 2: **Establish Public-Private Partnerships to enhance energetic materials and systems to support the fleet.**

- NSWC IHEODTD is actively engaged with private industry partners to enter into public-private partnerships (P3) under Center for Industrial Technical Excellence (CITE) and to execute partnership work for those P3 partnerships that have been finalized. To date, the command has entered into four P3 agreements with private industry entities and active discussions are underway with several other ordnance companies.

Goal 3: **Develop new products and services across NSWC IHEODTD core competencies to support strategic investments and to transition advanced warfighting capabilities.**

- In the past year, Goal 3 has worked to add new business lines to the NSWC IHEODTD portfolio. Most open source literature identifies the development of new business as the most difficult way to grow. To support this growth, Goal 3 has engaged with innovative partnering agreements and non-traditional contracting. Over the past year, new Small Business Innovation Research (SBIR) Phase II contracts were established, providing the command with access to new opportunities and tools streamlining command efforts. Additionally, new partnerships have been established with academic institutions and not-for-profits to extend the reach of the command's talented science and engineering workforce outside of the base. This has provided new opportunities for EOD tool development and energetics research. As a result, Goal 3 has "crossed the midfield" adding 52 work-years of new work within the command.

Goal 4: Establish NSWC IHEODTD as the energetic materials and systems provider of choice to protect the Navy's intellectual capital while expanding delivery of core products and services.

- Opportunity Capture – To grow 400 work-years, the command established a new system to identify, assess and capture workload opportunities. The command also conducted quarterly capture review boards to assess its efforts are going and approve/reject ideas for new efforts.

Goal 5: Invigorate interest in energetics to promote new RDT&E investment and the consideration of advanced energetics options within the capabilities development and acquisition process.

- Bolstering NSWC IHEODTD science and technology (S&T) execution is the bottom line for Goal 5 of the command's strategic plan. The target — adding 100 work years to execution in this technical arena — was bold because it represented more than a doubling of the command's fiscal year 2015 S&T numbers. Increasing funding and personnel are critical strides to success to meet these hard metrics. For fiscal year 2019, the command executed 141.8 S&T work-years — a 68.4 work-year increase from FY15 execution of 73.4 work-years. Goal 5 team did a great job in helping the command reach its target.
- Objective 5.1 is focused on developing and sustaining the communications necessary to grow the NSWC IHEODTD S&T workload. The critical messages from the Energetics Renaissance study in 2017 were distilled and delivered to a wide variety of strategic stakeholders. Within the Navy, this included program offices and, more importantly, the Office of Naval Research (ONR). These messages have also been delivered to several non-Navy customers. Fiscal year 2019 funding levels for S&T work at NSWC IHEODTD exceeded the $90 million mark, surpassing the $77 million target the command had established to maintain a healthy S&T organization. Both ONR and non-Navy customers are contributing to this growth.
- Objective 5.3 completed the first full year operating the Velocity Lab (VL). Chief Innovation Officer Dan Pines continues to shape the internal structure for both funding and infrastructure to support agile projects through the VL. The goal is to kick-start high risk ideas with minimal barriers to entry. The VL executed 15 different projects and started three new projects in the fall using a rolling selection process. These simple efforts can give employees the initial quick look at an idea to decide whether it's viable for a more formal pursuit. Several VL projects have transitioned into larger programs in the areas of additive manufacturing, counter-unmanned aircraft systems (UAS), and bio-agent defeat.

Objective 5.2 Scouting, Forecasting and Influencing is geared toward information sharing, idea generation and the development of an RDT&E program. This year, the team rolled out the SharePoint tool, "Technical and Business Scouting," to encourage more communication within the command regarding current and future technical opportunities. The team also developed a process to forecast technology needs using war-gaming. A technology scouting and wargaming pilot was conducted to encourage interdepartmental teamwork and identify new technical solutions to operationally relevant scenarios. The wargame had a senior and junior representative from each of the five technical departments, guided by warfighters and the command's subject matter experts.

People Supporting Plan: Ensure NSWC IHEODTD's workforce is properly informed, aligned, trained, engaged, motivated and rewarded.

- PE.1.2 Building Alliances with the Warfighter: In January 2019, a team of NSWC IHEODTD employees began an initiative titled "Building Alliances with the Warfighter" as part of the larger People V2 Strategic Planning vision of Commanding Officer Capt. Scott Kraft. The initiative's purpose is to establish ways to engage warfighters to determine how they operate/employ our products and determine ways to understand their current and future needs/expectations, so the command can better align efforts and provide the highest level of support possible. This initiative was broken down into several tasks with an aim to link the developers and producers of our weapons systems with the warfighters to create a synergistic force-multiplier through mutual understanding and shared purpose to provide capabilities required to defend the nation. The initial task was to define warfighter relationship as defined by our current workforce. Through a process of data analysis, the team developed engagement proposals designed to create or enhance the command's engagement relationship with the warfighter.
- PE.3.1 Establish a Process to Anticipate Organizational Staffing Needs: The team researched and benchmarked methods of anticipating staffing needs. Most notably the benchmarking discovered and received a live demonstration from Naval Sea Systems Command headquarters on a predictive analytics tool that provides capabilities in line with anticipating organizational staffing needs.

PE.3.2 Establish an Efficient and Effective Hiring Process: The Staffing and Recruiting Branch in Human Resources decreased hiring time from an average of 70.14 days in fiscal year 2018 to an average of 66.73 days in FY19, a reduction of 3.41 days. This average leads the Warfare Center Divisions. They created a new process to help managers understand exactly what they need to complete hiring actions. Additionally, the new internal process has a single point of entry for hiring packages, which are immediately reviewed upon receipt and any missing or incorrect items are requested at that time. This ensures that staffing specialists can act on hiring actions once they are routed to them. The major accomplishment for 2019 was the coordination and execution of the first-ever command-wide, all-discipline job fair, held in June, which resulted in 77 new hires to date.

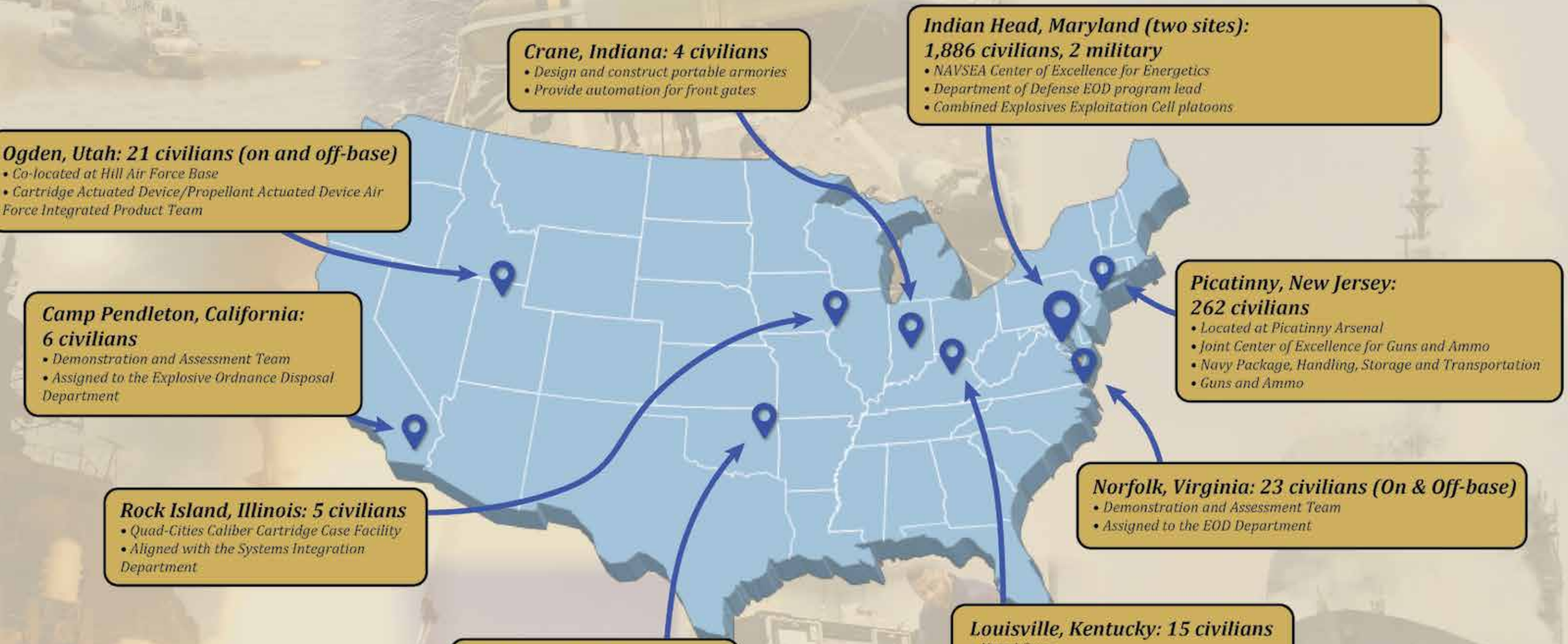
PE.3.3 Create a Culture of Inclusion: With a team of seven members, the initiative is creating a culture of inclusion where all employees feel welcomed, appreciated and fairly treated to drive increased effectiveness, motivation, morale and esprit de corp. To assist in accomplishing this goal, the team finalized and gained approval of a Diversity and Inclusion Maturity Matrix Model.

- PE.4.1 Establish Indian Head University: The Indian Head University (IHU) was launched in September 2019. The portal maintains all Workforce Development programs and is dedicated to provide employees information and opportunities that improve, support and sustain technical and professional proficiency. IHU is the primary interface to access learning and development programs, and tools and information that support individual, professional and organizational success. Since the successful implementation of IHU, 37 trainings have been offered, with 550 training requests being processed: 504 internal enrollments and 46 external enrollments. IHU hosts the Technical, Leadership, Business and General Studies Colleges.

Process Supporting Plan: Provide fast, rigorous, repeatable, accurate and safe work systems.

- PR.2 Business Rigor kicked off the acquisition pillar improvement effort to implement the work of the Acquisition Revitalization Team (formerly the Manhattan Project). The team is focusing on the three initiatives of:
  - PR.2.3 Piloting Technical Acquisition Specialists,
  - PR.2.6 Incorporating Coordinated Rigor and Discipline into Acquisition Processes, and
  - PR.2.9 Developing the Requirements Generation Process.

