NAVAL SURFACE WARFARE CENTER INDIAN HEAD DIVISION

NSWC INDIAN HEAD DIVISION

FLY FARTHER ★ HIT HARDER ★ SAVE LIVES

2021 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.*

Commanding Officer
Capt. Eric Correll

Technical Director
Ashley Johnson, SES

Director, Corporate Communications Division
Becky D'Ambrosio

Public Affairs Officer
Christine Stevenson

Editor-in-Chief
Barbara Wagner

Associate Editors
Kristen Knott
DeAndre Countiss

Layout and Design
Matthew Getz

Photography
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Glossary:

CAD/PAD	Cartridge Actuated Device/Propellant Actuated Device
DoD	Department of Defense
EOD	Explosive Ordnance Disposal
NAVSEA	Naval Sea Systems Command
NSWC IHD	Naval Surface Warfare Center Indian Head Division
OSHA	Occupational Safety and Health Administration

All photos are attributed to U.S. Navy.

COMMANDER'S ASSESSMENT

Commanding Officer Capt. Eric Correll

In the past year, our NSWC Indian Head Division team continued to lean in hard in our successful support of the warfighter despite continued challenges, both old and new. We have proven our readiness through multiple inspections and self-assessments, executed an incredible amount of technical work in support of our fleet and joint forces, and postured to seize additional opportunities on the next hill and the distant horizon.

Across the command, there has been a focused effort in owning and showing our expertise in our safety of energetics systems and explosives, and we had three successful Explosive Safety Inspections (ESI) to show for that. Inspections took place at the command's headquarters in Indian Head and Stump Neck, Maryland, and separately at our two detachments in Picatinny, New Jersey; and McAlester, Oklahoma.

It was evident to inspectors throughout the year we displayed a significant sense of transparency and ownership in all our programs, beyond explosive safety. The command hosted 40 inspectors supporting the NAVSEA Command Inspection Program in October, including both virtual and in-person visits with employees at many of our workforce locations. In nearly all of the 22 functional areas inspected, we either sustained solid performance or made significant improvements since the last inspection in 2017. The results confirmed the command's dedication, expertise and efforts, and a well-earned pat on the back for everyone.

Beyond our three ESIs and the NAVSEA Inspector General Inspection, we had continued success in our Government Purchase Card Program Assessment, our Radiation Safety Inspection, and a five-day on-site command cyber readiness inspection from U.S. Fleet Cyber Command. Like our cyber inspection, which required success and ownership by the entire command, we also performed very well during our OSHA Voluntary Protection Program Evaluation. OSHA certified we sustained our "STAR" status under this program, the highest safety designation for exemplary worksites with comprehensive safety and health management systems.

Every department met challenges head-on in 2021. Though we paused most of our energetics manufacturing operations in 2020, we returned to all cylinders firing again, resuming all of our processes and accelerating production after the Energetics Manufacturing Department reorganization in October and November. Production in many areas surged, while at the same time our CAD/PAD Consolidated Stock Point returned to full throttle with on-schedule deliveries, and our Moser Facility started one final production run while we prepare for our initial phase of Agile Chemical Facility operations.

Along with the Energetics Manufacturing Department, other departments either sustained or resumed full operations despite the challenges of another year with a pandemic. Our Systems Engineering Department continued to support a large number of customers, and testing and evaluation continued at a steady pace for both operational fielded and developmental newer systems and materials. Additional members of the Chemical, Biological, Radiological Defense (CBRD) Division bounded across the Potomac River from NSWC Dahlgren Division (NSWCDD), and a new underwater explosive named PBXIH-143 required strong and continuous collaboration not just within the Research, Development, Test and Evaluation (RDT&E) Department's Chemical & Materials Analysis Branch, but also with resident stakeholders in the Energetics Manufacturing and System Engineering Departments to produce charges for extensive explosive testing, certification and qualification.

While the command headquarters is in Indian Head, our detachments and several outlying locations were equally vital to our mission's success. System Engineering Department employees in McAlester not only successfully completed the ESI in May, but also continued to press ahead in their manufacturing, refurbishment and demilitarization operations, including reaching a milestone in manufacturing their 400th expeditionary systems fuel valve assembly.

From Picatinny to Louisville, Kentucky, to Quad Cities, Illinois, and several fleet areas, our Systems Integration Department continued their fleet support throughout 2021 with hands-on technical and logistical support; installation and in-service support of close-in weapon systems and naval guns; oversight of commodity management; and packaging, handling, storage and transportation support to the fleet, ranging from mobile ammunition evaluation recondition unit actions at magazines on foreign shores, to pier-side maintenance at continental United States (CONUS) fleet concentration areas.

And our personnel in Norfolk, Virginia; Southern California; Utah; other locations CONUS; and even Japan all remained focused on our prime objective: supporting the warfighters of our fleet and joint forces. The command's EOD Department reorganized and formed the Battle Lab Division; received huge kudos from the Commander, Operational Test and Evaluation Force for its demonstration and assessment efforts; and hosted several EOD events including the Joint Services EOD Threat Expo and the Annual Eastern National Robot Rodeo, all while continuing the daily technical support to our joint EOD forces.

The command's Comptroller and Contracts Departments continued to keep the command funded and executing despite a fiscally challenging year and amid a continuing pandemic. Comptroller worked to make sure our financial obligations and execution were on target, ensuring the command continued to function during another continuing resolution and delayed defense authorization. Contracts continued to meet our daily customer needs, even while many higher headquarters contracts required the department's support to conduct expansive pre-award coordination to recompete major actions. In addition, the team started our new other transaction agreements warrant and a new time and material contract for immediate facility improvements.

The Corporate Operations Department ensured the other command departments were supported to continue their mission through the pandemic environment and new protocols. From expanding and augmenting the RDT&E network to provide more stable and secure access during the maximum telework condition; to preparing for property and procurement audits; to focus on facility challenges; to juggling all the Human Resource actions across the year; to keeping internal and external communications channels open: Corporate Operations was there every step of the way.

As a wrap up, I am impressed with how our workforce supported one another and shouldered — and continues to shoulder — the stresses of the ongoing pandemic, the ups and downs of a fiscally challenging year, a full press restart within our arsenal, and the continued force needs for all our activities across the board. The command has indeed continued to rise to many challenges.

COMMANDER'S ASSESSMENT

In the midst of the Bravo Zulus and kudos I share, I must also drumbeat for all of us to stay the course. Continue to self-assess, keep each other honest and learn from each other. Our lives depend on each other, and our warfighters depend on us to ensure they are fully prepared for our strategic competitors. They can't do it without the command, and the command cannot do it without each of our dedicated employees on the team and around the globe.

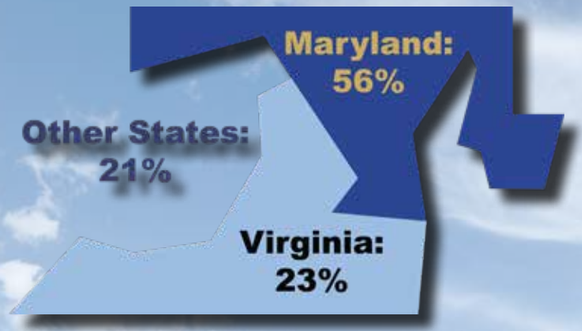
2021 saw several of our key competitors demonstrating what their armed forces have accomplished and pushed to the edge of international limits. At the time of this writing, a buildup of Russian forces on the Ukrainian border has international interest and concern. China has tested a nuclear-capable hypersonic vehicle amid a rapid expansion of its strategic and nuclear weapons systems.

These technologies enable states to deliver weapons against our fleet and our country, whether tactically or strategically, and our strategic competitors do it in a way against which it is hard to defend. China's newly fielded Renhai-class cruiser is the largest surface combatant vessel currently being built today, and its battle fleet is larger than ours. Iran is also providing more friction: A report in January from the United Nations cited indications Iran was providing arms and weapons components to the Houthi movement via smuggling routes at sea. To counter this, our team members and others directly supported critical maritime interdiction operations, assisting in discovering smuggled weapons and in exposing Iran's hand in providing the Houthis with sophisticated unmanned aerial vehicles to attack merchant ships in the region.

Make no mistake, our competitors have not paused their efforts over the past few years despite global challenges. The command must remain ready, remembering our strategic competitors as we go about our tasks. We cannot afford to lose sight of their accomplishments while celebrating our own 2021 wins.

ECONOMIC IMPACT

Where We Live



NSWC IHD Total Maryland Payroll

$322 million

FY21 Maryland Contract Dollars

$36.5 million

County-by-County Employee Breakdown (Maryland)

Charles	38%
Saint Mary's	13%
Prince George's	10%
Calvert	3%
Anne Arundel	3%
Other	3%

STRATEGIC LOCATIONS

Total number of employees:
2,381 (civ), 55 (mil)

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

Indian Head, Maryland (two sites): 1,884 civilians, 53 military
- *NAVSEA Center of Excellence (CoE) for Energetics*
- *DoD EOD program lead*
- *Expeditionary Exploitation Unit 1 (EXU-1)*

Ogden, Utah: 20 civilians
- *Co-located at Hill Air Force Base*
- *CAD/PAD Air Force Integrated Product Team*

Picatinny, New Jersey: 268 civilians, 2 military
- *Located at Picatinny Arsenal*
- *Joint CoE for Guns and Ammo*
- *Systems Integration (G) Department*

Camp Pendleton, California: 21 civilians
- *Demonstration and Assessment Team*

Norfolk, Virginia: 30 civilians
- *Located at Naval Weapons Station Yorktown*
- *Demonstration and Assessment Team*

Rock Island, Illinois: 7 civilians
- *Quad Cities Cartridge Case Facility*

Louisville, Kentucky: 17 civilians
- *Naval Guns*

McAlester, Oklahoma: 49 civilians
- *Located at McAlester Army Ammunition Plant*
- *Navy Weapons Division*

NAVSEA
WARFARE CENTERS
Indian Head

** Contractor numbers not included*

In June, a cross-departmental effort between the Energetics Manufacturing, Systems Engineering and RDT&E Departments successfully manufactured the first qualification 150-gallon mix of an improved underwater explosive, PBXIH-143.

NSWC IHD co-hosted a virtual event with NavalX's Capital Tech Bridge and Maryland Technology Development Corporation in January to discuss the importance of innovation and how to do business with the Navy and the command with industry. ♦

In February, the command unveiled the new Battle Lab Division to support warfighter capabilities. The creation of the Battle Lab leverages EOD Department's expertise to conduct equipment assessments directly in support of warfighter capability gaps. The new division brings together two established groups in testing and evaluation and operational assessments in the Demonstration and Assessment Team and Explosive Detection Equipment Branch and introduced the new EOD Technology Assessment Branch. ♦

EOD Department conducted its third annual joint EOD Threat Expo, April 13-15 at the Stump Neck Annex, Maryland. The EOD Threat Expo is the second in a series of events supporting the Joint EOD (JEOD) program's planning cycle. The first event was a threat assessment in February, where the JEOD program virtually connected more than 145 participants across 51 organizations, including the intelligence community, operational EOD forces and other government agencies. The event's purpose was to examine real-world threats that EOD operators encounter. This year the expo focused on assessing capabilities against the EOD prioritized threat list finalized during the first series of events. The results of this event produced an EOD technology and training capabilities gap list, updated fielded equipment capabilities and recommendations for metrics and guidelines. ♦

The NSWC IHD RDT&E Department's CBRD Division and the Chemical Biological Incident Response Force (CBIRF) hosted the Technology Experimentation and Characterization Field Trials (TECFT) at the CBIRF Downey Responder Training Facility, July 26-30. The TECFT is a test series managed by the Deputy Undersecretary of the Army for test and evaluation in support of the Chemical and Biological Defense Program. CBIRF, a 500-person active duty unit, is stationed alongside NSWC IHD on Naval Support Facility Indian Head. Pictured: CBIRF Marines monitor the progress of an unmanned ground vehicle (UGV) "Cerberus" down range as the UGV searches for chemical and radiation hazards during the TECFT at the CBIRF Downey Responder Training Facility, July 26-30.