STRATEGIC LOCATIONS



Crane, Indiana: 4 civilians
- *Design and construct portable armories*
- *Provide automation for front gates*

Indian Head, Maryland (two sites): 1,886 civilians, 2 military
- *NAVSEA Center of Excellence for Energetics*
- *Department of Defense EOD program lead*
- *Combined Explosives Exploitation Cell platoons*

Ogden, Utah: 21 civilians (on and off-base)
- *Co-located at Hill Air Force Base*
- *Cartridge Actuated Device/Propellant Actuated Device Air Force Integrated Product Team*

Camp Pendleton, California: 6 civilians
- *Demonstration and Assessment Team*
- *Assigned to the Explosive Ordnance Disposal Department*

Picatinny, New Jersey: 262 civilians
- *Located at Picatinny Arsenal*
- *Joint Center of Excellence for Guns and Ammo*
- *Navy Package, Handling, Storage and Transportation*
- *Guns and Ammo*

Rock Island, Illinois: 5 civilians
- *Quad-Cities Caliber Cartridge Case Facility*
- *Aligned with the Systems Integration Department*

Norfolk, Virginia: 23 civilians (On & Off-base)
- *Demonstration and Assessment Team*
- *Assigned to the EOD Department*

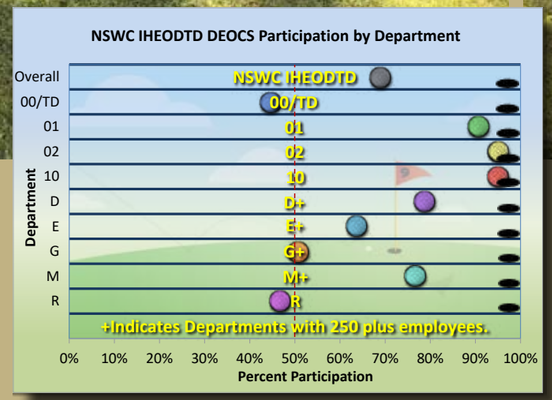
Louisville, Kentucky: 15 civilians
- *Naval Guns*

McAlester, Oklahoma: 41 civilians
- *McAlester Army Ammunition Plant*
- *Navy Special Weapons*

NAVSEA
WARFARE CENTERS
Indian Head EOD Technology Division

**** Contractor numbers not included***

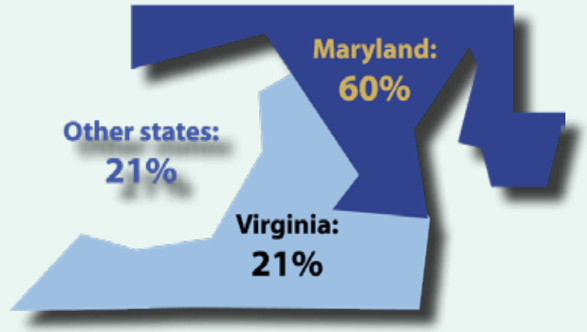
DEOCS



The command conducted its biennial Defense Equal Opportunity Management Institute (DEOMI) Organizational Climate Survey (DEOCS). Using a unique approach to increase participation, the DEOCS team encouraged employees to take part in the survey through the means of a "golf competition" between departments. Each week, the team would present the participation as departments worked to "sink the putt." The command's Infrastructure Division created and set up a display to track each department's participation. When the survey closed, there was 66% command-wide participation, demonstrating a 33% increase from the 2017 survey participation (50%). The top three concerns addressed in the 2019 DEOCS survey were: Organizational Effectiveness, Equal Opportunity/ Equal Employment Opportunities/Fair Treatment and Sexual Assault Prevention. Using data extracted from the survey results, the command developed an action plan to address the concerns identified in the survey.

ECONOMIC IMPACT

Where We Live



County-by-County Employee Breakdown (Maryland)

Charles County	70%
Saint Mary's	11%
Prince George's	10%
Calvert	3%
Anne Arundel	2%
Other	4%

NSWC IHEODTD Total Maryland Payroll

$260.9 MILLION

FY18 Maryland Contract Dollars

$46.3 MILLION

The command conducted a technology forecasting wargame pilot to study technology concept development and technology idea insertion to address a future operational problem. The two-day event was comprised of command scientist and engineers, uniformed military personnel, and a game mediator. The group studied tactical situations designed to focus on hypothetical, yet realistic operations.

Representatives from NSWC IHEODTD signed an Educational Partnership Agreement with Charles County Public Schools (CCPS) during a ceremony at the Charles County Fair in September. Under this agreement, NSWC IHEODTD will provide CCPS students access to U.S. Navy technology and materials deemed to be surplus, in addition to advice and mentorship from command personnel. In turn, CCPS will make laboratory equipment and facilities available to the command, as well as provide opportunities for NSWC IHEODTD to assist in the CCPS educational curriculum.

NSWC IHEODTD's Human Resources Division hosted a job fair at the College of Southern Maryland in June. There were 1,100 job seekers in attendance with more than 200 interviews conducted, 113 selections made and 84 job offers accepted on-site. Offers were made across all disciplines, using a variety of direct hire authorities.

The command's Acquisition Revitalization Team (ART) presented their findings to senior leadership in January after several months of research, brainstorming and consultation with subject matter experts. The ART identified key purchase and procurement issues across the command and developed short- and long-term solutions. ♦

The Moser Nitration Facility celebrated a milestone in March with Otto Fuel II production. Otto Fuel II is a monopropellant fuel for torpedoes and the facility provides it for the U.S. Navy and all of our allies ♦

The U.S. Air Force Integrated Product Team (IPT), within the Systems Engineering Department's CAD/PAD Division, successfully salvaged a 2014 U.S. Air Force contract for U-2 rocket catapults with N-43 propellant. In 2016, United Technologies Aircraft Systems announced they were discontinuing all N-43 propellant efforts for the Navy and Air Force after nearly 30 failed propellant mix/cast attempts. The IPT refused to accept defeat and assembled a team of government and contractor subject matter experts with a goal to salvage the program. The IPT was told the probability of success would be "akin to finding a unicorn." Three years later, the IPT "found their unicorn" and the first successful production lot of U-2 catapults since 2008 was delivered to Beale Air Force Base, California. ♦

The Energetics Manufacturing Department took its first steps towards a major order for the Air Force in May with the first of many deliveries of CXM. The production program funds more than 35 full time employees. ♦

The command signed its first bargaining agreement in 20 years in September with the American Federation of Government Workers, Local 1923. The agreement consolidated the previous seven separate agreements. The multiple agreements came as a result of the reorganization of Stump Neck Annex and NSWC IHEODTD. This was the culmination of six years of negotiations.

The command announced the signing of a Title 10, United States Code, section 2474, Public-Private Partnership with Grey Ops, in October. Under this five-year agreement, NSWC IHEODTD and Grey Ops will jointly manufacture an explosive desensitizing agent known as Silent Spring. Silent Spring is a Liquid Safing Fluid intended to desensitize primary explosive hazards, most commonly found in homemade explosives, to allow EOD warfighters and first responders the ability to safely move explosive materials, increase opportunities for forensic analysis and minimize damage to existing infrastructure.

In November, EOD department employees, along with Military Technical Acceptance Board (MTAB) members, traveled to Naval School Explosive Ordnance Disposal in Niceville, Florida, a Navy-managed command jointly staffed by Technical Training Acceptance Board (TTAB) members comprised of Army, Navy, Air Force and Marine Corps personnel. The groups were able to determine multiple areas for collaboration during the off-site visit.

The Assistant to Executive Manager for EOD Technology & Training (AX) Team took part in EOD Day on the Hill in November. This is an annual event which highlights the joint efforts of the EOD community across the services. ♦

Technical Director (TD) Ashley Johnson published an essay titled "Pentagon needs to start an 'Energetics Renaissance" in the January edition of National Defense Magazine. ♦

TD initiated Technical Project Reviews across the command in 2019 in order to inspect the technical discipline and proficiency applied in a variety of projects, from basic research to engineering and manufacturing efforts. ♦

TD and his senior staff established several new initiatives in 2019 to better track and lead command-wide efforts moving forward. From a comprehensive detailee forum to an organized structure to optimize our partnerships with our educational partners, these initiatives and others are expected to streamline the command's functionality. The TD's flagship effort, titled the Naval Energetics Stakeholder Oversight Board (NESOB), will better manage and care for the health of Indian Head's physical and intellectual capital in these times of a Great Power Competition. ♦

The Velocity Lab (VL) continued to provide support for innovation, research and development with its design and brainstorming area, classroom/conference room and light prototyping room. Highlights from 2019 include hosting a variety of activities, including a speaker series featuring Art Corbett, the Basic Ordnance Technology and Processes courses, hosting the Science and Engineering Apprenticeship Program (SEAP) interns, the IHU Leadership College course,

NSWC IHEODTD's Women in Networking group sponsored and produced a "Sustaining the Momentum: Women in Leadership for the Next Decade" symposium at the CSM in March. The event featured Lt. Rebecca Shaw, a U.S. Navy Test Pilot and project officer attached to Air Test and Evaluation Squadron (VX) 20 at Naval Air Station Patuxent River, Maryland as the guest speaker. The symposium was a joint effort between NSWC IHEODTD and CSM and featured employees from both organizations, as well as the Naval Air Warfare Center Aircraft Division, Naval Air Systems Command and Charles County Public Schools.

numerous VIP working lunches and the EOD Marker Concept and Situational Awareness Tool information/ brainstorming session. The VL provided funding for several collaborative projects which yielded four technical reports: one IEB Navy case, two explosive live fire demonstrations and one funded follow-on effort. ♦

The first Program Improvement Award/Grant funded by NSWC IHEODTD was awarded in 2019 to the College of Southern Maryland for their Innovation Training Workshop on Software Define Radio. ♦

The Ordnance Assurance and Safety Office (00SA) began 2019 with the retirement of then Safety Director, Kathy Garcia. In May, 00SA hosted the Explosive Safety Inspection (ESI). NSWC IHEODTD received a SATISFACTORY (SAT) with the least number of findings since 2011. 00SA's Picatinny Detachment hosted their ESI in May that resulted in an overall SAT and the McAlester Detachment hosted their ESI in June, also resulting in an overall SAT. ♦

During the week of Sept. 16, the command's Technical Director Ashley Johnson took part in a "job swap" with NSWC Philadelphia's Technical Director Thomas Perotti to leverage each of the two warfare centers' best practices to increase lethality, resiliency and agility of the warfighters they support. Johnson, (pictured above) greets an NSWC Philadelphia employee while on visit to the command.

The TD's Tenet program hosted three recognition ceremonies this year onboard Naval Support Facility Indian Head, as well as at the Picatinny, New Jersey and McAlester, Oklahoma sites. In total, 311 employees were nominated in 2019. The TD's five tenets are: Morale, Proficiency, Discipline, Motivation and Esprit de Corps. It is the TD's belief that when these tenets are prominent in the organization, there is evidence of effective leadership, and with this strength, the command can better achieve its vision and mission. The TD's program recognizes command employees who have taken the tenets to heart and performed over and above the regular demands of their jobs. Employees can nominate their fellow co-workers who have embodied one or more of these tenets for recognition by the command.

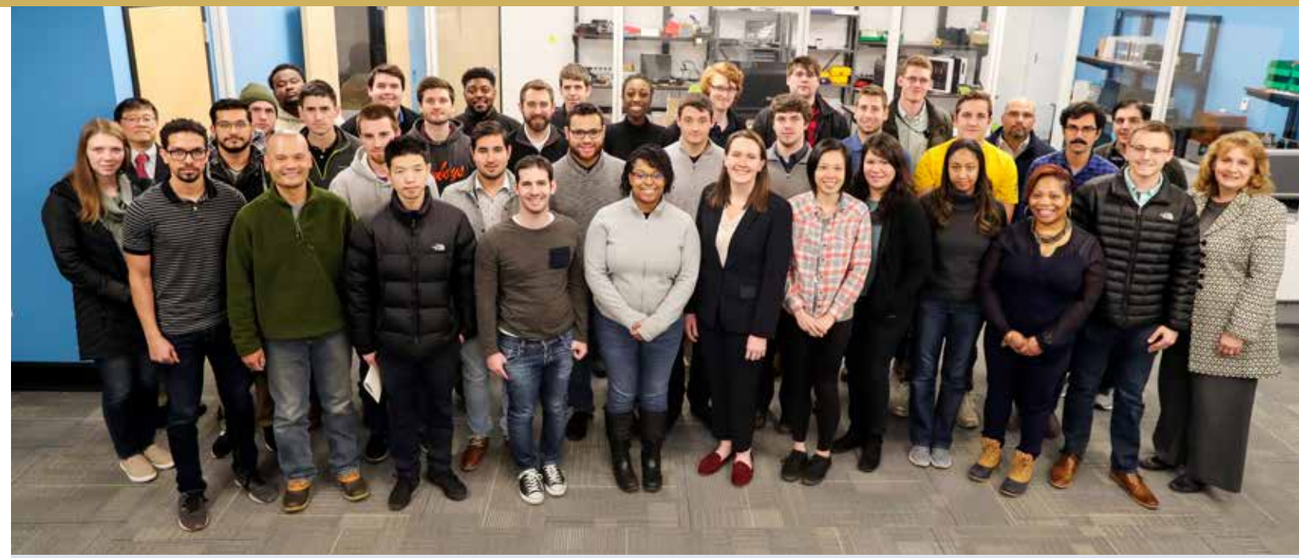
In June, 00SA welcomed new Safety Director, Constance Murphy. Connie brings extensive knowledge of Indian Head processes to the position with over 35 years of experience at NSWC IHEODTD. ♦