The command and the Town of Indian Head, Maryland, hosted the Eastern National Robot Rodeo, Aug. 2-9. This annual event was organized by the United States Bomb Technicians Association with support from NSWC IHD; the Air Force Civil Engineer Center; the Cybersecurity and Infrastructure Security Agency Office for Bombing Prevention; and the United Kingdom's Defence Science and Technology Laboratory. The rodeo pairs current and emerging unmanned systems technology with DoD, state and local bomb disposal operators within operational scenarios. This year's event saw more than 20 industry partners showcasing the latest in EOD hardware, along with five military EOD units and three law enforcement bomb disposal teams who would put the technology through its paces in eight different operational scenarios. The command has been involved with this event in the past, but this is the first year NSWC IHD was a co-stakeholder.

The NSWC IHD CAD/PAD enterprise assisted a U.S. Marine Corps MV-22B attached to the Presidential Helicopter Squadron (HMX-1) that sustained an impact on May 17. Through coordination with NSWC IHD leadership, the MV-22B landed at the installation's helipad on the morning of May 18, where a pallet of replacement assets was waiting to be loaded onboard. Later that day during the maintenance event, an additional requirement was generated resulting in a repeat visit by a second HMX-1 MV-22B the following morning.

NSWC IHD Technical Director Ashley Johnson discussed energetics challenges to attendees at the Naval Energetic Systems and Technologies (NEST) Other Transactions Agreement (OTA) Collaboration Event at the Gaylord Resort and Convention Center in National Harbor, Maryland, Aug. 24. The event, hosted by the National Armaments Council (NAC), ATI and NSWC IHD, welcomed more than 300 attendees, and served as an introduction to the NEST program. The program also showcased NSWC IHD's unique facilities and capabilities to participants. At the event, government requirement representatives were provided the opportunity to openly discuss more than 50 government needs, representing nearly $100 million in opportunities available to the consortium members in the NEST's initial release of government requirements.

NSWC IHD Commanding Officer Capt. Eric Correll (top left) and Technical Director Ashley Johnson (bottom left) attend an Aug. 26 meet and greet with MBDA Inc. President and CEO John Pranzatelli (bottom right) and MBDA Inc. Vice President of Business Development Charles Ungermann (top right) to commemorate the signing of a Title 10, United States Code, section 2474, Public-Private Partnership (P3) with MBDA Inc. The P3 contractual agreement was signed May 25, and under this 20-year agreement, NSWC IHD and MBDA Inc. will jointly develop, qualify and manufacture propulsion systems and warheads for current and future warfighter needs.

Expeditionary Exploitation Unit 1 (EXU-1) visited NATO in Cartagena, Spain, where they served as guest speakers and working group members for the first NATO Counter-Improvised Explosive Device Center of Excellence Technical Exploitation in Underwater Environments event in July. ♦

At the end of July, the command hosted the Wargame for Innovation and Frontline Improvisation pilot event at the College of Southern Maryland's Velocity Center. The event was funded by the Office of Naval Research through the Small Business Technology Transfer and Small Business Innovative Research programs to serve as a pilot program for invention and ideation within the competition phase of engagement. The pilot event focused on exploring opportunities within the Expeditionary Advanced Base Operations and Stand-In Forces concepts. This event brought together three NAVSEA warfare centers, Indian Head, Carderock and Crane; along with active-duty personnel from the Marine Corps, Navy and Coast Guard. The event led to several new collaborations across a broad range of topics, and NSWC IHD is currently planning a follow-on event to expound upon the concept of war gaming as a business development concept. ♦

In January, the command launched the culture continuous learning program. As a program under Indian Head University's Leadership College, the culture continuous learning program provides a variety of self-directed learning platforms, reading material and engaging events that introduce and further educate employees about organizational culture and how to be successful in spite of its dynamic nature and challenges. The program enables every employee to play a part in building a positive workplace culture.

During the past 12 months, the Velocity Lab executed six emerging RDT&E projects with two transition knowledge products directly to fleet users. ♦

NSWC IHD participated in the development of the 2021 National Energetic Plan (NEP). The NEP was a response to a congressional ask for information and analysis of the current state of the nation's energetics industry using assistance from SES leadership from various government organizations. Command personnel were actively involved in many of the working groups and Technical Director Ashley Johnson led a working group focused on energetics manufacturing and supply. ♦

In May, the command's Environmental Branch underwent several inspections including ESI Program 7 and the Maryland Department of the Environment (MDE) Resource Conservation and Recovering Act inspection. ♦

From May to July, Naval Research Enterprise Internship Program interns completed a 10-weekslong internship with the command at both Indian Head and Picatinny sites. Even in the midst of complicated and evolving limitations, all three interns completed independent research projects while receiving one-on-one mentorship from command experts in their fields. Their efforts included packaging, handling, shipping and transportation work; developing novel experiments in the area of combustion experimentation; and studying materials currently being used by formulators and scale-up experts on-site. ♦

In June, the MDE Air Compliance inspection was conducted and in July, the MDE National Pollutant Discharge Elimination System was conducted. ♦

Chief Innovation Officer Dan Pines nominated numerous munition concepts for the Office of the Under Secretary of Defense for Research and Engineering during an Emerging Disruptive Technology Tabletop Exercise to influence Joint Warfighting Concept 2.0 at the Velocity Lab in June. ♦

Over the course of four days in September, the command had OSHA, DoD and private industry safety offices on deck to evaluate safety programs. During the inspection, hundreds of workforce employees were interviewed and the command was assessed under OSHA's Voluntary Protection Program. The command passed the inspection and retained "Star" status. ♦

A NAVSEA command inspection of 38 OSHA programs took place Oct. 25-29. The command's overall safety program received a satisfactory rating (ratings are either satisfactory or unsatisfactory). Significant improvements were noted since the previous inspection in 2017. ♦

Technical Director Ashley Johnson completed his third and fourth cohort of "Strategic Thinking as a Fundamental Element of Leadership." Students were challenged to develop strategic thinking and leadership skills in a variety of reading assignments and activities. Historical perspectives, structured activities and discussions lead to practical development of the basic skill sets needed to lead Indian Head in the current era of renewed strategic competition. ♦

The command's business director championed a cross-functional team to conduct a small business industry day, July 30, at the College of Southern Maryland Velocity Center in Indian Head, Maryland, with an 8(a) Alaskan Native Corporation (ANC). The purpose of the event was to inform and inspire the workforce to envision how small business can improve innovation leading to greater capability for the fleet. The business director communicated the advantages of an 8(a) sole source option that enables a streamlined acquisition process and unprotest able awards of up to $100 million. The event provided key information about the ANC's capabilities, which triggered leadership from the CAD/PAD Joint Program Office, Business Director's Office, Energetics Manufacturing and Systems Engineering Department to form a team to reimagine an acquisition strategy to resolve chronic supply chain and procurement policy compliance issues. Subsequently, the team is on track to leverage small business and implement an advanced procurement process which will reduce the preproduction phase and provide quality metal parts for one of the command's largest operations: manufacturing lifesaving CAD/PADs used to safely eject pilots. ♦

The EOD Technology and Training (EOD T&T) Executive Manager's Office updated policies and processes regarding the Navy's role in EOD T&T, moving from the EOD EOD T&TSingle Manager to DoD Executive Agent. The DoD Directive 5160.62 was updated and received final approval in October. ♦

The joint services team met biweekly throughout 2021 and as a result, Secretary of the Navy instruction was developed to further identify the executive agent roles and responsibilities within the Navy and a memorandum of agreement for each of the other service branches was created to ensure agreement to these roles. An updated process for identifying the EOD T&T capability gaps was implemented, which included an EOD specific threat assessment, mission prioritization, capability assessment, an industry event, a program management sync (with all four services), and executive agent collaboration. These accomplishments included operational, intelligence, technical and programmatic personnel's input. The final output was an EOD T&T integrated prioritized capabilities list provided to the Navy Expeditionary Combat Branch (OPNAV N957) for resourcing. ♦

Another new effort from the EOD T&T office was the addition of a dedicated requirements writer in October, detailed to OPNAV N957, who focused on developing capability development documents (CDD). Two formal CDDs were generated with one of them completed and approved by the DoD EOD Program Board. The Military Technical Acceptance Board (MTAB) also began writing statements of need, based on an updated requirements policy agreement that feeds the initiation of the formal CDDs. All of these efforts have focused on improvements to the EOD T&T program. ♦

In November, the command underwent the annual comprehensive facility inspection for storm water and the MDE industrial waste processor inspection took place in December. ♦

NSWC IHD Technical Director Ashley Johnson (left) and Disposal & Decon branch manager Derek Reynolds (right) review Standard Operating Procedures used in processes in a manufacturing facility prior to the ESI to ensure proper compliance, April 26.

The command's Safety Execution Technical Rigor Pillar and the Safety Office developed an Operating and Support Hazard Analysis (O&SHA) Guidance Table Tool in mid-December. The tool provides a methodology for O&SHA development to ensure consistent assessment of common risk scenarios. The team also developed an Enterprise Safety Applications Management System (ESAMS) toolbox of the deficiency process to streamline the handling of deficiencies, to address challenges of the current method, and to provide expectations for the content and quality of metrics within ESAMS. ♦

The Safety Office received and approved eight nominations for the Great Safety Catch Award. The initiative was developed to proactively recognize employees who are conducting operations in the correct and safe way or who have contributed toward advancing or improving the explosives safety, occupational safety and health (OSH), radiation safety, and environmental programs. ♦

In December, the NAVSEA Radiological Affairs Support Office conducted a three-day inspection. The inspector reviewed documents and programs and viewed various radiography operations at locations around the command. The inspector was very impressed with the command's operators, technicians and all supporting staff from the safety office and around the command. ♦

Explosive safety self-assessments (ESSA) resumed in the spring to evaluate the explosive safety programs and prepare for the ESI, resulting in a successfully passed inspection at NSWC IHD and the command's detachments in Picatinny, New Jersey, and McAlester, Oklahoma. ♦

ESSAs conducted at Indian Head and Stump Neck sites in 2021:

June:
Program 4, Ammunition and Explosives (A&E) Standard Operating Procedure Program 5, A&E Facilities and Operations

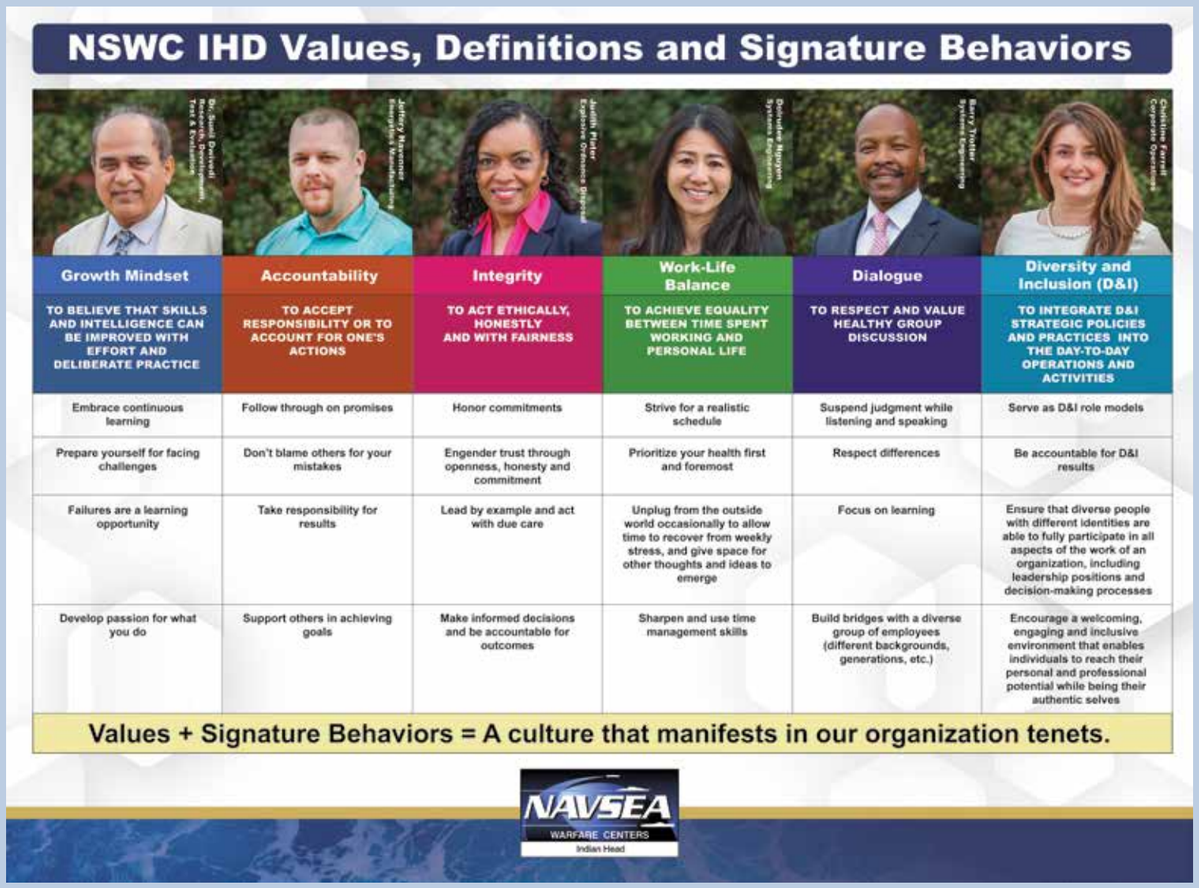
July:
Program 4, A&E Standard Operating Procedure
Program 5, A&E Facilities and Operations

August:
Program 5, A&E Facilities and Operations
Program 8, Arms, Ammunition and Explosives Transportation and Equipment

September:
Program 5, A&E Facilities and Operations

October:
Program 5, A&E Facilities and Operations
Program 7, Material Potentially Presenting an Explosive Hazard and Ranges

November:
Program 5, A&E Facilities and Operations
Program 1, Explosives Safety Administration and Management



In July, NSWC IHD launched the "Stronger Together" campaign to promote the newly developed command organizational values and signature behaviors. Sharing strong tenets and common values provides continuous alignment to the command's vision, mission and strategic goals.

December:
Program 5, A&E Facilities and Operations
Program 3, A&E Qualification, Certification and Training ♦

The Safety Office reviewed approximately 110 standard operating procedures (SOP), two ballistic test plans, two engineering procedures, one lab test procedure and one test plan. Other services included providing assistance to develop several SOPs for the Infrastructure Group, attending preconstruction meetings, processing more than 250 Hazardous Material Authorized Use List requests, conducting facility OSH and explosive safety inspections, and issuing over 800 safety work permits to identified hazards and mitigations for hot work, chemical, environmental, confined space, fall protection, asbestos, lead, construction, etc. Many of these services were provided in-person or virtually by Safety Office team members. ♦

Members of the EOD Department Information Management Division Underwater Publications Development Team collaborated with active-duty EOD operators to revise the current Limpet Defeat and Tactics Publication. This vital publication provides clear guidance to deployed Navy EOD forces tasked with supporting threat defeat and force protection of critical national assets and infrastructure around the world.

Members of EOD Department's Demonstration and Assessment Team (DAT), a component of the Battle Lab, supported the Marine Corps Warfighting Lab's Rapid Capabilities Office in assessing the Expeditionary Modular Autonomous Vehicle (EMAV). The team assessed the utility of the system ahead of its operational deployment with the Marine Corps 2nd Combat Engineering Battalion. Marines employed the EMAV for normal operations at Camp Lejeune, North Carolina, and Twentynine Palms, California. During the assessment, the team collected warfighter feedback and submitted their findings to Marine Corps Warfighting Lab's Rapid Capabilities Office as a capabilities assessment report. ♦

DAT members supported the Marine Corps Warfighting Laboratory for the Naval Integration in Contested Environments Advanced Naval Technology Exercise 2021 from April 5-15. This exercise demonstrated and assessed 65 technologies at Marine Corps Base Camp Lejeune, North Carolina. ♦

The Technical Support Center (TSC) processed 3,770 requests for information (RFI) over the last year for all uniformed services as well as civilian and law enforcement agencies. ♦

The EOD-Electronics Exploitation Lab (EEL) worked in close cooperation with Joint Service EOD (JSEOD) technicians, weapon development programs, and munitions disassembly to ensure the EOD community has procedures and technical information that are accurate, safe and effective. EOD-EEL completed nine ordnance firing energy discharge projects and seven ordnance exploitation projects in support of this effort. ♦

Members of the TSC participated in an event held by the United States Bomb Technicians Association in Chicago, Illinois, Sept. 8-10. The event was comprised of special agent bomb technicians and Joint Service EOD members working together to process nine different threat scenarios involving challenging threat situations using state of the art equipment and technology. ♦

In March, the Battle Lab Division EOD Technology Assessment Branch conducted an assessment of large caliber air rifles to evaluate their applicability as an operational solution to dearming and disruption of explosive hazards using a nonpyrotechnic tool.

In April, the Explosive Detection Equipment (EDE) Branch conducted an evaluation of the LightShift system, a prototype manufactured by Surface Optics Corporation (SOC). For this evaluation, a Cooperative Research and Development Agreement was established between the EDE Branch and SOC to enable open communication and data exchange. EDE chemist Nicole Bowes conducted outdoor testing to determine how well the system would operate under outdoor lighting conditions.

In May, DAT members conducted their final operational demonstration of the Unmanned Logistics System – Air Joint Capability Technology Demonstration program at Fort A.P. Hill, Virginia. U.S. Marines and Soldiers planned and executed cargo deliveries while flying the TRV-150 unmanned aerial vehicle with autonomy packages. Flown to remote landing zones, delivered materials include ammunition crates, meals ready to eat (MREs) and large containers of water. A key mission objective of the program is to deliver cargo weighing up to a ton within five hours.

Weapon of Mass Destruction Countermeasures Team Lead Bryan Milani wrote an article on Silent Spring, published in the May/June issue of the International Association of Bomb Technicians and Investigators magazine, The Detonator. Silent Spring is a liquid safeing fluid intended to desensitize primary explosive hazards, most commonly homemade explosives, to allow the EOD warfighter the ability to safely move explosive materials, increase opportunities for exploitation, and minimize damage to existing infrastructure. ♦

The Explosive Tools Branch developed and tested various explosively-driven tools that will be used in EOD procedures for disposal of IMX-101-filled M795 155 mm projectiles. The test results collected by the Explosive Tools Branch demonstrated two potential disposal tools and one potential disruption tool. ♦

Representatives from the Electronic Protection System Branch were tasked by PMS 408 to evaluate the commercial off-the-shelf LITEX constant potential X-ray generator against the latest variant of the Golden Engineering 150keV generator. Successful testing was performed in September using X-ray imagers selected by the Joint Service MTAB. ♦

The Electronic Protection System Branch performed Minelab MDS-10 hand-held detector regression testing to assure that hardware, firmware and software updates implemented to address counter radio-controlled IED electronic warfare (CREW) electromagnetic interference did not degrade system effectiveness or performance. The regression test was conducted in September at Fort A.P. Hill, Virginia. In March, NSWC IHD performed a CREW electromagnetic interference evaluation of the MDS-10 hand-held ground penetrating radar metal detector at Naval Air Weapons Station China Lake, California. ♦

Representatives from the Electronic Protection System Branch traveled to Bahrain to support legacy channel CREW systems. Support included training military personnel that had rotated into theater and troubleshooting existing systems that may not have been functioning optimally. ♦

Electronic Protection System Branch employees supported the CREW program through several efforts including the AN/PLT-4 replacement effort, the single laptop solution, and universal test set training and threat configuration file development. The branch also supported Hemlock engineering analysis, software development and database modification for military and nonmilitary users. A prototype of the database and software program was developed this year. ♦

The Material Management Branch received, inspected, tested, packaged and shipped over 50,000 pieces of equipment. The Quality Assurance Team inspected and evaluated approximately 17,250 items in the Naval Supply Systems Command underwater and JSEOD inventories. The material handlers prepared, packaged and shipped approximately 2,000 individual shipments in support of 10 program of record projects, ensuring the EOD community had the items needed to be mission ready. The Material Management Branch Foreign Military Sales (FMS) shipping team supported 35 different FMS cases for 32 countries. The team received, inspected, packaged and coordinated the shipment of almost 100,000 pounds of material valued over $21 million. ♦

The EOD Technology Assessment Branch conducted the rapid large area clearance analysis of alternatives (RLAC) effort to address a statement of need from the EOD MTAB for set of tools that enable EOD technicians and small units to conduct rapid large area clearance of explosive hazards in order to assure freedom of maneuver to the joint force, including in remote, austere and contested environments. The RLAC team conducted market surveys and attended technology demonstrations to identify available solutions to the large area clearance problem. Several potential technology solutions were selected to participate in a capabilities and limitations assessment. ♦

In May, the DAT members supported the Marine Corps Warfighting Laboratory Rapid Capability Office in investigating the future of human performance augmentation technologies and how they support the individual Marine and infantry unit. This assessment investigated a suite of technologies, including biosensor wearable technologies, jump plate hardware technologies and athletic analytical software technologies.

SYSTEMS ENGINEERING DEPARTMENT

The Systems Engineering Department's new System Safety Division held its first division team-building picnic at Gilbert Run Park in La Plata, Maryland, in early July. The realignment to the new division kicked off the list of milestones, as the realignment occurred just weeks before the COVID-19 maximum telework posture. Additionally, the division celebrated the professional and personal achievements of employees and welcomed 14 new employees that came onboard during the pandemic.

NSWC IHD's McAlester Detachment procured, packed, inspected and shipped 21 expeditionary facilities for Naval Facilities Command (NAVFAC) to the fleet, including the combat operation center that is used as the frontline command and communication base camp. This facility has more than $8 million in equipment and material to sustain Navy shore-based operations. McAlester also completed six NAVFAC housing and lodging facilities, each containing four air beam shelters capable of accommodating 48 personnel.