In July, the Explosive Safety Officer and Deputy Explosive Safety Officer attended an Explosives Safety Council meeting at Joint Base Anacosta Bolling, hosted by the Commander Naval Installations Command. The meeting objectives included ensuring the governance of CNIC-wide explosives safety management efforts and ensuring all regions and installations maintain the highest possible level of explosives safety compliance. ♦

OSH safety employees attended the NAVSEA Inspector General (IG) competency training in August, at the NAVSEA IG Academy held at the Washington Navy Yard. This training will allow 00SA trained employees to assist other Warfare Centers with future IG inspections. ♦

Indian Head University (IHU) launched in September. The portal maintains all Workforce Development (WFD) programs and is dedicated to provide employees information and opportunities that improve, support and sustain technical and professional proficiency. IHU is the primary interface to access learning and development programs, and tools and information that support individual, professional and organizational success. IHU hosts the following four colleges:

- IHU Technical College. This college enhances the technical proficiency and knowledge of the technical workforce by offering courses and information to support the science and engineering competencies, as well as processes applied across the workforce including project management, systems engineering, safety and quality.
- IHU Leadership College. This college is for employees looking to develop their leadership and strategic thinking skills.
- IHU Business College. This college is the central learning and development resource for those working and interested in the areas of Business, Contracting/COR, Corporate Operations (EEO Diversity & Inclusion, Human Resources, Information Technology and Cyber, Infrastructure, Public Affairs, and Security), and Financial Management and Comptroller.
- IHU General Studies College. This site provides information and resources to support learning and development programs for all employees, including:
    - Academic Tuition Assistance
    - DAWIA and other certifications
    - Employee Rotation Program
    - General Development
    - Individual Development Plans (IDPs)
    - Mandatory Training
    - Mentoring
    - Supervisory Training ♦



NSWC IHEODTD employees completed the first Basic Indian Head Process course, held at the Velocity Lab November 19-21. It is one of the first basic courses in IHU Technical College led by NSWC IHEODTD Deputy Technical Director and Technical College Champion Amy O'Donnell and Lead Systems and Chief Engineer for the Energetics Manufacturing Department and Technical College Lead Lekisha Hodges. This course, along with Basic Ordnance Technology, is foundational for new employees' proficiency, discipline and career growth. The Basic Indian Head Process course provides awareness of the Indian Head structure, corporate technical processes and rigor that is expected to be used during duty execution regardless of the branch, division or department.

In early October, 00SA held a tailgate picnic at Autumn Fest Park. Employees wore team shirts to show their team spirit. Later in the month, safety employees attended the annual environmental, safety and health (ESH) Community of Practice (CoP) face-to-face meeting to develop and finalize projects the ESH CoP are engaged in. The end of the month wrapped up with 00SA hosting it first guest speaker, Terry Gray with "The Safety Man Movement," at the annual Safety & Security Stand-Down. The training was attended by more than 1,200 employees. ♦

Technical Director Ashley Johnson taught the first class of students in the IHU Leadership College's inaugural course, Strategic Thinking as a Fundamental Element of Leadership. ♦

In November, the Radiological Affairs Support Office audited the radiation safety program. Results of the audit were zero findings. ♦

Safety provided ongoing OSH safety support to the start-up efforts of QCCCF. ♦

The Safety Office reviewed over 130 Standard Operating Procedures in 2019, attended Pre-Construction meetings, processed more than 1,000 Hazardous Material Authorized Use List requests, and issued over 1,000 safety work permits that identified hazards such as hot work, chemical, environmental, confined space, fall protection, asbestos, lead, etc. ♦

The Quality Technical Rigor team developed four basic Indian Head Process Improvement Courses:

- Quality Basics and Customer Care Basics
- Basic Defects Inspection
- Basics of Root Cause
- Product Data Reporting and Evaluation Program ♦

QCCCF

The Quad Cities Cartridge Case Facility (QCCCF) is a state-of-the-art facility located in Rock Island Arsenal, Ill., and is an Army Ammunition Plant owned by the U.S. Army Joint Munitions Command for the manufacturing of large caliber metallic cartridge cases for all Department of Defense services. NSWC IHEODTD restarted the facility and is utilizing deep drawn technology to produce premium steel and brass cartridge cases for Navy surface warfare use.

In 2017, the U.S. Navy realized its inventory of cartridge cases would be soon be depleted and began looking at alternate manufacturing methods. Although different manufacturing technologies were capable of manufacturing a case, none were as cost effective as the deep draw operation utilized at QCCCF. A cost benefit analysis was performed and determined the lowest risk and lowest cost approach to meet Navy requirements would be to reactivate the QCCCF facility.

In 2019, a cadre of NSWC IHEODTD employees across multiple departments began renovations at the site and have since taken command of the facility operations. QCCCF represents the only known worldwide capability to manufacture large caliber steel cases, with the additional ability to receive incoming raw material and ship out completed cartridge cases all under one roof.

NSWC IHEODTD has the ability to manufacture propellant and design and manufacture primers for large caliber propelling charges. These capabilities provide a unique opportunity to quickly develop new prototypes and test out new propellants. ♦

Members of the Automated EOD Robotic System Increment 1 robot support team and the DAT; with assistance from JHU/APL trained operators, worked diligently to keep their systems running through a weeklong user assessment at Fort Story, Virginia in May. Left to Right: Adam Shaker (NSWC IHEODTD), Nguyen La (Johns Hopkins University, Applied Physics Lab) , Todd Zimmerman (NSWC IHEODTD), Andrew Czop (NSWC IHEODTD), Wirak Lim (Johns Hopkins University, Applied Physics Lab)

The Demonstration and Assessment Team (DAT), in conjunction with the Marine Corps Warfighting Laboratory, conducted a Moving Target Engagement assessment at Marine Corps Base, Camp Lejeune, North Carolina in early March. ♦

The Explosive Detection Equipment Branch continued its support and sustainment of over 1,600 Homemade Explosive detector kits for both Army and Navy in both CONUS and OCONUS. ♦

In late April to early May, the DAT conducted a limited assessment and demonstration of 26 prototype Small Business Innovation Research technologies in support of Marine Corps Systems Command. These technologies ran the spectrum from Ground Combat to Communications to Logistics. ♦

The DAT conducted a Critical Infrastructure Protection Less-than-Lethal exercise to examine less than lethal solutions that could be employed by Marine Security Guard, Local Guard Force, and Special Program for Embassy Augmentation and Response personnel. ♦

EOD Department held a Halloween costume contest in October. The individual winners were Debbie Ledford (dressed as a scarecrow) and Derrick Cooper (dressed as Rick James). The group winners were the Explosive Detection Equipment team who dressed up representing elements of the periodic table.

Employees gather for a group photo at the EOD Department's "Family Day" celebration at NSWC IHEODTD's Stump Neck Annex in June.

EOD Department personnel Garfield Shealy (D11 Technical Project Officer), Joe Vollenberg (D11 Foreign Program Analyst) and Kodie Hayes (DB International Programs Office) visited the Joint EOD Command in Soesterberg, Netherlands in early November in support of the command's Information Exchange Agreement with the Dutch and to attend their 75 Year EOD Celebration

Information Management Division personnel provided visual information support for a trip to the National Police and National Police EOD School in the Czech Republic. During the visit, over 6,000 images and a large amount of documentation were collected on both Czech and Russian ordnance. ♦

The DAT supported the Marine Corps Warfighting Laboratory in the planning, coordination and overall execution of Advanced Naval Technology Exercise East in July in Camp Lejeune, North Carolina. This event focused on command and control, communications, force protection, unmanned systems and logistics. ♦

Mike DelSignore and Adam Shaker of the EOD Department Robotics Branch supported the evaluation of the AEODRS Inc 1 system at the Eastern National Robotics Rodeo (ENRR) held from 16 to 19 August 2019. The ENRR sponsored by the Air Force Civil Engineer Center, Combating Terrorism Technical Support Office, and United Kingdom Defence Science and Technology Laboratory. Robot operators attending the event are active members of military both U.S. and U.K., as well as, public safety civilian bomb squads.

The Physical Security Enterprise and Analysis Group and the Joint Improvised-Threat Defeat Organization funded the Explosive Detection Equipment team to evaluate commercially available handheld explosive detection equipment. Based on that evaluation, the team chose the SEEKERe Explosive Detection Kit with 122 systems fielded during 2019. ♦

The Technical Support Center processed 4,620 Requests for Information. ♦

The DAT executed a User Evaluation of Man-Transportable Robotics System II (MTRS) (AEODRS Inc 2) /Talon 5 using simulated scenarios along varying terrain and environmental conditions at Explosive Ordnance Disposal Training and Evaluation Unit Two, Joint Expeditionary Base Little Creek-Fort Story, Virginia in August. The team collected data and user feedback to characterize the MTRS II/Talon 5 during user training, set up and configuration, and assessment execution. ♦

NSWC IHEODTD participated in the 2019 America, Britain, Canada, Australia and New Zealand (ABCANZ) Alliance (ABCANZ) EOD and Diving Information Exchange Program in Sydney, Australia in late October to early November. EOD Department, EOD Military Technical Acceptance Board, EOD Mobile Unit Five, EXU-1 and NAVSEA (SEA-00C) personnel participated in a multilateral EOD and diving working group with delegations from the United Kingdom, Canada, Australia and New Zealand.

Members of the CAD/PAD technical and logistics team traveled to the NASA's Johnson Space Center in Houston for a Technical Interchange Meeting on NASA T-38 and WB-57 Aircraft in August. The CAD/PAD Division supports NASA's mission of training astronauts and conducting high altitude research. The team provides acquisition, logistical and engineering support for both the US16LN and Aircrew Common Ejection Seat (ACES) II ejection seats and other related emergency escape system and fire protection components.

Members of the CAD/PAD Engineering team visited Marine Corps Air Station (MCAS) Beaufort, South Carolina, where they met with Marine Fighter Attack Training Squadron (VMFAT) 501 Warlords in support of the F-35 aircraft's US16E ejection seat upgrade, which included both arming and de-arming processes. ♦

NSWC IHEODTD McAlester Detachment completed delivery of the first limited rate initial production of a Medium Combat Operations Center (COC Medium) to Expeditionary Warfare Center (EXWC) Port Hueneme, California, in July. The COC Medium is a facility used by multiple operational units within the U.S. Navy and consists of 13 TRICON II containers packed with equipment for use as an expeditionary base. ♦

In the past year, the McAlester Detachment received 150 missiles from Raytheon Missile Systems and repackaged and stored 200 missiles. The detachment also manufactured 200 CNU-735/E containers, and retrieved, inspected and repaired 150 CNU-735/E containers from the MCAAP Demilitarization line for reuse. The detachment also inspected, repaired and refurbished 260 CNU-308/E shipping and storage containers to Raytheon Missile Systems for use in the delivery of Tomahawk missiles to the fleet. ♦

McAlester Detachment completed two Ernst and Young audits, in addition to completing the Explosive Safety Inspection. ♦

The CAD/PAD Division conducted their second CAD Dangerous Goods Technical Specialist Course at MCAS Miramar, California, in June. U.S. Marines from 12 squadrons on MCAS Miramar attended the shipping class. ♦

CAD/PAD hosted a team-building event in May where employees enjoyed an ice cream social and a competitive game of kickball.