NSWC IHD conducted Submarine Launched Mobile Mine training at Naval Weapons Station Seal Beach, California, in a joint effort with Commanding Officer Mobile Mine Assembly Group, Navy Munitions Command Pacific East Asia Division Unit Guam, NSWC IHD Ordnance Assessment Branch and NSWC Panama City Division In-Service Engineering Activity (ISEA). The command's own Robert Shumaker served as the training team lead (pictured teaching a mineman how to wire a mine cable). Lead technician Ken Harvey documented testing results, logged components and ensured all equipment was functional.

McAlester Detachment completed the manufacturing and packing of the command's 400th fuel valve assembly in September. McAlester is the sole source manufacturer of the fuel valve assemblies that are used in the fleet and multiple NAVFAC Expeditionary Facilities. ♦

CAD/PAD Navy Mishap Investigation Support Team (MIST) members responded to four Class A mishaps for the Navy and Marine Corps involving one F/A-18 aircraft and three T-45 aircrafts. There were a total of seven successful ejections, without any CAD/PAD anomalies or deficiencies. ♦

In November, command MIST lead Nick Schombs presented at the 59th annual Survival and Flight Equipment Association Symposium in Mobile, Alabama. Schombs briefed CAD/PAD engineering investigations that were opened/closed over the past year including root causes and trending analysis. Schombs briefed Conventional Ordnance Deficiency Reports (CODR) to show areas of concern and FY21 mishaps supported by the CAD/PAD MIST members. ♦

Systems Engineering Department employee Lisa Fay-Lucas completed a 15-month deployment to Afghanistan in July as part of the DoD Expeditionary Civilian program. Her ability to resolve complicated problems outside of her field was recognized with three awards: the Joint Civilian Service Commendation Award, the Global War on Terrorism Award and the NATO Medal for Service for Resolute Support Mission Award.

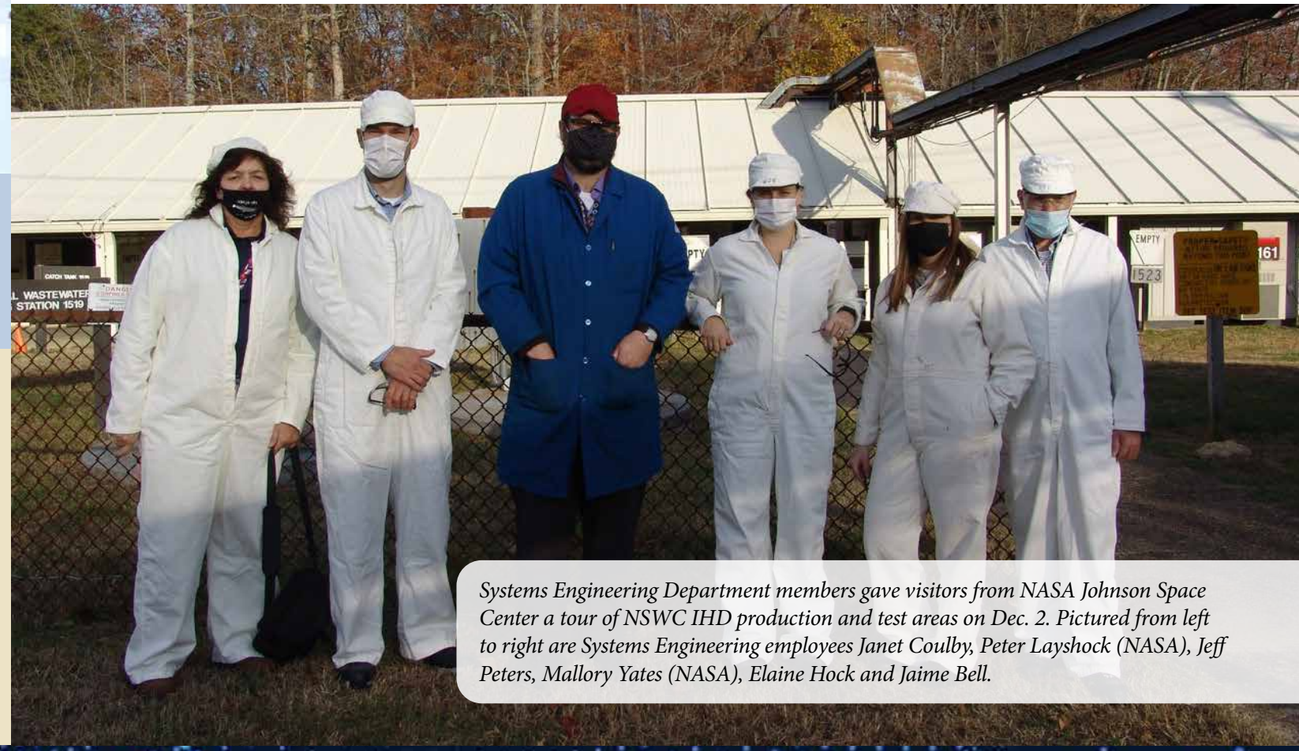
Employees at McAlester Detachment participated in the annual Feds Feed Families food drive in July and accumulated more than 642 pounds of consumable goods for the campaign. ♦

SYSTEMS ENGINEERING DEPARTMENT

In September, under the FY21 capitalization improvement program initiative, a new state-of-the-art waterjet capability was added to McAlester Detachment's extensive list of manufactured equipment. This equipment uses ultra-high-pressured water with added abrasion to cut a wide-range of materials into elaborate shapes and designs quickly and easily. This computer numerical control equipment is internal software that produces precision parts with minimal space between cutouts, fewer errors, less material waste and faster completion.

In November, Layne Peterson and Ed Hernandez presented the state of Systems Engineering Department CAD/PAD at the 2021 CAD/PAD Joint Program Office Industry Day Summit in Mobile, Alabama. This event was attended by military and contractors from all over the world to work together on new CAD/PAD acquisition and sustainment strategies.

McAlester Detachment's Weapons Maintenance Branch received and stowed numerous Tomahawk cruise missiles for Program Executive Office, Unmanned Aviation and Strike Weapons and Naval Air System Command's (NAVAIR) Tomahawk Weapons System Program. McAlester Detachment repackaged additional missiles into CNU-735E storage containers and transferred the missiles to the Army's demilitarization (DEMIL) program for deconstruction. McAlester retrieved and inspected numerous CNU-735E containers for reutilization in the DEMIL process. The detachment also refurbished more than 300 of the CNU-308E shipping containers in support of coastal fleet operations. Furthermore, McAlester refurbished 63 Mark 45 hand lift trucks, 108 Mark 535 lightweight torpedo containers and completed two Mark 23 vertical launching system tilt handling fixtures.



Systems Engineering Department members gave visitors from NASA Johnson Space Center a tour of NSWC IHD production and test areas on Dec. 2. Pictured from left to right are Systems Engineering employees Janet Coulby, Peter Layshock (NASA), Jeff Peters, Mallory Yates (NASA), Elaine Hock and Jaime Bell.

MHE ISEAs traveled to Marine Corps Air Station New River in Jacksonville, North Carolina, to support a training evolution for the CMV-22B Osprey tilt rotor aircraft. Ordnance Logistics/Explosive Safety Branch MHE ISEAs worked with support equipment engineers from Naval Air Warfare Center Aircraft Division, (NAWCAD) Lakehurst, NAWCAD Patuxent River, and Sailors from Fleet Logistics Squadron (VRM) 30 to develop a lift plan for the hub and blade assembly. The lift plan was successfully demonstrated through six removal and installation evolutions of the hub and blade assembly on a trainer aircraft.

Systems Integration Department Guns Division Mark 110 In-Service Engineering Agent (ISEA) lead technician Travis Jacobson along with U.S. Coast Guard personnel completed the Standardized Pierside Maintenance and Repair (SPMR) on the NSWCDD live firing Mark 110 gun mount. ♦

Technicians Dan Luevano and Jamie Hough completed removal of the Phalanx Weapon System aboard USS Bonhomme Richard (LHD 6) in support of ongoing recovery efforts. The system was partially salvaged from the highly-publicized fire that took place on the vessel. ♦

The March/April issue of Defense Acquisition magazine featured an article by senior packaging, handling, shipping and transportation (PHST) engineer Bob Van Schaack titled, "Packaging, Handling, Storage and Transportation in Naval Warfare." ♦

Bill Jurkowski, Roddy Wiggins and Cameron Swett, members of the Ammunition Engineering Support Branch Mobile Ammunition Evaluation and Reconditioning Unit (MAERU) team, conducted ammunition surveillance sentencing in Rota, Spain. The team conducted training in the proper use of military marking for shipment and storage and provided guidance when processing materials. Pictured left to right: MAERU team members Roddy Wiggins, Bill Jurkowski and Cameron Swett.

Systems Integration Department representatives Ken Zimms, Bob Van Schaack, Chris Mezzacappa and Michael Kelly provided virtual PHST training to students of the Eisenhower School for National Security and Resource Strategy for the second consecutive year. ♦

Mark 45 ISEA field service representative Dennis Gardler and the BAE Systems alteration installment team completed the installation of ordnance alteration kits 80194 and 80187 that will provide reliability and interoperability to the Mark 45 gun mount. In addition, USS Bulkeley (DDG 84) received an SPMR, which brought the gun mount to a fully operational condition. ♦

NSWC IHD Picatinny Detachment NAVAIR Medium Caliber Gun ISEA team members David Barlieb and Tommy Singer performed testing on GAU-12 projectile sensors at Range 647. They were tasked with testing excess turned in and repaired sensors for functionality. The units that pass will be returned to the fleet for use as spares in the AV-8B Harrier aircraft. Ten of the 22 projectile sensors passed testing, thus providing spares for fielded GAU-12 gun systems, increasing its maintainability and ability to continue supporting the mission.

Guns Division Major Caliber Brach Mark 45 ISEA employees Dennis Gardler and Greg Bowers, with the alteration installment team, successfully completed SOVT, smoke alarms and SPMR on the Mark 45 gun mounts on USS Bulkeley (DDG 84) and USS Farragut (DDG 37). Additionally, the Mark 45 ISEA team resolved three causality reports by providing technical and logistics support to the ship's force on USS Mobile Bay (CG 53). The ISEAs provided critical distance support to the ship's crew on USS John S. McCain (DDG 56) which was forward deployed.

A line of grateful military in recognition of Master Chief Jason Gurley's last Mark 45 Gun Mount Technical Enhancement Training Class for the Fleet. Gurley retired in December with 28 years and eight months of military service, spending his last tour as a member of the Systems Integration Department staff supporting all shipboard gun weapon systems.