Engineers from the Surface Systems Branch worked with a team of German personnel to support failure investigations on three sibling motors. ♦

A team comprised of members from the Land and Expeditionary Systems and Fuzing and Initiation Systems Branches worked on a fiscal year 2019 Naval Innovative Science and Engineering/Section 219 funded-project to develop an open architecture safe-and-arm for small unmanned aircraft systems munitions. ♦

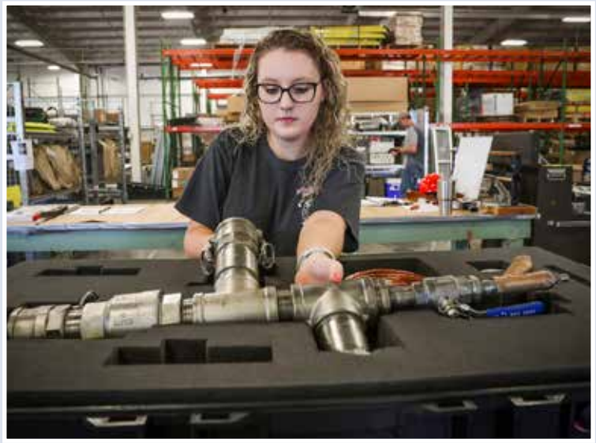
In January, Annmarie Shahan and Ed Lustig of the Warhead and Propulsion Technology Branch served as guest lecturers at the U.S. Naval Academy in Annapolis for a class focusing on weapon design and analysis. In the spring, the midshipmen participated in a grenade design competition in which the designs were tested for effectiveness at Blossom Point Research. ♦

Representatives from the Weapons Effects and Analysis Branch, along with other NSWC IHEODTD departments and NSWC Dahlgren Division, met with the German Navy to hold the eighth Dynamic System Mechanics Advanced Simulation Technical Progress Meeting in February. ♦

The CAD/PAD Division hosted their biennial Industry Summit at CSM in May. The Summit represents the only forum dedicated to presenting program updates, managing industrial base preservation and addressing new acquisition procedures relevant to the CAD/PAD industrial base. CSM also hosted the CAD/PAD International Logistics Meeting in June. This annual meeting is dedicated to presenting the latest efforts with respect to CAD/PAD acquisition along with program updates relevant to contracting practices.

SYSTEMS ENGINEERING DEPARTMENT

Seven Systems Engineering Department employees sponsored and mentored Robotics Team 5587 - Titan Robotics from T.C. Williams High School in Alexandria, Virginia. The team won the Engineering Inspiration award for spreading STEM awareness in their community and qualified to compete at the For Inspiration and Recognition of Science and Technology (FIRST) World Championship in Detroit where they competed against more than 30 nations.



The McAlester Detachment was tasked by EXWC with the manufacture of the fuel valve assembly for inclusion in the COC kits, with 76 assemblies completed during the year.

The Joint Counter Radio-Controlled Improvised Explosive Device Electronic Warfare (JCREW) Software Support Activity (SSA) closed out the year in October with an end-of-year program review. The program review included a tour of the SSA lab, where the team demonstrated the new enhanced capability investments that provide value-added to the future sustainment of the NAVSEA PMS 408 Expeditionary Missions JCREW I1B1 program. ♦

The Electro Static Discharge (ESD) tech agent team coordinated with the RDT&E Department's Test and Evaluation Division to expand the explosive test capabilities for ordnance evaluation in the ESD uncontrolled environment. This coordination effort developed a standard operating procedure to allow for ESD testing at the Sigmund Jacobs Physics Detonation Laboratory Bomb-Proof Facilities. ♦

The department's Air Systems and Ordnance Electronics Engineering branches continued support of NAVAIR's Direct and Time Sensitive Strike (PMA-242) and H-60 Multi-Mission Helicopters Program (PMA 299) Digital Rocket Launchers (DRL) program through production of the LAU-61G/A launcher and launcher electronics control assembly. ♦

The Warhead and Propulsion Branch completed private party support of Chemring Ordnance utilizing NSWC IHEODTD Arsenal Site status. The effort was comprised of developing design changes and conducting Navy qualification of a 57mm artillery round procured from a foreign source and altered for use by the U.S. Navy. ♦

In June, the McAlester Detachment hosted the Naval Sea Systems Command Test and Evaluation Consortium at McAlester Army Ammunition Plant. More than 20 attendees representing activities from across the Naval Warfare Center enterprise met to collaborate and share best practices regarding test and evaluation, manufacturing, additive manufacturing and calibration. ♦

CAD/PAD Division employees, including Yusuf Shodunke (pictured), trained at Master Jet Base at Naval Air Station (NAS) Oceana, Virginia, in September, learning how the Navy NACES ejection seat used on various naval aircraft is installed and removed from the aircraft, as well as how CAD/PAD devices are handled in maintenance procedures.

The CAD/PAD division's Air Force IPT Branch contingent located at Hill Air Force Base in Ogden, Utah enjoy camaraderie and good food at a team-building barbeque.

SYSTEMS INTEGRATION DEPARTMENT

Human Resource Director Bill Shea and staff from the Human Resources Division visited the Picatinny Detachment twice in 2019 and hosted sessions with managers and employees. Discussions included the initiatives and changes to the Workforce Development Branch, implementation of Indian Head University, supervisory training, and writing assessment training.

In May, Naval Packaging, Handling, Storage and Transportation (PHST) division employees William "Woody" Wheeler and Brian Won received the Long-Life Design Award for their EX 839 MOD 0 shipping and storage container submission at the National Institute of Packaging Handling and Logistic Engineers (NIPHLE) awards ceremony in Huntsville, Alabama, in May. The container was selected as the 2018 first place winner of the NIPHLE Long-Life Packaging Design Award. In addition, the EX 839 MOD 0 shipping and storage container was also selected as the best in show.

Brian Won and William "Woody" Wheeler hold the trophy they won as first place winners in the NIPHLE Long-Life Packaging Design

The Systems Integration Department (G), located onboard the U.S. Army Picatinny Arsenal in Picatinny, New Jersey, hosted Reverend Dr. DeForest Soaries, Senior Pastor of First Baptist Church of Lincoln Gardens in Somerset, New Jersey, for their Dr. Martin Luther King Jr. remembrance ceremony. Soaries served as keynote speaker for the event. ♦

G Department employees volunteered at "Introduce a Girl to Engineering Day" in February. Approximately 125 young women spent time learning about the important work done at Picatinny Arsenal, where they talked to engineers, interfaced with weapon systems, participated in simulation training, and handled inert ammunition. ♦

The Guns Division hosted the Warfare Center Logistics Leadership Community of Practice meeting in May. The primary topic was "Digital Future for a More Networked Fleet" and its applicability in areas such as logistics. ♦

The department hosted a Holocaust Remembrance Day assembly in May. The event was an installation-wide assembly attended by more than 100 employees. Mikki Friedman, Intermediate Caliber Commodity manager, facilitated bringing the guest speaker Bella Miller of Wantage, New Jersey. Miller recounted events that began in a small town in eastern Poland in 1939 when she was seven years old.

The department hosted its summer picnic in August where a record-breaking turnout of more than 150 employees and their family members attended. The summer picnic allows employees to develop relationships with their peers, team-build and renew their sense of purpose, as well as foster a sense of unity among the divisions.

The department hosted its "Bring a Child to Work Day" in April for 20 children at the Transportation building. The event included a tour of the PHST test facility and interviews with employees.

Department leadership hosted a VIP visit by Dr. William Cohen of the Office of the Assistant Secretary of the Army, along with the different tenants of Picatinny. Conventional Ammunition Division Director Mike Taft presented a Systems Integration Department overview and employees from each division discussed their respective division's contribution to the Navy mission and collaboration with the Army.

The Picatinny Chapter of Women in Defense and the Systems Integration Department sponsored speaker, author and founder of Random Acts of Leadership, Susan Mazza, in October. Mazza spoke to the Picatinny community regarding the secret to business relationships that work. A lunchtime meet and greet with Ms. Mazza was held afterward to give attendees the opportunity to pose specific questions and receive her advice.

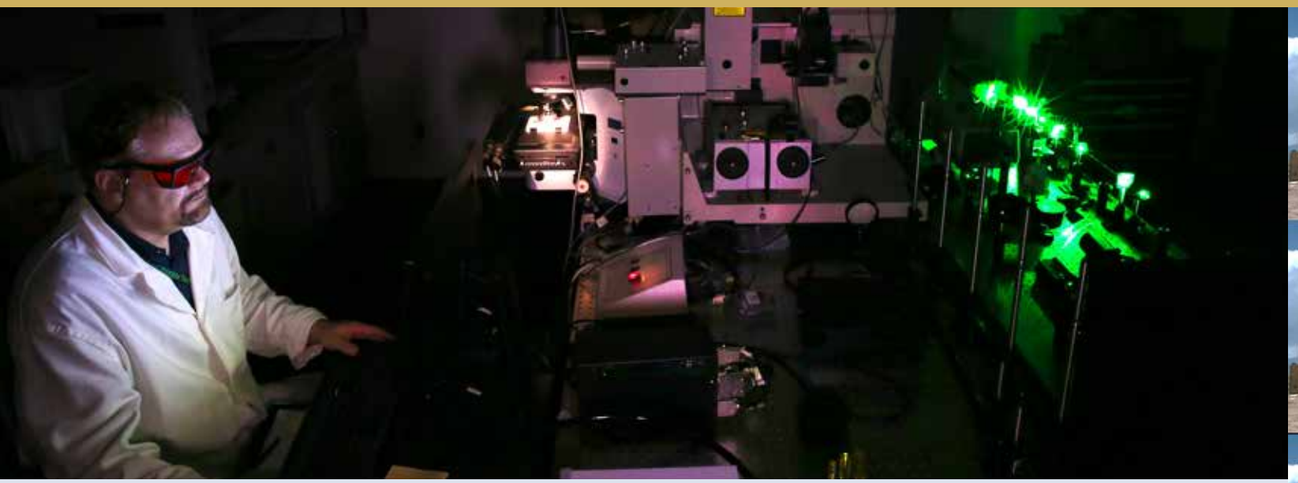
Acting Deputy Director Ken Zimms was selected to the NIPHLE Hall of Fame. PHST Division employees are long-standing members of NIPHLE, with three current members in the Hall of Fame: Mario Scaglione, Robert Dress and Roy Smith. "Ken has spent his entire career working to improve the Navy's ability to safely package, handle, store and transport critical ordnance throughout its logistics cycle," Systems Integration Department's Naval PHST Division supervisor Arthur Stanton said. "Under his tenure, the PHST center has standardized material and parts for weapons containers, developed innovative packaging solutions to meet insensitive munition requirements and unique Navy concepts of operations, developed a standard for ordnance packaging for all military services, and received numerous patents and design awards." ♦

The detachment participated in the Picatinny Arsenal Installation's Annual Community Day. The event is open to all properly vetted family members and residents of local towns surrounding the Arsenal. ♦

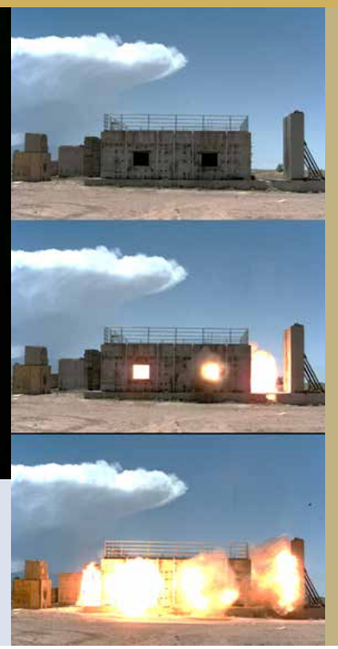
Mike Hagn, Mike Bottass, Cale Williams and Eric Lambert received a PEO IWS Team Excellence Award for fiscal year 2019 3rd and 4th quarters as recognition for their contribution to the start-up of the Quad City Cartridge Case Facility, in Rock Island, Illinois. The team members familiarized themselves with a 200,000-square foot unused facility and unused equipment and rejuvenated the facilities capabilities to serve the needs of not only the Navy, but other service branches and our allies' military forces. ♦

In 2019, the department began including a historical tour with a certified base historian as part of their new hire tour.

The Systems Integration Department established a party committee, led by Stacy Hill, the department's executive assistant. The committee met throughout the year to coordinate events such as the summer picnic, a Halloween "spooktacular" and an off-site winter holiday party.



The RDT&E Department developed an advanced diagnostic in 2019 to provide in-depth characterization of energetics through monitoring molecular and microstructural processes at pressure and temperature extremes. This new capability includes heated diamond anvil cells and a micro-Raman spectrometer for in-situ detection of structural and chemical stability and reactivity to accelerate testing of new energetics for advanced applications. The development was led by Dr. Zbigniew Dreger and funded by the NSWC IHEODTD In-House Laboratory Independent Research (ILIR) program.