Systems Integration Department Minor Caliber Guns Branch employees Monty Cox, Alex Stoyko, Matt Mascolo and Brian Meyer performed software updates to circuit card assemblies intended for use during the fielding of engineering change proposals for the Mark 46, 30 mm gun mount. During the preparation process, software was uploaded, a system operational checkout was performed, and pointing and firing cutouts were uploaded. This update will allow for a seamless fielding process to reduce the risk of failed parts or software loading errors. ♦

Minor Caliber Branch Mark 38 ISEA team members John Thiel, Mike Skowronski, James Holle and Kouji Hamanaka successfully installed and tested all four Mark 38 MOD 3 machine gun systems (MGS) onboard USS George H.W. Bush (CVN 77). The team also conducted Mark 38 MOD 3 differences and Mark 52 coax training with six Sailors providing MODs 2 and 3 differences, along with field training on the Coaxially-mounted 7.62mm Mark 52 machine gun. ♦

In June, Guns Division Medium Caliber Branch Mark 110 ISEA employee Alex Warriner provided outstanding technical support in resolving multiple issues on USCGC Midgett during her scheduled CSSQT. Warriner conducted CSSQT Mark 110 events, following a casualty to the Mark 110 outer crank assembly occurred during post-fire maintenance.

Minor Caliber Branch Mark 38 ISEA personnel Sean Stafford and Ryan Burns successfully installed one Mark 38 MOD 3 MGS with Mark 52 coax over the course of several days in May. The team also conducted a training course for the MOD 3 and Mark 52 coax. ♦

Self Defense Systems Division Close-In Weapons System ISEA members Michelle Collins, Eddie McClain, James Vaughn, Jamie Hough and Dicky Watson all combined efforts to successfully complete Close-In Weapons System Rolling Airframe Missile Defense Capability Block 1 installation, training and alignment verifications onboard USS Ronald Reagan (CVN 76) amidst COVID-19 restrictions. Many hours and miles were covered in personnel and parts support to complete this mission. ♦

On Sept. 30, the department celebrated the retirement of Operating Materials and Supply Office Director Karen Ross, after 34 years of government service. On Dec. 15, the department held a retirement ceremony for John Piccini at Picatinny Arsenal, New Jersey. ♦

In June, Fleet Support Branch's Travis Huff conducted a readiness assist visit aboard U.S. Coast Guard Cutter Kimball (WMSL 756).

In April, Commanding Officer Capt. Eric Correll, Materials Science Branch employee Dr. Alexandra Reinert and Detonation & Combustion Technology Branch employee Kenny Henderson were a part of a planned test at Fort A.P. Hill, Virginia. Dr. Reinert is the project lead and principal investigator and Henderson provided range testing support. Correll met with Fort A.P. Hill leadership including Lt. Col. Andrew P. Aswell and Command Sgt. Maj. Renard R. Chaffin.

In February, the RDT&E Department stood up a dedicated research facility to support the Department of Homeland Security-funded gas forming reactions program. The facility allows for testing and characterization of relevant gas threats. The program team included subject matter experts from the Research and Development Division; Chemical, Biological and Radiological Defense (CBRD) Division; and Test and Evaluation Division. Members of this program also represented both international working groups and the National Security Council. ♦

In May, the CBRD Division participated in the Defense Threat Reduction Agency's (DTRA) Chemical Biological Operational Assessment at Naval Amphibious Base, Little Creek, Virginia. CBRD Division's Scapegoat Team demonstrated their remote chemical and biological detection platform on a Group 1 unmanned aerial system (UAS) and the Wearable Detection Team demonstrated its ear-wearable device. ♦

In June, CBRD Division's Scott Caple served on a detail with the Office of the Secretary of Defense acting as the program manager for the Fill Finish Capacity Expansion project, part of the White House's nationwide vaccination project. The program was implemented to expand domestic filling and finishing of COVID-19 vaccines and therapeutics. ♦

In July, the Ballistics Test Branch identified root causes for delays in on-time delivery for Cartridge Actuated Device Lot Acceptance Test items and developed an action plan to fix systemic problems. They held lean rapid improvement process meetings which determined that creating test kits would help with efficiency and throughput. ♦

In August, RDT&E Department held its annual picnic at Autumn Fest Park on base. More than 160 people attended to celebrate the department's successful year. RDT&E Department Head Dr. Heather Hayden kicked off the event with an all-hands call and awards ceremony, where she distributed several dozen internal and external awards, as well as 56 time-in-service awards. These awardees were recognized for their service to the country, ranging from five to more than 40 years of employment. Pictured above, Jamie Flamish and Meghan Griffiths enjoy a friendly competition during the RDT&E Department's Annual Picnic cornhole tournament.

In September, RDT&E Department personnel supported the Purple Haze demonstration at Fort A.P. Hill, Virginia. Purple Haze is a continuation of the Remote Breaching and Clearing program and uses an agent defeat formulation developed at NSWC IHD to clear bio-contaminated spaces via a Group 1 UAS. The Purple Haze program, supported through the Warfighting Lab Fund, completed several live demonstrations this year.

In October, CBRD Division's Fleet Support Branch led a "Scientists to Sea" event with several DTRA personnel onboard USS Gunston Hall (LSD 41).

Members of CBR Protection and Integration Branch enjoy their free time while in Romania working at the Aegis Ashore Missile Defense site. The team trained, inspected, accepted and successfully completed the Board of Inspection and Survey's inspection on the first Aegis Ashore platform in Romania. Pictured from left to right: Romanian local, RDT&E employees Wes Crew, Ray Squirini, Chuck Lansing and Tyler Schell.

During the months of July and August, the Chemical and Materials Analysis Branch participated in a collaborative training effort with Naval Air Systems Command scientists from Naval Air Station Patuxent River, Maryland, to introduce new instrumental techniques and establishing cross-organizational contacts and relationships. ♦

In September, the Research and Development Division's Physics and Engineering Branch completed the revitalization of its single stage gas gun, resulting in successful test shots for the first time in almost 15 years. This facility is now ready to support new collaborations within the shock physics programs. ♦

The Test and Evaluation Division's Materials Properties Branch continued its second year of aging and testing on the Mark 135 Tomahawk booster propellant. A unique twist on this program is that the branch is using slab motor firings to develop a ballistic model in order to see how the burn rate changes over time. This will allow the models to be updated over the years as more real-time data becomes available. ♦

In October, the Non-Destructive Evaluation Branch worked to bring the computed radiography system back online to X-ray all cartridges after being offline for four years. Additionally, most of the CAD/PAD product line has been converted to digital X-ray which significantly reduces cost and increases efficiency. ♦

ENERGETICS MANUFACTURING DEPARTMENT

During the Formidable Shield exercise conducted from May 15 - June 3, a flight-representative, inert Mark 70 rocket motor was manufactured and used at White Sands Missile Range in White Sands, New Mexico. The qualification testing included a new modified AML 43K launcher and a successful at-sea demonstration.

In February, during an operational risk management meeting, the department was alerted that the rocket motor turntable in the circuit testing bay was nearly one inch higher than the rails used to transfer motors onto the turntable, making the movement of 2,000-pound rocket motors hazardous. Following the meeting, the issue was resolved in two days. The turntable is now positioned so that the railcar rolls smoothly onto the turntable. Pictured: the repaired turntable interior and exterior.

In March, Dr. Phillip J. Cole was selected as the new Energetics Manufacturing Department Head. Cole's diverse background includes research and development, global security testing, chemical engineering, materials science and engineering, nuclear technology and combat weapons.

2021 Manufacturing Products Delivered:

- Navy: 38,261
- Air Force: 3,413
- Marine Corps: 868
- Army: 45
- Special Operations Command: 845
- Private Party providing DoD support: 12
- DoD/The Office of the Secretary of Defense: 85

Energetics Manufacturing Department CAD/PADs saved nine U.S. military aviators during aircraft ejections.

- March 24 - USN T-45C: Two Mark 122 MOD, 0 parachute deployment rocket motors (PDRM)
- May 17 - USN T-45C aircraft mid-air collision: Two PDRMs
- May 18 - Boeing F-15QA: Four JAU-8/A25 cartridge actuated initiators
- Sept. 19 - USN T-45C: Two PDRMs.
- Oct. 4 - USN F/A-18F: One PDRM. ♦

In April, an employee suggestion box program was implemented giving employees the opportunity to submit questions and offer feedback and suggestions directly to department leadership. Anonymous suggestion boxes were installed in department breakrooms as well as Union Hall, and an electronic option was made available on the department's intranet webpage. ♦

In May, the department converted 16 active Evolved Sea Sparrow Missile (ESSM) warheads into inert warheads. Eight of the inert loaded ESSM warheads were to support inert all-up rounds for USS Ford (CVN 78) shipboard shock tests. ♦

Also in May, the department converted 12 active high-speed anti-radiation warheads to inert warheads and assembled them into the missile system to support fleet training requirements. ♦

The Energetics Manufacturing Department's reorganization was completed in September to align plants by product areas. This realignment of engineers and operators into the same organization enables improved collaborative solution-finding with a focus on plant readiness and execution of legacy and new core products and processes. ♦

This year the Energetics Manufacturing Department continued corrective actions as a result of the January 2020 Shutdown and Restart Readiness Review Board analysis. The last 38 manufacturing process areas were approved for full restart on July 2. Key performance indicator (KPI) production boards were implemented at various process steps in the Mark 90 grain production line. KPI boards enable the group to gather metrics on each of the processes as the day progresses to serve as a place to communicate issues.

The first of two initiatives intended to improve the quality and efficiency of preproduction tasks and achieve a more reliable steady-state production that meets customer requirements and expectations kicked off in September. The campaign was highly successful, resulting in significantly increased energetics production, the establishment of new processing capability and capacity, and the implementation of new tools for production tracking and status communication throughout NSWC IHD. ♦

CORPORATE OPERATIONS DEPARTMENT

Corporate Business Office employee Aida Torres led the inclusion team under the NAVSEA Inclusion and Engagement Council. Her team developed and implemented a visual campaign focused on improving inclusion, and developed a new and transferring employee sponsor program guide. Pictured: Aida Torres (middle front row) with the NAVSEA Inclusion and Engagement Council, NAVSEA Executive Director Giao Phan, NAVSEA Commander Vice Adm. Bill Galinis, council advisors and NAVSEA Senior Executive Service members.

The Continuous Process Improvement Office held a Green Belt (GB) training in February at the Velocity Center, which was the first GB training since the COVID-19 shutdown nearly a year prior. With COVID-19 safety precautions, the modified class was able to train 15 new Green Belts.

The Human Resources (HR) Division's Workforce Development Branch completed the FY21 training plan with more than 50 courses offered to command employees. The part of this initiative the branch was also able to ensure 100% verification of individual development plans for requested courses. ♦

The Staffing and Classification Branch used the results of NAVSEA's "First Impressions Survey" to modify the branch's onboarding process. Implementing changes based on the survey results led to an increase in employee satisfaction during the process. At the end of December, HR successfully onboarded more than 250 new hires remotely during a maximum telework environment. ♦

In 2021, NSWC IHD invested $24 million across 65 facility sustainment, restoration, and modernization projects to include full facility renovations of over 38,000 square feet of modernized administrative and new lab workspace with an additional $8 million earmarked for future projects. The Infrastructure Division Infrastructure Support Branch completed more than 3,900 facilities infrastructure repair service tickets in-house and coordinated with NAVFAC to complete an additional 2,800 service tickets. The division also completed more than 3,100 inspection testing and maintenance tickets maintaining compliance and operational readiness to support mission execution. ♦

The Records Management Team completed a major record destruction undertaking throughout the year. In January, the team was notified that 10 file cabinets were removed from a storage building prior to the building's demolition. In preparation for destruction, the records in the cabinets were boxed. This resulted in 155 cubic feet of non-record material for disposal and 82 cubic feet of damaged records being transported off-site for destruction.

The Labor and Employee Relations Branch developed and implemented a new process for employees to request remote work. This process was important to meet NAVSEA's requirements enabling the enabling the command to finalize all full-time remote work requests. Additionally, the branch was able to review all billets and identify eligible positions for telework and remote work in a post-pandemic environment. ♦

During FY21, a total of 4,200 service tickets were completed by the Infrastructure Division resulting in the formal closure of 196 of 417 findings in the manufacturing complexes. ♦

The Corporate Communications Division published 26 editions of the biweekly newsletter The Loop, including several special editions honoring the command's graduates, veterans and Honorary Award winners. The division broadcasted 19 livestreams, published 15 press releases and 10 publically released articles. The division worked closely on several command initiatives such as the EEO D&I "Hello" campaign and disseminated critical COVID-19 messaging across all command platforms. ♦

The ACIO/Information Technology (IT) Division provided large-scale remote secure access for NMCI and RDT&E users. New and improved IT services included the transition to the Navy's new Flank Speed platform, as well as the expansion of home and office access options for unclassified RDT&E users. IT procurement support included the processing of 418 IT procurement requests (PR), 398 PR approvals and 1,879 PR line items in Enterprise Resource Planning. ♦

CORPORATE OPERATIONS DEPARTMENT

Significant progress was achieved in the command's goal to leverage an increase in resiliency, reliability and efficiency of facilities and utilities systems through award of an Energy Savings Performance Contract (ESPC). Managed by the Infrastructure Division, the command-funded ESPC program development targeted at over 470 NSWC IHD facilities as well as CNIC utilities systems. In 2021, the ESPC team selected an Energy Servicing Company, which performed a preliminary assessment, to include audits and inspections of 125 facilities, at an estimated investment value of $48 million.

The IT Operations Branch completed the testing, documentation, procurement and rollout of external WiFi cards, enabling RDT&E unclassified users to telework through a home wireless network. The branch also tested and implemented the High Performance Computing Outreach solution in two buildings, providing temporary unclassified internet access using a VPN for NMCI users awaiting the installation of NMCI connectivity. Customer support included the processing of 2,324 NMCI Science and Technology (S&T) and RDT&E network tickets for approximately 350 RDT&E users. ♦

The Information Management Customer Services Branch assisted over 3,000 users in the migration to the new Flank Speed cloud environment. More than 1,500 solid state drives were installed into NMCI unclassified and classified computers to significantly boost computer performance for users. Nearly 1,800 NMCI Move, Add, Change requests were processed in support of approximately 4,000 unclassified and classified NMCI users. ♦

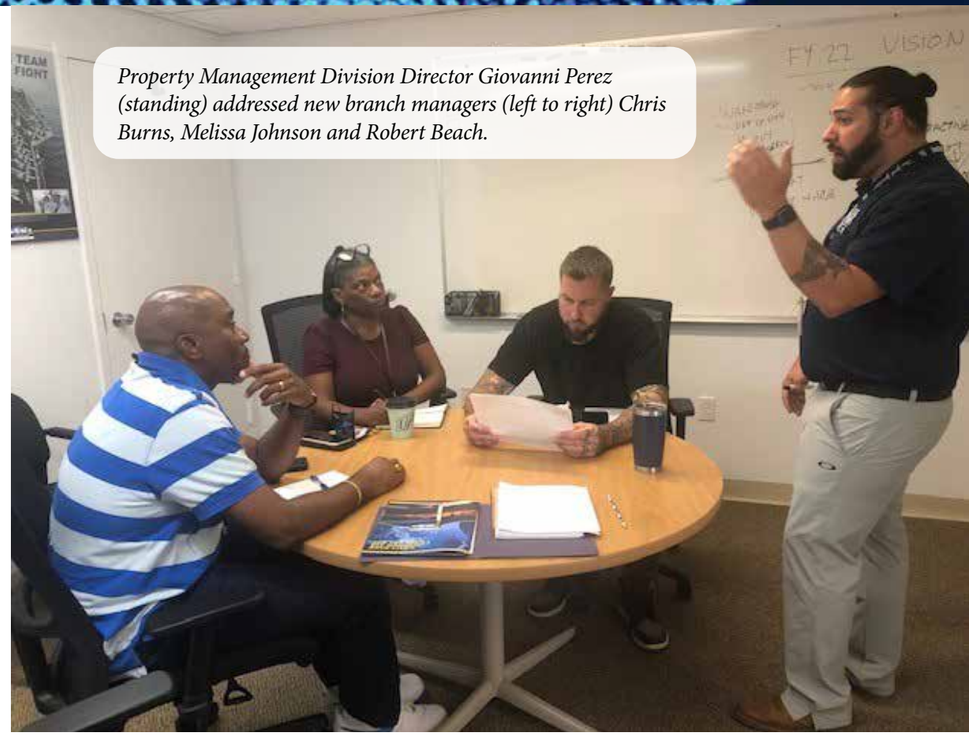
The Cybersecurity Branch completed a successful Red Team audit to test the command networks' internal cybersecurity and achieved 100% system authorization for two zones. The branch processed more than 1,000 system access authorization request forms across all IT platforms. The command achieved 100% on-time completion for mandatory annual cyber awareness training. More than 2,000 damaged or obsolete hard drives and cell phones were destroyed in compliance with Navy security standards. ♦

The Security Division had several significant personnel changes in 2021. Bill Gregor returned to NSWC IHD as the Security Director while Chris Suda became the team lead for the Special Security Branch and Jason Hundley joined the Physical Security Team. ♦

The Personnel Security Team reviewed and processed more than 400 new hire packages and reviewed 600 investigations required for command personnel security clearances. The Industrial Security Team processed 40 classified contracts and nearly 600 Common Access Cards for contractors in support of their daily duties. ♦

The Information Security Team maintained 100% accountability for all classified material and containers in a maximum telework environment. The team also organized and executed a Controlled Unclassified Information destruction effort that resulted in 18,000 pounds of material destroyed in a three-month period. ♦

The Physical Security Team completed more than 500 arms, ammunition and explosives (AA&E) surveys and 75 non-AA&E surveys. The team established a new non-AA&E Lock and Key Program for the command and conducted over 65 initial AA&E screenings for new hires into the QUAL/CERT program. The team was acknowledged for having one of the best AA&E physical security programs in the warfare centers by higher headquarters ESI inspectors during the May 2021 ESI. ♦



Property Management Division Director Giovanni Perez (standing) addressed new branch managers (left to right) Chris Burns, Melissa Johnson and Robert Beach.

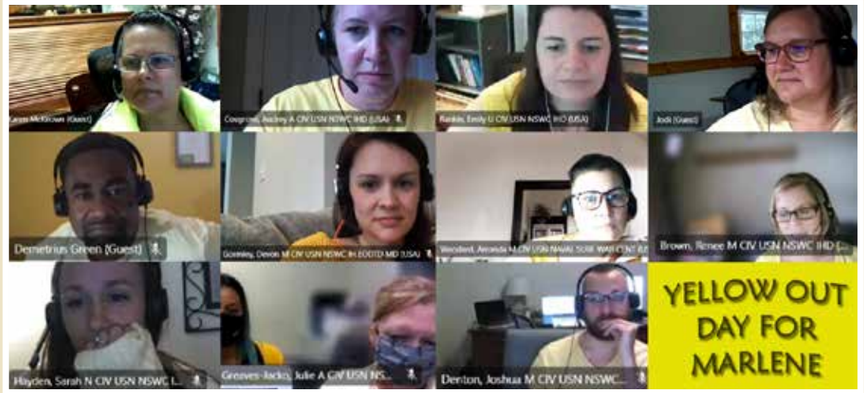
With the challenges of a pandemic not just locally but nationwide, getting material from suppliers and into the hands of the customers was extremely challenging for the Property Management Division. The division met these challenges with innovative ideas and adjustments such as significant updates to Procurement Automation Tool , a restructure in Purchasing Branch and the introduction of a virtual material inventory in General Equipment. The Purchasing Branch was able to successfully complete the obligation of all expiring funds prior to the October 1 deadline resulting in 100% of funding being executed. As a team , the Purchasing Branch processed 23,000 line items totaling $592,040,973. The branch also anticipated the back-to-work federal mandate and procured 2,200 rapid-Covid test resulting in NSWC IHD making it the only Warfare Center to have tests available for its workforce upon initial return. ♦

Property Management Division's Supply Branch focused on wrapping up fence line actions and inventory accuracy this year. The branch made tremendous strides in inventory accuracy in a joint effort with the Systems Integration Department. Together the two teams completed an unprecedented inventory of 5,000 lines of material in a ten day time period. Supply Branch also led the major revamping efforts of Naval Support Activity South Potomac's scrap yard. Working with Safety, Environmental and the Infrastruture Division performed environmental remediation of the old scrap yard site and completed the identification, evaluation and construction analysis for the new scrap yard to open in 2022. ♦

The General Equipment Branch showed a significant improvement during the NSWC IHD Property Assessment in April. Their efforts contributed to an 18% increase of the overall assessment score. The branch also released an automated Property Pass tool to modernizing the process. ♦

CONTRACTS DEPARTMENT

Divisions within Contracts made time during the year to get together in person or via Teams to not only celebrate all their hard work throughout the year but to also catch up with their co-workers.



The last week of September marks the end of the fiscal year and is the time of the year when the Contracts Department comes together and cheers on their teammates to get all expiring funds obligated, the department refers to it as "eat week." In a typical year, the department would gather daily in the breakroom for breakfast, lunch and desserts, each day promoting a "spirit day" theme. Although the department could not gather in the breakroom this year due to COVID-19 safety protocols, employees gathered on Microsoft Teams and hosted virtual spirit days. This year, two spirit days were celebrated: Yellow Out Day and end of FY21 Pajama Day. Yellow Out Day honored contracting officer Marlene Ridgell, who has been battling bone cancer and is recovering from a bone marrow transplant.