NSWC IHEODTD Physics and Engineering Branch (R12) researchers, along with university partners, conducted testing to successfully demonstrate novel diagnostic techniques and solutions for use with advanced technology energetic materials. These advanced technology energetic materials present new challenges in characterizing performance. Data acquired from these tests also aid in the verification and validation of high-fidelity numerical models of future higher performing weapon systems.

Dr. Anne Kyner inspects the fit of various components of a press tooling assembly. This assembly was manufactured for the pressing of a pyrotechnic formulation that was tested in the R Department for assessment of dispersion clouds through both experimental and modeling and simulation studies. The project was internally funded through Navy Innovative Science and Engineering (NISE) 219.

Department employees enjoyed beautiful weather and a bountiful spread at their annual family picnic in May.

The Research, Development, Test and Evaluation (RDT&E) Department expanded in 2019 with the addition of the Chemical, Biological, Radiological Defense Division (CBR-D). In December of 2018, 40 employees became part of the RDT&E Department in the first wave of the CBR-D mission transfer from NSWC Dahlgren Division (DD) to NSWC IHEODTD. ♦

RDT&E Scientist Nicholas Owens graduated from the Journey Level Leadership (JLL) Program in September. JLL is NAVSEA's mid-level leadership development program. Owens, alongside E Department teammate Katelyn James, executed a capital investments data analysis capstone project with the Supplier Health and Resiliency Collaboration (SHARC), a collaborative team with members from DASN (Ships) and NAVSEA. ♦

The RDT&E Division Additive Manufacturing Team Scientists Jorge Castellanos, David O. Zamor and Christine D. Knott published their first article on the direct-ink writing of solid propellant grains in the Defense Systems Information Analysis Center Journal, Summer Issue 2019 (Vol. 6 No. 3). The article presents a generalized methodology for mixing a solvent-loaded, ammonium perchlorate containing formulation and procedures for obtaining optimum print parameters. ♦

Researchers in the Test and Evaluation Division led a team that characterized the effects of a relevant improvised gas generating threat. The team is comprised of scientists, engineers and technicians from across the RDT&E Department. This information is used to help first responders understand and mitigate these types of threats. ♦

The Baseline Assessment Memorandum Advanced Low-cost Munitions Ordnance Office of Naval Research Future Naval Capabilities (BAM ALaMO ONR FNC) has entered the third year of the program. The program is a joint collaboration between the RDT&E Department, NSWC DD Engineering Development and Lethality and Effectiveness Departments as well as several contractors. BAM ALaMO FNC is a program to incorporate high density reactive materials into a warhead case to increase lethality and effectiveness on target without affecting flight performance of the current round. The program is in the design phase of the final Phase 3 warhead development. ♦

The Johns Hopkins University Applied Physics Laboratory tasked R Department's Ballistics Test Branch to perform an MK 104 static fire test using a simplified Jet Tab Assembly in support of the Standard Missile. The MK 104 rocket motor selected for this test was the oldest MK 104 ever static fired. Due to issues seen in previous geriatric MK 104 motors, various risk mitigation techniques were used and the static fire test was successfully completed. ♦

The Detonation and Combustion Technology Branch's Counter Improvised Threat Team (CITT) developed and live-tested a threat using a small unmanned aerial system (sUAS) carrying an improvised explosive device (IED). The sUAS IED was flown at a classified test range in an effort to characterize signatures and observables associated with both the flight and initiation of said sUAS. The CITT spearheaded the characterization of a gas forming reaction (GFR) threat in support of a high priority Department of Homeland Defense request. This included development of small-scale testing capable of understanding the phenomenology of the GFR. The findings of each stage of testing were briefed at the National Security Council. ♦

ENERGETICS MANUFACTURING DEPARTMENT

Department employees traveled to Naval Station Norfolk for a tour of two Navy warships in May.

The Energetics Manufacturing Department completed a 100% wall-to-wall inventory of all Ordnance Information System assets. The Industrial Support Division was responsible for inventorying 14,000 of the 18,000 line items. ♦

The department processed 4,945 orders received through the Cartridge Actuated Device/Propellant Actuated Device (CAD/PAD) Virtual Fleet Support system resulting in the delivery of 33,317 CADs and 1,456 PADs to the fleet. This was a 7.5% increase in the number of orders processed from the previous year. ♦

The Energetics Manufacturing Department took its first step toward a major order for the Air Force in May with the first delivery of CXM. ♦

The Moser Facility received a facelift, bringing it from the analog age to the digital. The nitration facility, constructed in the 1970s, was designed to allow for continuous operation, while also keeping the operators away from the hazardous material and potential explosions during the nitration process. The updates allow for ease in remote operation of nitration and decreased the plant downtime, increasing overall operational efficiency. ♦

The department hosted its annual softball game in October. Once again, the engineers were pitted against the operators in a no-holds-barred showdown. Team Engineers defeated Team Operations 14-3, ensuring bragging rights for the first time in three years.

Department personnel took part in a field trip to Naval Air Station Patuxent River in Patuxent River, Maryland, in October. The team toured F/A-18 Hornet and F-35 Lightning II fighter aircrafts and several testing and maintenance facilities.

CORPORATE OPERATIONS DEPARTMENT

In line with Strategic Goal One: Reshape Facilities and Utilities, the Infrastructure Division took over grounding and bonding testing of explosive facilities from Naval Facilities Command (NAVFAC) on June 1, 2019. The division's electricians have been conducting full-system grounding and bonding tests to ensure lightning protection systems are in compliance with OP-5 safety standards. Between June and November, 453 tests were performed at 353 of 496 explosive operating buildings (353 visual and 100 full ground tests).

Corporate Operations' Infrastructure Division remained busy in 2019 by completing service tickets and building renovations to improve the safety, quality of life, capacity and capability of all Indian Head/Stump Neck departments. Over 6,000 service tickets were received and filtered by the division and the small cadre of in-house maintenance mechanics handled more than 1,800 tickets and achieved nearly a 90% on-time completion rate.

In 2019, the Infrastructure Division pursued and funded sustainment, restoration and modernization facility projects at historic levels. Over 50 projects were awarded and more than $17 million was expensed. The Infrastructure Division also funded over $3 million in paving projects, which greatly improves the safety and efficiency of explosive truck routes in addition to upgraded parking lots and other common areas. ♦

Two separate pilots took place at Indian Head, proving out technology for workspace management. The first pilot was the testing and implementation of ARCHIBUS, an IT software tool to plan and manage workspace and personnel move. Due in part to the success of this pilot, ARCHIBUS has been chosen as a warfare center enterprise solution for workspace management. The second pilot was a handheld scanning effort, which used rapid data collection technology to generate highly accurate 2D and 3D floorplans of the facility. The pilot tested the capability and capacity of the scanning devices to produce floorplans that could be integrated into the ARCHIBUS software. ♦

The Equal Employment Opportunity (EEO), Diversity and Inclusion Office coordinated and carried out 100% of the Special Emphasis programming for 2019, including special programming for African American/ Black History Month in February, Women's History Month in March and National Disability Employment Awareness Month in October; a Hispanic Heritage Month luncheon in September; and recognition of American Indian Heritage Month in November.

In 2019, the Infrastructure Division teamed up with NAVFAC to pursue an Energy Savings Performance Contract (ESPC). NSWC IHEODTD and NAVFAC have recognized a need for a holistic look at the facilities, utilities and processes at Indian Head and Stump Neck. The goal of the ESPC contract will be to provide needed upgrades to increase the resiliency, reliability and efficiency of utilities for the long term. ♦

The Corporate Communications division published 25 editions of the bi-weekly news magazine The Loop. The division supported multiple command events: the Honorary Awards, Warfare Center Awards, four Technical Director Tenet Recognition events, various visits and tours, and community relations events, including Sea-Air-Space Exposition, Modern Day Marine and the Charles County Fair. ♦

The Records Management Team scanned and transferred documents and drawings to the Federal Records Center and identified historical drawings and records that were transferred to the National Archives and Records Administration or the Naval History and Heritage Institute.

CORPORATE OPERATIONS DEPARTMENT

NSWC IHEODTD hosted the Naval Underwater Warfare Center / NSWC Quality Community of Practice Annual meeting for the second year in October. The Quality Team Champion is the command's Technical Director Ashley Johnson. This community of practice is 1 of 20 across the Warfare Centers. The team reviewed their accomplishments of 2019 and set forth their plan, goals and initiatives for 2020.

The Personnel Security Team reviewed and processed 358 new hire packets for 2019 and reviewed 556 investigations required for command personnel security clearances. ♦

The Security Team's preparations leading up to the 2019 Explosive Safety Inspection resulted in Program 9 Arms Ammunition and Explosives and Physical Security receiving zero discrepancies. ♦

Leading up to the Naval Sea Systems Command (NAVSEA) Command Cyber Readiness Inspection (CCRI) Pre-Assist Visit, the Security Team self-identified and closed a number of Traditional Security discrepancies. As a result, the NAVSEA CCRI Pre-Assist Visit team discovered zero Category 1 discrepancies and a reduced number of Category 2 and 3 discrepancies. The Security Team also passed the bi-annual Communications Security Material System Central Office of Record Audit provided by the Naval Communications Security Material System Assist Team. ♦

The Equal Employment Opportunity (EEO), Diversity and Inclusion Office hosted Dr. Roy Nafarrete for an All-Hands Prevention of Sexual Harassment training event in August which aligns with the command's People Supporting Plan.

The Special Security Team received accreditation of a Sensitive Compartmented Information Facility (SCIF) expansion project from Special Security Officer Navy and successfully decertified a separate SCIF in preparation for that building's refurbishment. ♦

The Security Division partnered with the Activity Command Information Officer/ Information Technology (ACIO/IT) Division in performing weekly walk-through inspections of command buildings. These security spot checks helped to reduce security incidents and increase overall security awareness. ♦

The Information Security Team was recognized with the 2019 NAVSEA Warfare Center Information Security Award for promoting and increasing security initiatives, including a 100% inventory of classified information to ensure greater security and accountability of classified and controlled unclassified information. ♦

The Purchase Requisition Branch processed 25,021 material and service lines in fiscal year 2019, totaling $438,412,044. ♦

ACIO/IT team members wore their jerseys or red to support the "home team" Washington Nationals baseball team who won the World Series in 2019.

NAVSEA ERP Business Office Deputy Director Parul McDonald was presented with a Letter of Appreciation by NSWC IHEODTD Technical Director Ashley Johnson and Commanding Officer Capt. Scott Kraft in April. McDonald was recognized for her leadership leading the Property Management Division through a critical period for NSWC IHEODTD. Her successes included championing the Property Audit preparation, leading the headquarters initiative to consolidate purchase requisition creator roles in ERP, filling key branch positions, removing barriers for the work force, assisting Expeditionary Exploitation Unit ONE in preparing a common organization waiver and assisting the Acquisition Revitalization Project team on "quick wins" during their campaign.

During 2019, the ACIO/IT Division worked hard to provide improved IT services and support to the command. IT procurement support included the processing of 531 IT procurement requests (ITPRs) and approval of 848 PRs and 2,789 PR line items in Enterprise Resource Planning (ERP). On the RDT&E network, IT operations upgraded four distribution switches around the command and another nine aggregating network switches were upgraded. ♦

CONTRACTS DEPARTMENT

The end of fiscal year is always an intense time in the Contracts Department. Employees buckled down during "crunch time" in September to ensure the command met its obligations.

The Purchase Card program completed its Procurement Performance Management Assessment Program in April with a rating of satisfactory. The audit was conducted by Naval Sea Systems Command (NAVSEA) Level 3 Agency Program Coordinators and consisted of 80 transactions, where zero deficiencies were found. During the 18-month period (September 2017 to February 2019), the team of Theresa Mullican, Melissa Johnson and Penny Watson processed 8,223 transactions totaling more than $10 million.

Contracts welcomed a new Deputy Chief of the Contracting Department (DCCO), Elizabeth "Beth" Hoover in April 2019. As the DCCO, Hoover acts in the absence of the Chief of the Contracting Department and shares overall responsibility for ensuring that the Contracting Department's policies and procedures comply with applicable laws, regulations, good business practices and prudent business decisions. In addition, she has the responsibility to exercise various review and approval authorities detailed in federal, Department of Defense and Navy regulations and procedures.

Contracts welcomed aboard several new employees to help meet the growing demands of the command: (back row) Joshua Denton, Sarah Hayden, Deanna Huntt, Lois (Michelle) Taylor, (front) Joanna Whitehead and Trellis Harris.

Two Contracts Department employees – Jamie Brown and Ashleigh Bowie – traveled to Norway to support the Nammo Energetics post-award kickoff meeting. The kickoff took place at one of the subcontractor locations, where the first phase of the contract for the Multiple Launch Rocket System M26 Rocket Motor Reclamation and Flight Testing took place. While in Norway, the two toured the facilities used for this contract, as well as the possible flight testing location where phase three could possibly take place.

CONTRACTS DEPARTMENT

Contracts finalized its "Teamwork Puzzle," in which employees recognized each other for exhibiting the Technical Director's five tenets: Morale, Proficiency, Discipline, Motivation and Esprit de Corps. This initiative began in August 2018, and the puzzle was completed in May. Overall, the department highlighted the five tenets 252 times.

The Contracting Department awarded an urgent contract in 45 days supporting the decontamination and remediation of the fallout-controlled gas turbine exhaust systems onboard USS Curtis Wilbur (DDG 54) and USS Preble (DDG 88). These ships were part of the Navy's "Operation Tomodachi," the humanitarian and disaster relief operations associated with the Fukushima Daiichi Nuclear Power plant explosion event. Both ships suffered consequent shipboard radiological contamination, which required decontamination and remediation. ♦

In January, the Contracts Department lost a very special employee, Paula Greaser-Hayes, following a long battle with cancer. Greaser-Hayes was employed for 42 happy years at NSWC IHEODTD in various positions including mechanical engineer, branch manager, and the technical liaison officer in the Contracts Department.

The Contracts Department and Division and the Property Management division teamed up in October for a joint team building event and spent an afternoon playing kickball and getting to know each other better.

The Contracts Department shares in "spooktacular" fun with an office Halloween Bash. Participating divisions dressed up in costume, shared spooky appetizers and scary desserts, held a door decorating contest and played Halloween bingo!

Ruth Adams (right) retired in June, after 37 years of dedicated service. Adams began her government career at Indian Head in October 1981 as a GS-01 clerk-typist and retired as the deputy department head in the Contracts Department. Her entire career was at NSWC IHEODTD, successfully performing positions in the Manufacturing and Contracts Departments.

Janice Barber-Cook (left) retired in November 2019 after 42 years of dedicated service. After high school, Barber-Cook served in the U.S Army for three years and the Army Reserve for a year. She began her government career in the command's internship program as a contract specialist in 2005.

The Comptroller's office bid farewell to their long-standing Deputy Comptroller Dennis Holden in June. Holden had been a familiar face at NSWC IHEODTD, having served 30 of his 35 1/2 of federal service at the command. Sara Gunderson replaced Holden as the new Deputy Comptroller.

Providing working capital fund training to the non-financial workforce became a reality during 2019. Along the lines of thinking big and starting small, Comptroller put together a training package and informally presented it at one of the RDT&E Department all hands. As IHU came online, Comptroller was asked to use the training as the first course offered through IHU. In September, Comptroller provided the training to 100 employees over two sessions. The training once again went on the road to the McAlester Detachment, where 20 McAlester personnel were trained. ♦

At the beginning of fiscal year 2019, the department established the Expeditionary Exploitation Unit ONE (EXU-1) travel office. Standing up this Unit Identification Code distinctive office allows EXU-1 to meet the unique strategic needs of its travelers. Along with the establishment of this office, the Comptroller Travel Office was also included in the Defense Travel Management Office Excellence in Practice Award as a part of the Naval Sea Systems Command Warfare Center Transportation of People Team. ♦

Employee Services continues to focus on improving the travel process. They conduct internal audits and review previous and current travel vouchers to ensure that each request is within the regulations set. ♦

The Government Credit Card Office published the "Policies and Procedures for the Administration and Use of the Government Travel Charge Card" in 2019. The document is a great reference source when reviewing travel vouchers and records. ♦

The Comptroller Department became fully staffed during 2019 for the first time in a decade — adding an additional 15 new hires during the year. As the strategic plan continues to add more direct work years, the support for the increase must be accompanied by proportional growth in support that Comptroller provides. Leveraging the College of Southern Maryland and the command job fair, Comptroller was able to gather over 150 resumes, subsequently interviewing more than 50 candidates and backfilling its vacancies through the direct hiring authorities. Additionally, Comptroller has been using the Pathways internships to attract college students currently pursuing accounting degrees to work flexible schedules without interfering with their school schedules. After meeting the requirements of the program, which includes a degree and 640 working hours, the interns can then be non-competitively converted to permanent NSWC IHEODTD employees. Comptroller has had three interns converted since starting the Pathways program; two more are scheduled to convert in December and four additional over the next two years. Comptroller discovered the Pathways intern program is an excellent way to support succession planning by exposing a younger generation to the financial workings of a working capital fund.

Corporate Budget Division employee Mary Grace Acosta was one of five employees across the Navy who were selected to participate in the Defense Civilian Emerging Leaders Program. Acosta began training for the program in March 2020 in Southbridge, Massachusetts.

COMPTROLLER DEPARTMENT

For their part at the annual Bring a Child to Work Day, Comptroller employees provided an ice cream sundae bar with a twist: the children were given an $8 budget. A scoop of ice cream cost $5 and an additional scoop was $1, with toppings ranging in price. The children then created their dream sundae within their budget constraints. The employees also incorporated titles that are involved in the budget and completion process, and initialed off on the sundae creations as they went down the table.

In June, Comptroller personnel began providing Labor Training for the command's departments. This training is performed by the Accounting Office's labor analysts and is a great overview for new and current employees. The purpose of this training is to provide a more in-depth understanding of the labor process from the point of entering time in enterprise resource planning (ERP) via a timesheet to the labor charges posting to the network activity (NWA) or rejecting and becoming a Labor/OH Error reject. ♦

Along with annual Labor Training, the Accounting Division also conducts internal Labor Cost Transfer audits to ensure that all documents for cost transfers are within the guidelines. Continuing with the focus on Labor for 2019, the Accounting Officer facilitated a Labor Accrual and Leave and Fringe activity for all new hires and interns for the Comptroller Department. This allowed the new employees to learn various reports within ERP in addition to the process of how to calculate the Labor Accrual amount for the month or Leave and Fringe projection for Year-End. ♦

As the Department of Navy (DON) continues to undergo a financial management transformation in order to achieve audit success, the Navy continues to reform business practices for greater performance and affordability. The audits allow the DON and ultimately NSWC IHEODTD to identify shortfalls, discrepancies and inconsistencies well before they have an unintended consequence. Audits serve to find hidden efficiencies, resulting in savings of taxpayer dollars that are reinvested into increased readiness for the Fleet. The Financial Improvement & Audit Remediation (FIAR) team continues to support the command in all of the audit-related activities. Indian Head's FIAR team supported the Energetics Manufacturing Department and Safety Division with the first ever 100% Ordnance Inventory. This task was monumental and took the support of everyone on the base in order to complete in four short weeks. In addition, FIAR has been instrumental with assisting the Asset Management Branch with their annual General Equipment Inventory as well as supporting the Property Management Branch with the Operating Materials and Supplies Audit. The FIAR team supported several on-site Ernst & Young external site visits that included a Military Standard Requisitioning and Issue Procedures process walkthrough, Transportation of People process walkthrough, Transportation of Things process walkthrough, Month-End Close process walkthrough and an on-site Ordnance external audit. ♦

Comptroller employees shared a bit of "The Big Easy" at their Mardi Gras party in March with a spread of Cajun food and crowning a Mardi Gras King and Queen.

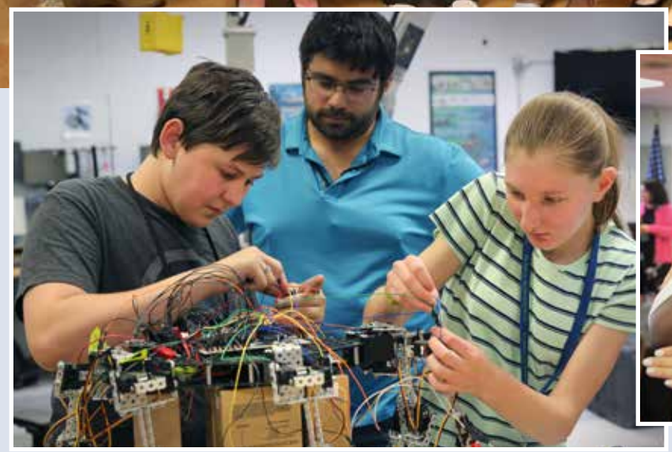
STEM AND COMMUNITY PARTNERSHIPS

(Left) David Rivera Marchand, a Robotics Branch mechanical engineer with the EOD Department, demonstrates an EOD robot to students as Kerry Clark, the command's chief technology officer looks on with students at the History, Industry, Technology and Science Expo at St. Charles High School, March 16.

In September, command personnel participated in the 96th annual Charles County Fair, bringing with them a number of hands-on demonstrations and devices, including EOD robotic capabilities; SEAP students project designs; the Charles County High School's For Inspiration and Recognition of Science and Technology Robotics team, "Robo Raptors," sponsored by NSWC IHEODTD; and the EOD Navy Diver tank where Commanding Officer Scott Kraft took to the water with the underwater tic-tac-toe game.

Command employees assisted in numerous off-site STEM events at local schools and libraries, including the Charles County Public Library STEM Fest in October where students and their families were exposed to the diversity of missions and opportunities available in the STEM field and onboard NSWC IHEODTD.

For her ongoing efforts with STEM outreach and volunteering with the robotics program, Systems Engineering Department's Jean Nelson received the 2018 Volunteer of the Year Award from the College of Southern Maryland's Vex Robotics League. She credits her drive to volunteer with support she has received from NSWC IHEODTD. ♦



During the 2019 SEAP apprenticeship, 12 students ranging from rising high school seniors to college freshmen worked alongside command engineers and scientists, receiving mentorship and guidance and gaining practical experience in various STEM fields.

BRING A CHILD TO WORK DAY

NSWC IHEODTD coordinated their second annual Bring a Child to Work Day. With 57 children registered and many more who came for the day, the Town of Indian Head's Pavilion on the Green was filled with children who had the opportunity to get to know not only a little more about what their family members do, but what the command does.

Departments provided interactive displays for the youngsters so that they could better understand what their family member does onboard the command, there were many hands-on displays as well as in the field science experiments and the grand finale that included small hobby rocket launch for everyone's enjoyment.

Displays ranged from a budgeting demonstration with an ice cream sundae bar from the Comptroller Department where children were given an amount to spend for the various toppings and had to budget to get their perfect sundae complete; a mock acquisition with a chance to spin the wheel on the "Price is Right" type game called "It's In the Bag!" where children were tasked with matching an array of items with the bag they believed was the correct price; a sign language demonstration and follow-along from the EEO and Diversity Office; the Security Division supported the event by providing a high security lock display and conducted roving patrols throughout the Indian Head Pavilion on the Green; and the Ordnance Assurance and Safety Office interacted with the children on the importance of having and wearing personal protection equipment. Every department and division provide personnel and activities that kept the children and their family members entertained and educated. ♦

At the inaugural testing run of the Underwater Test Tank (UTT) at Test Range Two Hypervelocity Test Facility on board Stump Neck Annex, George Torres, Bill Davis and their team tested the underwater characterizations of two different rounds — the BK-40 and the BK-110. "This was the very first underwater testing carried out in this tank," Torres said. "The underwater test tank is another capability that we have recently added. It's a pretty big feat that is working so well." The UTT was completed in July. The facility is designed to test 25 grams net explosive weight (NEW) and five pound NEW for the test range.