The Contracts Department closed out the year with 1,653 completed actions with a total obligated amount of more than $442.5 million for FY21. ♦

The Contracts Department Government Purchase Card (GPC) Program Procurement Performance Management Program (PPMAP) review was conducted virtually by NAVSEA Headquarters Level 3 Agency Program Coordinator (APC), from Aug. 9-13. The PPMAP review is conducted regularly within an 18-month cycle. ♦

The department achieved an overall PPMAP rating of satisfactory (low risk) for both the transactional review and internal management control review. PPMAP consisted of a transactional review and an internal management control review. The transaction review consisted of 80 randomly selected GPC transactions from Nov. 20, 2019 through May 19, 2021 and 8,247 GPC transactions totaling $13.2 million. ♦

The Purchase Card Program had many successes while in remote status. There were 5,267 purchase card acquisitions totaling $8.2 million for FY21. The Purchase Card APC office continues to play a vital role in assisting Code 107 with purchase card transactions. ♦

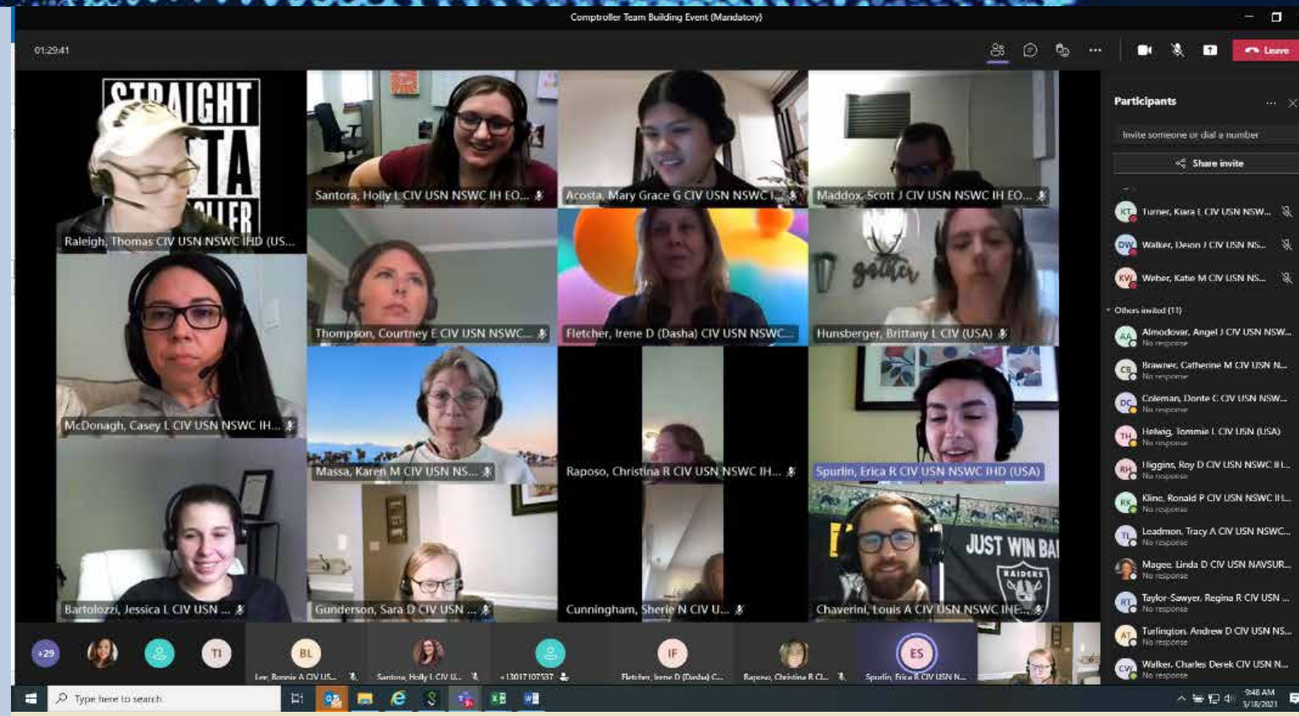
The Contracts Department was one of the first Warfare Centers to deploy NAVSEA's new Acquisition Management System (AMS) in November. The AMS is a tool that provides a holistic solution to digitally manage the acquisition process, fosters transparency and promotes commonality and consistency with contract tracking and execution across the Warfare Centers. ♦

COMPTROLLER DEPARTMENT

In September, Comptroller Tom Raleigh, Deputy Comptroller Sara Gunderson and Employee Services Division Director Cindy Gilroy shared a moment of levity during an all-day year-end Microsoft Teams meeting.

The Comptroller Department worked tirelessly during the fiscal year through several unforeseen financial circumstances: continued manufacturing restart, paid parental leave, COVID-19 costs, emergency family leave and a $60 million shortfall. Comptroller worked with all departments to execute realistic plans given a challenging budget across the organization. The department analyzed various options to achieve net operating results (NOR) results for the command. Six months prior to year-end, Comptroller performed a financial health assessment that included several bold mitigation strategies to lessen the Warfare Center enterprise's cash impact and support the enterprise NOR goals, which required systematic changes and weekly reporting mechanisms to analyze results to allow for proactive business decisions. Through the use of strong analytical skills, system skills and leading indicators, Comptroller Department ensured that NSWC IHD achieved each line of effort goal and the overall health assessment NOR metric, surpassing the goal by 25%. The Corporate Budget Team received an award due to these efforts related to the Manufacturing Financial Health Assessment and NOR mitigation strategy. ♦

With the help and collaboration with the Corporate Operations Department Property Management Division and Naval Sea Logistics Center (NSLC), the Comptroller Department formed a Military Standard Requisitioning and Issue Procedures working group. With support from the Accounting Division, the Property Management Division, NSLC and business financial managers from the command's Picatinny and McAlester Detachments, this team resolved the aged military standard requisitioning and issue procedures unmatched disbursements by working together via Microsoft Teams to resolve each document start to finish. ♦



Comptroller and Contracts Departments piloted a new space sharing initiative with the usage of maximum telework as the command continued to work through facility improvements and space concerns in response to the pandemic. In light of the various moves and seating arrangements, the Comptroller Department maintained flawless customer service along with business and financial support to the command. If there is one constant, the Comptroller Department continues to remain dedicated to the command's mission.

In May, the Comptroller Department hosted a virtual team-building event. The event included a variety of challenging tasks meant to test leadership, creativity and innovation. Comptroller employees Bonnie Lee, Erica Spurlin, Henry Mayle and Mary Grace Acosta were a huge asset to the Strategic Planning Team and this event. Even in a team-building environment, the department is fierce in its competitive nature and at conclusion of the event, one team received the title of "Top Dog." The Top Dog team that won the most challenges included Caitlin Armstrong, Katie Weber, Derek Walker, Courtney Thompson, Tiffany Maston, Ryan Armstrong, Sara Gunderson and Brittany Caywood. They were the overall best team at trivia, a scavenger hunt, Pictionary and the Comptroller guessing game.

COMPTROLLER DEPARTMENT

Comptroller's Accounting Division performed well and had no findings in the NAVSEA Inspector General Audit last fall, even noting that the Indian Head's accrual process was the best of all the warfare centers divisons. Additional inspections of the Accounting Division's processes went well, and Erica Spurlin and Melissa Price, from the Accounting Division, shined with their accounting process walkthroughs. ♦

Although year-end had its challenges with the Office of Management and Budget requiring new postings for COVID-19 surcharges, emergency paid leave and the Accumulated Operating Results deferral, the department pulled through to close out another successful FY. The department took advantage of the virtual environment and collaborated on a new level via Microsoft Teams. This enabled the department to be several places at once to manage the chaos that accompanied the year-end. The collaboration within the Comptroller Department was top notch, and the daily NOR meetings kept the team on the same page as the fiscal year concluded. ♦

The Budget Division processed more than $600 million in reimbursable funding in FY21, which equates to over 4,400 documents. The Funds Management Team welcomed Jennifer Krikstan as the new team lead; Tiffany Maston as a new budget officer; and Ryan Armstrong as a new team member. With all of the new faces, the team also bid a farewell to Corporate Budget lead Regina Taylor-Sawyer, who retired. ♦

In December, the Comptroller Department gathered at The Greene Turtle Bar and Grill in La Plata, Maryland, for some after-hours festivities to celebrate a successful year. The department also hosted a virtual holiday gathering

The Employee Services Division remained focused in providing world-class customer service in the areas of payroll, travel and travel card. The division expanded in 2021 to include on-site official passport and visa support services. Even though it was slow to start, the Passport Office processed 11 passports and two visas. When travel returns to pre-pandemic levels, the office anticipates processing two or more requests a month. While the Passport Office is located within NSWC IHD, the office is open to all in need of an official passport or visa. ♦

The Financial Improvement and Audit Readiness (FIAR) team welcomed a new team leader to the staff of two civilians and one intern. The FIAR team processed 270 delegations (including new letters), updated training certificates and replaced some existing letters with the new formats. The team launched a local testing initiative starting with accruals, which included creating a testing SOP and workbook. The FIAR team helped the command achieve a successful Ernst & Young site visit to evaluate Ordnance processes. FIAR collaborated with department subject matter experts on the local testing, external data calls and internal testing of 1,800 testing points, and launched process improvement efforts based on test findings. ♦

The Comptroller Department continued to sustain its intern program for the fourth consecutive year. Last summer, Comptroller welcomed three new interns to the program: James Hume, Isaiah Satterthwaite and Brennadette Beebe. The department used the Pathways Internship Program that allows students to work while continuing their education. Interns typically pursue business, financial or accounting degrees or certificate programs, so the positions allow interns to gain professional experience and hands-on business and financial exposure while working towards degrees or certificates in the same field. This becomes a great avenue to teach the intricacies of a working capital fund (WCF) and develop entry level financial skills necessary to move into career positions. The program allows the interns to rotate through the different divisions within the Comptroller Department. The internship also provides a broad range of knowledge, refines skillsets through strength-based leadership, and develops a knowledge set that provides a connection, understanding and appreciation for all the financial processes required for the success of a WCF. The Pathways Internship Program is an ongoing initiative that seeks to grow the Comptroller Department organically and to establish a future for succession planning and the next generation of leaders. ♦

INNOVATION AND PATENTS

RDT&E Department Materials Science Branch scientists Dr. Alexandra Reinert and Dr. Anne Haslam designed and implemented a new testing apparatus for characterizing high-speed reactive material impact and penetration events in March. Pictured: Reinert (left) and Haslam (right) display an example witness plate from current vented chamber calorimetry experiments geared towards screening a subset of novel and preexisting materials.

In May, Land & Expeditionary Systems Branch employees Steve Kim and Mark Cavolowsky and Chief Scientist Carl Gotzmer secured the patent for the Vulcan Fire (VF) torch. The patented portable torch can cut half-inch holes through hardened steel. The VF torch was successfully designed and demonstrated at NSWC IHD.

In March, Ordnance Components Technology Branch employees Oliver Barham and Lou DeChiaro, in collaboration with Chief Scientist Carl Gotzmer and Scientific and Technical Intelligence Liaison Officer Ken Conley, led a Defense Advanced Research Project Agency-funded effort to investigate electrochemistry experiments using Cold Fusion. The group of researchers formed an interdepartmental team of scientists from DoD, the Department of Commerce, NSWCDD, the U.S. Naval Academy, the Army Research Lab, the National Institute of Standards and Technology, and other academic and industry partners. The team investigated the controversial theory in an effort to uncover evidence of nuclear reactions that could lead to a new repeatable and controllable green nuclear energy source.

The Customer Advocate Office (CAO) finalized one Center for Industrial and Technical Excellence partnership agreement with MBDA Inc. on May 25. Under this 20-year agreement, NSWC IHD and MBDA Inc. will jointly develop, qualify and manufacture propulsion systems and warheads for current and future warfighter needs. The CAO also finalized 27 Work for Private Parties agreements with a total value of $1.8 million. The office also executed and finalized 20 Cooperative Research and Development Agreement resulting in approximately $1.6 million of funding for research. ♦

In June, through the collaboration of personnel from Systems Engineering, Energetics Manufacturing and RDT&E Departments, two 150-gallon mixes of the polymer-bonded explosive PBXIH-143 to produce charges for local on-site explosive testing were completed. This effort was a successful formulation of an improved underwater explosive nearly 20 years in the making. Pictured: In preparation for a series of mixes to qualify polymer-bonded explosive PBXIH-143, NSWC IHD Research and Development Division lead explosives chemist Stephen Stiles (left) transfers bulk nitrate ester explosives from commercial packaging to the "milk can" held by Energetics Manufacturing Department's Energetic Chemicals Branch explosives operator Darryell Johnson (right), June 3. Explosives Production Branch explosives process engineer Eric Saar (center) wipes the cans to prevent spillage as Energetic Chemicals Branch nitration engineer Matt Spielman (back) looks on.