The Customer Advocate Office finalized 21 Cooperative Research and Development Agreements resulting in approximately $1.6 million of funding for research and 14 Work for Private Parties Agreement. ♦

Engineers from the CBR-D Division's Protection and Integration Branch and NSWC Philadelphia Division completed Ship Alteration 82907K, the Collective Protection System (CPS) Variable Speed Drive, on USS Sterett (DDG 104) in January. This upgrade increases the crew's situational awareness of CPS by providing real-time operating parameters while reducing the overall CPS energy consumption by more than 60%. ♦

RDT&E Physics and Engineering Branch researchers, along with university partners, conducted testing to demonstrate novel diagnostic techniques and solutions for use with advanced technology energetic materials. These materials present new challenges in characterizing performance. Data acquired from these tests also aid in the verification and validation of high-fidelity numerical models of future higher performing weapon systems. ♦

An advanced diagnostic was developed in RDT&E Department's Research and Development Division to provide in-depth characterization of energetics through monitoring molecular and microstructural processes at pressure and temperature extremes. This new capability includes heated diamond anvil cells and micro-Raman spectrometer for in-situ detection of structural and chemical stability and reactivity to accelerate testing of new energetics for advanced applications. The development was led by Dr. Zbigniew Dreger of the Physics and Engineering Branch and funded by the command's In-house Laboratory Independent Research program. ♦

Patents in 2019

Patent Number 10,125,058. **Encapsulated, Particulate Energetic Composition and the Making of the Same.**
Victor J. Bellitto
An encapsulated, particulate energetic composition includes one of explosive particles of a known size, oxidizer particles of a known size, and a mixture of explosive particles and oxidizer particles of known sizes, in which particles of one of the explosive particles, the oxidizer particles, and the mixture of the explosive and the oxidizer particles, are encapsulated by a combustible fuel of a known thickness to enhance the energy output.

Patent Number 10,126,328. **Electrical measurement test fixture.**
John Parkes
An electrical test fixture includes a printed wiring board (PWB) and a pair of cable connectors for connecting to a device to be tested.

Patent Number 10,131,638. **Synthesis of AZO intermediate.**
Patrick A. Caruana, Alfred G. Stern, Alex J. Zaita, Thao Vo
A synthesis for an azo intermediate, 5,5'-azobis(4-chloropyrimidine) is disclosed. 5,5'-azobis(4-chloropyrimidine) is a relatively stable azo compound in that decomposition does not occur until about 194.degree. C.

Patent Number 10,132,604. **Cap for explosive water charges.**
Keith Chamberlain, Lee Foltz, Angel Diaz
A cap for an explosive water charge includes a top surface and a generally cylindrical portion extending downwardly from the top surface.

Patent Number 10,222,182. **Modular Shaped Charge System (MCS) Conical Device.**
Normary Camacho Cardoza, Nicholas Shaker, Michael G. Craft, Lonnie Frericks
A modular shaped charge system including a housing including a circular opening; an attachment ring having a diameter complementary to a diameter of the opening of the housing.

Patent Number 10,234,248. **Micro-Electric-Pyrotechnic Energy-Harvesting Apparatus for Munitions.**
Thinh Hoang, Khoa Nguyen, Daniel Corey Pines, Troy Caruso
A micro-electric-pyrotechnic energy-harvesting apparatus to harvest an incidental portion of a propellant energy utilized when a munition is fired freeing a magnet to strike an impact pin that strains a piezoelectric element.

Patent Number 10,337,814. **Dearmer Positioning System.**
Nicholas Shaker, Michael Craft
A dearmer positioning system has two assemblies, each of which circumscribes a dearmer's barrel.

Patent Number 10,342,232. **Iodinated Polymers for biological Agent Defeat.**
Robert Carl Brothers, Rebecca Marin Wilson, Michelle Pantoya
A binder and related processes, has been developed for biological agent defeat formulations.

Patent Number 10,344,973: **Apparatus for Incinerating Explosive Devices and Biological Agents.**
Carl Gotzmer, Steven S. Kim, Brian Amato
An incinerator has a spherical chamber body to define an incineration chamber and includes a port structure with an opening that provides access to the incineration chamber.

Patent Number 10,358,392: **Process for making a powdered amorphous explosive.**
Raafat H. Guirguis
A process for converting a crystalline energetic material to an amorphous energetic material that is less susceptible to accidental detonation initiation by mechanical insults.

Patent Number 10,365,073: **Extraction charge for underground threats.**
Lee Foltz, Angel Diaz, Dennis Askin, Herman Wallace, Daniel McCarthy
An extraction charge for threats buried underground includes a housing, a shaped charge disposed in the housing at one end thereof, and a canister disposed in the housing and spaced apart from the shaped charge.

AWARDS

The command's Chief Technology Officer, Dr. Kerry Clark, received the Technical Cooperation Program Team Award as part of the Weapon Systems Group's Energetic Materials and Propulsion Technologies Technical Panel at the Pentagon in Arlington, Virginia, in February.

The Department of the Navy (DON) Superior Civilian Service Award was presented to Thomas Kloehn, a technical product manager for the Joint Project Manager - Protection (JPM-P) Department. Kloehn was recognized for his service as the project manager for the Contaminated Human Remains System under the JPM-P on board NSWC Dahlgren from May 2017 to December 2018. This award is the second highest honorary service award given to civilian employees under the DON Civilian Awards program. It recognizes employee contributions that are exceptionally high in value that, as a minimum, have a wide impact in the DON.

In 2019, five personnel from NSWC IHEODTD were recognized with the Navy Meritorious Civilian Service Award, the third highest Navy civilian award. The Navy Meritorious Civilian Service Award is awarded to civilian employees in the Department of the Navy for meritorious service or contributions resulting in high value or benefits for the Navy or the Marine Corps. ♦

Dr. Richard Lee, received the award for his outstanding service and personal commitment to supporting the warfighter throughout his career as a scientist from April 1984 to December 2018. Prior to his retirement, Lee was a senior technology leader in the Research, Development, Test and Evaluation Department. ♦

Human Resources Director William Shea received the award for the unification of the NSWC Indian Head and the NSWC Naval EOD Technology Division human resource workforces following the organizational merger in 2013, leading the renegotiation of the American Federation of Government Employees union contract in 2017, and the numerous and significant hiring process improvements implemented during his tenure. ♦

Systems Engineering Department Head Michael Thornton was presented with the award for his efforts in recruitment that demonstrated his dedication to ensuring a continuous source of qualified personnel focused on meeting the needs of the warfighter. ♦

Chemical, Biological, and Radiological Defense (CBR-D) Division Principal Engineer Bruce Corso received the award as a result of his instrumental leadership and planning in the functional transfer of the CBR-D Division from NSWC Dahlgren to NSWC IHEODTD, while maintaining the CBR-D's customer focus and support of the warfighter. ♦

Gregory Harris, a mechanical engineer (now retired), received the award for his part in co-developing part of the formal Naval Sea Systems Command specification for designing underwater explosion resistant ship hull girders. Harris' contributions resulted in the rapid expansion of Dynamic System Mechanics Analysis from the undersea weapons community to the Navy platform acquisition community and to agencies outside of the Department of Defense. ♦

The 2018 Dr. Delores M. Etter Top Scientist and Engineers Award in the Emergent Engineer Investigators category was presented to George McDaniel Jr. for his innovative applications of resonant acoustic mixing for improved lethality warheads. McDaniel performed independent complex research responsible for the conception, creation, scale up and production of new high explosive compositions suitable for incorporation to prototypes.

NSWC IHEODTD Systems Integration Department acting Deputy Director Ken Zimms was inducted into the Military Packaging Hall of Fame in May.

NSWC IHEODTD Commanding Officer Capt. Scott Kraft conferred the Master Black Belt Certificate to James Young of the Corporate Operations Department in May. Young serves as a Lean Six Sigma Black Belt and holds a professional certification from the American Society for Quality.

NSWC IHEODTD Honorary Awards

The command's Honorary Awards took place in April with College of Southern Maryland President Dr. Maureen Murphy as guest speaker. The awards are presented to individuals and teams who have made significant contributions to the command, the warfighter, the community and our nation.

Roger M. Smith Team Award
Explosive Formulation Revitalization Team
Gabriel Bjerke, Craig Diamond, Darlene Galloza-Lorenzo, Kevin Genson, Emily Leitsch, George McDaniel Jr., Dwayne McKinney Jr., Hannah Moody, David Nelson, Lori Nock, Stephen Stiles and James White

Safety Excellence Award
Hazard Analysis Team
Wanda Agens, Angel Almodovar, Timothy Appleby, Anthony Brown, Jonathan Bueno, Walter Buswell, Robert Frederick, Timothy Freehling, Rachel Hardin, Jason Hintze, Eric Lambert, Wendell Lee, Debra Lucas, Daniel Martin, Yonatan Mikre, Christopher Mikus, Amanda Robson, William Russell Jr., David Sapiro, Taylor Schaeffer, Adam Sharrow, Matthew Spielman, Cale Williams, Erin Wilson, Troy Wolf and Nicholas Zalewski

Excellence in System Engineering Award
Technical Data Package Cross Cutting Initiative Team
Yasmine Aly, Kyle Beard, Elizabeth Braun, Victoria Fuller, Nadine Geier, Mark Heinrichs, Lekisha Hodges, Ishmael Kamara, Steven Kelly, Kimberly Lawson, Paula Loucas, Michael Neff, Joseph Neuman, James Young and Dr. Christopher Wilhelm

Excellence in Quality Execution Award
Cartridge Actuated Devices/Propellant Actuated Devices Manufacturing Quality Control Team
Lydia Berry, Joseph Fritz, Kimberly Gore, Bryan Kilikewich, Brandon Shaffer, and Bernadette Wackerle

Excellence in Project Management Award
Alexander Sweeney, Systems Engineering Department, Fusion and Initiation Systems Branch

Lance Corporal T.J. Honeycutt Award for Forward Deploying Service
William Jurkowski, Systems Integration Department, Ammunition Engineering Support Branch

Internal Customer Service Awards
Ashleigh Bowie, Contracts Department
Staffing and Recruitment Team
Kristy Burns, Christen Danielson, Lindsay Longshore, Lori McFarland, Lisa Robey, Brandy Stickel, Sebastiane Toney, Lauren Trilli and Brittney Vincent

Equal Opportunity and Diversity Award
Dr. Dion Serben, Systems Integration Department, Other Ship Gun Ammunition Program

Dr. Horst Adolph Award for Outstanding Patent
Special Purpose Low Impact Threat Rupture Team
Arthur Ellis Jr., Lee Foltz, Joseph Rothenberger, Michael Sharp and Chad Smith

Continuous Process Improvement Award
Mark 706 Container Re-Manufacture Team
Donald Bacote, Daniel Bouch, Robert Branson, Russell Carey, Denise Cobey-Warren, Michael Dutton Gerard Heard, Damaris Kaminski, Gloria Parker, Floyd Proctor, Sharon Rich and Karen Wilson

Captain H.E. Lackey Award for Community Service
Darrell Flesher, Research, Development, Test and Evaluation Department, Ballistics Test Branch

A.J. Perk Outstanding Operator/Technician of the Year Award
Austin Collins, Energetics Manufacturing Department, Rockets and Cartridge Actuated Devices/Propellant Actuated Devices Operations Branch

Clarence Tasker, Explosive Ordnance Disposal Department, Inventory Control Point/Depot Branch

Admiral Harold R. Stark Award for Innovation
Smart Mining Initiative Safety and Arming Rapid Prototype Development Team
Antonio Borckardt, Ralph Bridge, Douglas Butterworth, Qixun Cai, Chris Cao, Mark Cavolowsky, Ezra Chen, Dai Dinh, Daniel Jean, Muhammad Khan, Jiawen Li, Trong Luong, Caitlyn May, David Muzzey, Cuong Nguyen, Khoa Nguyen, Rajitha Samaraweera, Alexander Sweeney, Matthew Vincent and Steven Wu

Joe L. Browning Award for Managerial Excellence
Lance Brown, Explosive Ordnance Disposal Department, Test and Evaluation Branch

Dr. George W. Patterson Award for Outstanding Accomplishment
George McDaniel Jr., Research, Development, Test and Evaluation Department, Chemistry

Robert B. Dashiell Award for Excellence
Scott Buswell, Energetics Manufacturing Department, Chemicals Development and Manufacturing Branch

Warfare Center Awards
NSWC IHEODTD Commanding Officer Capt. Scott Kraft and Technical Director Ashley Johnson presented Warfare Center Awards in October. In all, seven Warfare Center Awards were presented:

Alan J. Dean Award for Talent Management Winner
Staffing and Recruiting Branch Team

Kristy Burns, Lori McFarland, Brandy Stickel, Lindsay Longshore, Lisa Robey

Information Security Award Winners
Security Division
Eric Albrecht, Raymond Bean, Robert Caldwell, Michelle Campbell, William Gregor Jr., Robert Hales, Christopher Haynie, George Jones IV, Cody Krikstan, Megan Morgan, Michael Paulk, John Piccini, Carol Oakes, Lee Sanders, Christopher Suda, Michael Turman, Cindy Wehausen and Michael White

Technical Support Services Award Winners
David Clark, Energetics Manufacturing Department
Indian Head's Otto Fuel II Production Team
Daniel Arnold, Erwin Beroncal, Jock Dwayne Brewer, Joshua Clark, Gregory Cline, Brendon Cox, Peter Cusack, Paul Desear, Charles Forte, David Gilroy, Darryell Johnson, Gerald Kris Propst, Peter Rohr, Larry Swann, Alvin Thomas, Melvin Thomas, Joshua Wustner and Travis Yon
Threat Exploitation Team
Jeremy Brewster, Jason Bruce, Mark Cavolowsky, John Alex Cox, William Davis, Jr., Steven Dunham, Kevin Holmes, Kazi Islam, Gregory Kaminski, John Painter, John Papanicolas, Christopher Ruelle, Annmarie Shahan, Kyle Shahan, Brian Specht, Laura Tinsley and Matthew Vincent

Knowledge Sharing Award
NSWC IHEODTD members of the People's Integrated Essential Resource Team: Chris Adams, Tara Landis
NSWC IHEODTD members of the Research Commons Team: Amber Knott

Dr. Maureen Murphy, College of Southern Maryland president, offers congratulatory words and inspiration during the NSWC IHEODTD Honorary Awards ceremony.

CBR-D DIVISION

In December, 2019, the transfer of function for the CBR-D was initiated from NSWC Dahlgren Division to NSWC IHEODTD as one of the first critical step towards achieving Strategic Plan Goal 3: develop new products and services across our core competencies. CBR-D systems workload properly aligns with NSWC IHEODTD's mission and existing research and development efforts in explosive neutralization of biological threats, remote sensing and signatures of CBR threats, EOD mission and technology development (including CBR weapon exploitation and render safe procedures), and CBR-related tasks for the intelligence community. CBR-D hosted an open house in March with approximately 100 command personnel in attendance. The event provided an opportunity to view displays and discuss a broad spectrum of CBR-D projects and focus areas.

CBR-D Division Protection and Integration Branch's Joe Novick briefed the Commandant of the U.S. Army Chemical School and the Joint Program Executive Officer for Chemical, Biological, Radiological and Nuclear Defense in January on the High Mobility Decontamination System's (HMDS) operational assessment conducted at Camp Humphreys, South Korea. The 23rd Chemical Battalion at Camp Humphreys recommended the use of HMDS over the legacy system for terrain, equipment and fixed site decontamination because of this operational assessment. ♦

Engineers from the CBR-D Division Protection and Integration Branch and NSWC Philadelphia Division completed Ship Alteration 82907K, the Collective Protection System (CPS) Variable Speed Drive, on USS Sterett (DDG 104) in January. This upgrade increases the crew's situational awareness of CPS by providing real-time operating parameters while reducing the overall CPS energy consumption by more than 60%. ♦

Members of the CBR-D Protection and Integration Branch who supported the Pentagon's Force Protection Agency received the Mission Excellence Award in January. This award was given to recognize the team in their response to Ricin letters that were received by the Pentagon's Mail Receiving Facility. As a result of the team's efforts, mail was identified, sorted and quarantined with no interruption to the mission. ♦

The division hosted a two-day Program Objective Memorandum meeting in June for the Navy's Chemical and Biological Defense (CBD) enterprise. The two-day event included program reviews for each commodity area covering requirements, funding, execution and issues. ♦

The CBR-D Division hosted the quarterly Defense Threat Reduction Agency Lab Commander's meeting in August. This marks the first time this senior-level meeting was held at NSWC IHEODTD bringing together key joint service stakeholders to discuss the CBD Program. The division provided a technical brief discussing a prototypical technological concept

Allena Ward, an engineer with the CBR-D Protection and Integration Branch, was recognized as a "Volunteer of the Year" by the College of Southern Maryland for her support to their middle school STEM education efforts in 2019.

Members of the Protection & Integration Branch - Carly Davis (second row, second from the right), Anton Fionov (second row, first on the right), Anthony Mangus (last row, fourth from the right) and Andrew Lesson (last row, third from the right) and members of the Pentagon Force Protection Agency's Chemical, Biological and Radiological Protection (CBR) Division receiving Mission Excellence Award in January.

presented at the Chemical Biological Operational Analysis event at Camp Dawson, West Virginia in August. ♦

As one of the major Navy sponsors for the CBR-D Division, OPNAV N967 recognized the need to initiate a new Program of Record within the joint CBD Program called Next Generation Collective Protection (Colpro). For decades, the CBR-D Division has served as the recognized experts in shipboard Colpro, and have consequently increased these capabilities at NSWC IHEODTD to meet the growing need for advanced shipboard ventilation systems. Next generation Colpro will consolidate and take advantage of new and modern heating, ventilation and air conditioning technologies to provide Navy ships with modern, affordable, and lighter weight collective protection. ♦

CBR-D Division scientists and engineers supported the annual "Bring a Child to Work" event in June by designing and building a filter-themed ball toss game and a filter demonstration device using an inert smoke generator.

In June, the NSWC IHEODTD McAlester Detachment hosted the Naval Sea Systems Command Test and Evaluation Consortium at McAlester Army Ammunition Plant. Fifty-two personnel attended representing activities from both the Navy Surface and Undersea Warfare Centers.

The Naval Construction Force, Construction Battalion, also known as "Seabees," helped build new EOD robot test apparatuses for the command. Six members of the Construction Battalion Maintenance Unit 202 spent four weeks at NSWC IHEODTD constructing the test sites for EOD robots. "The apparatus being constructed by the Seabees are part of the Unmanned Systems Test Methods developed by the National Institute of Standards and Technology," said Warren Tibbs, an electronics/engineering technician with EOD Department's Robotics Branch. "These test methods are used extensively in the first responder community for training and evaluation of robotics platforms, and are increasing in use within the Department of Defense."

The command invested in major facilities renovations. The facility investment increased from $7 million in fiscal year 2017 to $32 million in fiscal year 2019. The primary focus of this funding was for general building renovations and the repair of roofs and heating, ventilation and air conditioning (HVAC) systems. In addition to having renovated buildings, these projects increased the number of personnel occupying buildings or provided usable buildings that were initially deemed unusable. In fiscal year 2019, there were also 23 roof projects and 16 HVAC projects for administrative and operating buildings. ♦

The 2019 Science and Engineering Apprenticeship Program (SEAP) kicked off in June. SEAP welcomed 12 students for the summer program. Dr. Martin Chernoff was the program coordinator for the year. *Read more about the SEAP program on page 50.*

The 46th term of the Professional Development Council (PDC) hosted their out-brief to leadership in August. The council highlighted their accomplishments, which included training and mentoring, community outreach, visibility for the group and tours. The council also presented two corporate projects: 1) the PDC Past, Present and Future (PPF), a review of past PDC practices to better align the council with the command's Strategic Plan; and 2) the Technical Development Council, an organization aimed at enhancing the technical skills of engineers, scientists and technicians in the command.

Personnel from the command's CAD/PAD Division attended the 2019 Sea-Air-Space Expo in National Harbor, Maryland, in May. Sea-Air-Space is the largest maritime trade show in the U.S. and is an extension of the Navy League's mission of maritime policy education and sea service support. ♦

The Albert T. Camp Technical Library permanently relocated to Building 2172 on the Stump Neck Annex in July. The Technical Library is now collocated with the Information Management Division's EOD Library. ♦

NSWC IHEODTD hosted Propel, a five-day course for new supervisors February 11-15. Launched in 2017, Propel provides an introductory level awareness of the Warfare Center expectations for supervisors, and the interactive class content gives new supervisors assistance in interpreting the workplace environment to identify and use organizational resources in an appropriate and timely manner. ♦

In 2019, the command designed, developed and qualified the Mark 85 Mod 0, Rocket-Assisted Take-Off system to launch the BQM-177A subsonic aerial target, an anti-ship cruise missile threat simulant. "The benefit to the fleet is that the aerial target launched by the Mark 85 provides a greater range of threat simulant capabilities. This allows for training exercises in realistic combat conditions to maintain fleet readiness,"

Command staff attended the 2019 Modern Day Marine Expo at Marine Corps Base Quantico, Virginia, in September to highlight the command's capability. This annual expo offers U.S. Marine Corps warfighters a chance to view the latest in warfare technology from across the country.

said Pat Cieslak, Systems Engineering Department aerospace engineer. ♦

The command conducted several Green Belt Trainings in May and October. Trained Green Belts served as Continuous Process Improvement (CPI) consultants and advocates for change within their organizations and work with the Code 106 CPI Black Belts to improve command processes to efficiently and effectively use limited resources. ♦

Chemical Development and Manufacturing Branch Manager Derek Reynolds, Naval Nuclear Propulsion Program Director Adm. James Caldwell, and Technical Project Manager Pete Cusack discuss the plans for the new Agile Chemical Facility during Caldwell's visit to the command in March.

Eight United Kingdom Defence Science and Technology Laboratory representatives and one Defence Research and Development Canada representative visited the command, April 8-9. This visit continued our exchange of explosive ordnance disposal information under the American, British, Canadian, Australian and New Zealand EOD Information Exchange Agreement Annex.

Brig. Gen. Alfred F. Abramson III, Joint Program Executive Officer Armaments & Ammunition and the Commanding General of the Picatinny Arsenal, visited the Systems Integration Department in February. ♦

In May, the command hosted members of the Mexican Navy. The Mexican Navy delegation visited the command to learn about the technology and capabilities here, while also discussing potential future collaboration. ♦

In August, Michael White, Assistant Director for Hypersonics in the Office of the Under Secretary of Defense for Research and Engineering, came to Indian Head to learn more about Solid Fuel Ramjet and our experience with warhead technology including reactive materials. ♦

In October, Mark Mitchell, Acting Principal Deputy Assistant Secretary of Defense for Special Operations/Low-Intensity Conflict, visited NSWC IHEODTD Stump Neck Annex for a tour during the EOD 101. ♦

In February, Naval Air Systems Command Deputy Commander Garry Newton toured NSWC IHEODTD facilities along with NSWC IHEODTD Technical Director Ashley Johnson and Naval Ordnance Safety and Security Activity Executive Director Dale Sisson.

Commander, Naval Surface Warfare Center/Commander, Naval Undersea Warfare Center Rear Adm. Eric Ver Hage toured NSWC IHEODTD in May, learning about the research, development, test and evaluation, and in-service support of energetics and energetics systems.

In May, the command hosted members of the Mexican Navy. The Mexican Navy delegation visited the command to learn about the technology and capabilities here, while also discussing potential future collaboration.

On July 26, Maryland Sen. Chris Van Hollen visited with Commanding Officer Capt. Scott Kraft and other command personnel during a meeting at NSWC IHEODTD. Following the meeting, Van Hollen and other local officials visited the construction site of the College of Southern Maryland's Velocity Center in Indian Head, Maryland.

In September, NSWC Philadelphia's Acting Technical Director Thomas Perotti listens as an employee explains their job with the command. Perotti temporarily served as technical director during a "TD swap" where he and NSWC IHEODTD Technical Director Ashley Johnson temporarily switched duty stations, with Johnson serving the week at NSWC Philadelphia.


DEPARTMENT OF THE NAVY
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HIT HARDER.
SAVE LIVES.