Patents in 2021

US Patent Number 10,914,564.
Blast containment system for trash cans
Edward A. Lustig Jr. and Christopher Wilhelm
A blast containment system for trash cans features a donut-shaped bag having a sealed donut-shaped bottom positioned at the base of the trash can, and an open donut-shaped top positioned and retained at the top of the trash can.

US Patent Number 10,928,173. **Remotely actuated multi-use modular explosive ordnance disposal rocket dearmer**
Lee Foltz and Daniel McCarthy
A novel dearmer enables EOD technicians to propel dearmer projectiles using conventional electric .50-caliber blank cartridges or conventional non-electric 12-gauge blank cartridges. The dearmer projectiles may render energetic threats safe without requiring an opposing force to offset the recoil.

US Patent Number 10,962,342. **Blast containment system for trash cans**
Eyal Banai, Edward A. Lustig Jr. and Christopher Wilhelm
A blast containment system for trash cans includes a donut-shaped bag having a sealed donut-shaped bottom positioned at the base of the trash can, and an open donut-shaped top positioned and retained at a top periphery of the trash can. A ballistic fabric is situated inside of the trash can and outside of the donut-shaped bag.

US Patent Number 10,968,072. **Automatic diving tending system**
Ramon M. Colon Montes, Aaron O'Toole, Zachary Vardian and Todd Zimmerman
The automatic diving tending system (ADTS) includes a buoyant sealed torsional apparatus having a plate with a perimeter seal affixed to a cover with a perimeter flange forming a dry buoyant cavity. On the plate is mounted a bridge supporting a drive shaft, a locking mechanism, a constant torque spring motor, and an overdrive transmission linkage. A tether spool apparatus is mounted on the exterior bottom side of the plate. It includes a frame with a guide, a spool, and a coaxial connecting structure that connects to the drive shaft. A line wound on the spool that can tighten the spring motor, enabling the full length of the line to be rewound back onto the spool and to be stopped at any time by a diver.

US Patent Number 11,001,553. **Process for the synthesis of 2-nitratoethyl acrylate**
David N. Vaccarello
An elegant process for the synthesis of 2-nitratoethyl acrylate is a single reactive step. A 2-hydroxyethyl acrylate having only one hydroxyl group is nitrated in a 1:1 volumetric mixture of nitric acid and sulfuric acid therein forming 2-nitratoethyl acrylate. The 2-nitratoethyl acrylate is minimally soluble in a quenched cold acid water mixture, which enables relatively easy isolation of about 96% purity 2-nitratoethyl acrylate at a yield of about 85%.

US Patent Number 11,007,593. **Vulcan fire torch**
Mark Francis Cavolowsky, Carl Gotzmer and Steven Kim
A torch device includes a case connected to a first cap at a first end of the case, and a second cap at the second end. The first cap closes the first end. The second cap leaves an opening in the second end. A nozzle is connected to the second end. A first section is located in proximity of the nozzle inside the case and contains a thermite material. A second section is located in proximity of the first section inside the case and contains an ignitable composition. A third section is located in proximity of the second section inside the case and contains the ignitable composition. A fourth section is located in proximity of the second section inside the case and contains an oxidizer. The third and fourth sections are separated by an insulating tube.

US Patent Number 11,033,997. **Method for precise control of manufacture of non-rigid thin-walled tube products**
Tina Jones and John Kelley
A method for correcting non-rigid thin-walled tubular elements having geometric deficiencies, wherein, following correction, the tubular elements may perform over a wide range of pressure and temperatures, for example, as a rocket motor beaker, from about -70 degrees Celsius to about 1,000 degrees Celsius.

US Patent Number 11,035,767. **Apparatus for determining swollen-polymer cross-link density**
William F. Bryant Jr. and John N. Kelley
An apparatus to determine the swollen cross-link density of a polymeric specimen. The apparatus includes a support structure, a fluid-holding structure to hold a solvent, a first gripping assembly engaged with a weight scale and adapted to grip a specimen, and a second gripping assembly adapted to grip the specimen.

US Patent Number 11,040,924. **Process for additively manufacturing discrete gradient charges**
Jorge Castellanos, Demitrios Stamatis, Samuel B. Emery, David O. Zamor, Meagan E. Gay, George W. McDaniel Jr., and Austin W. Riggins
A discrete gradient charge that has a discrete first hollow cylindrical layer of a solid first fuel, which is about 85% by weight fine aluminum powder having a median diameter of about 3.5 microns. There is a discrete second hollow cylindrical layer of a solid second fuel that is about 80% by weight coarse aluminum powder with a median diameter of about 31.0 microns. The fuels have a cured hydroxyl-terminated polybutadiene binder.

US Patent Number 11,054,230. **Flexible anti-personnel mine**
Steven Dunham, Daniel Pines, Alexander Sweeney and Taylor Young
An anti-personnel mine that is flexible for manipulation in the field to accommodate missions by changing the shape of the C-4. The mine includes M112 seated in and adhered to a flexible housing having a rear involute wall.

US Patent Number 11,085,748. **Environmentally-friendly fireworks disposal unit and method**
Jesse Moran and Frank Steinkamp
A method for destroying pyrotechnic materials including providing an apparatus having an inlet and an outlet. It's configured to mechanically destroy pyrotechnic materials and discharge pyrotechnic debris through the outlet.

US Patent Number 11,117,243. **Multi-tool for disrupter breech maintenance**
David G. Banks, Lance A. Brown, Keith Chamberlain, Lonnie Frericks and Scott Steward
A multi-tool for disrupter breech maintenance includes an elongated body with first and second axial ends. The elongated body encases a storage volume commencing at and accessible from the second axial end. An open-ended rectangular notch in a radial wall of the elongate body has a planar base.

US Patent Number 11,148,867. **Dunnage assembly**
Eric R. Boyd
A dunnage assembly has a plurality of tubes with an attached moveable locking bridge. The locking bridge has radial sections extending through corresponding slots in the tubes and into the tube interior regions. A stop member is movably positioned within each tube interior region and attached to the portion of the radially extending section located within the tube interior region. The locking bridge and stop members move together.

US Patent Number 11,160,576. **Amputation system for field use**
Matthew Bradley, Keith Chamberlain, Kerry Clark, Samuel Emery, Lee Foltz, Erin E. Koelling, Peter A. Margiotta, Daniel McCarthy and David R. Whittaker
An amputation system featuring a V-shaped cutting element having a cutting blade with a vertex and an angle in a range of 90-120.degree.

US Patent Number 11,187,487. **Disrupter driven highly efficient energy transfer fluid jets**
Arthur W. Ellis, Lee Foltz, Eric S. Morefield, Phillip R. Quillen and Ian B. Vabnick
Projectiles for use in a propellant driven disrupter device, and associated methods, to neutralize an explosive target. The projectile includes a friction-reducing container at least partially filled with one or more fluids, particles and other components to provide one or more fluid properties to achieve a desired jet parameter upon target impact. The projectiles and disruptor can be more precisely individually tailored to the target, thereby increasing the likelihood of successful disablement and decreasing the likelihood of inadvertent and uncontrolled explosion.

US Patent Number 11,187,512. **An apparatus for detonating a munition having a munition casing**
Lee Foltz, Daniel McCarthy and Ray McGuire
The apparatus includes a pyramidal-shaped housing with an interior to receive explosive material and a stepped structure defining a plurality of tiered sections. A force-reactive component secured to the bottom portion of the housing confronts the munition casing and includes a force-receiving portion exposed to the housing interior. The force-reactive component impacts the munition casing when a force is exerted upon the force-receiving portion. After the apparatus is positioned on the casing, explosive material is packed into the housing interior, the energetic device is detonated and the force-reactive component impacts the munition casing where shock waves permeate the munition casing and detonate the munition.

AWARDS

In March, five employees were recognized with Department of the Navy (DON) awards: CBRD Division Facility Manager James Flamish was recognized with the DON Civilian Service Achievement Medal for his role in the transfer of the CBRD function from NSWCDD to NSWC IHD over a period of approximately two years. Collective Protection System (CPS) senior project manager and engineer Richard Warder received the DON Civilian Service Commendation Medal for his leadership of several overseas CPS projects. CAD/PAD supervisory/administrative technical specialist Terri Willett received the DON Civilian Service Commendation Medal for her duties as the CAD/PAD Acquisition Branch manager assigned to the CAD/PAD Division, and as a CAD/PAD program analyst assigned to the CAD/PAD Joint Program Office. Systems Integration Department ISEA Thomas Fox received the DON Superior Civilian Service Award due in part to his operational expertise and leadership as a technician at NSWC Port Hueneme Division and NSWC IHD from October 2003 to June 2020. CBRD Protection and Integration Branch Manager Danielle Zimmerman (pictured) received the DON Meritorious Civilian Service Award for her role in the CBRD Division's transfer to NSWC IHD.

In April, NSWC IHD D&I Program Manager Shari Thomas (middle) received the National Diversity and Leadership Conference Diversity, Equity and Inclusion Champions Award given by the National Diversity Council. (Also pictured: Capt. Eric Correll (left) and Deputy Director, EEO, Diversity and Johnna Robinson (right))

In September, Michelle Hinkle was presented the DON Human Resources and Equal Employment Opportunity (EEO) Community Award for Excellence in the First Line Supervisor category by Technical Director Ashley Johnson and Capt. Eric Correll.

In March three command employees were recognized for their accomplishments in 2020 with Excellence in Partnership Awards in the Acquisition Excellence Award category. EIP Awards honor individuals and organizations in the acquisition community who made significant contributions to the procurement system to deliver best value and meet agency missions. These awards are given to individuals, organizations and contractors involved in procurement with the General Services Administration, Department of Veterans Affairs, Department of Defense, Department of Homeland Security, and other government agencies. The employees are:
Fund Partnership Intermediary Agreements Lead Dr. Christopher Wilhelm, CAD/PAD In-Service Engineering Branch team leads Milton Reese and Melina Andino, and Expeditionary Exploitation Unit 1 facility coordinator Robert Sorzano. ♦

On June 2, three EOD Department employees received the FBI Director's Award for Excellence in Innovation at the FBI Critical Incident Response Group's award ceremony. Pictured front row, left to right: Special Agent Bomb Technician Dr. Ian Vabnick, lead scientist and director of the RAPID Program; NSWC IHD Commanding Officer Capt. Eric Correll; Explosive Tools Branch mechanical engineer Lee Foltz; and EOD Department Head Amanda Vehslage. Back row, left to right: WMD, Intel & Tech Support Branch technical specialist Chad Smith, WMD Countermeasures Team Lead Bryan Milani, Weapons of Mass Destruction (WMD), Intel & Tech Support Branch technical specialist Valja Collingwood and EOD Information Management Division Director Kurt Desque.The FBI Director's Awards for Excellence offer the Director and other FBI officials the opportunity to recognize Bureau employees and others who make positive contributions to the community for their outstanding contributions and exceptional service to the FBI and its mission. (Photo courtesy of the FBI.)

On Oct. 18, Capt. Eric Correll presented Chief Learning Officer Stuart White with a Marine Corps Commendation for Meritorious Civilian Service for his outstanding support to the fleet. White received the award for demonstrating continued excellence as Deputy Director, Marine Corps Tactics and Operations Group, Marine Air Ground Task Force Training Command, Marine Corps Air Ground Combat Center in Twentynine Palms, California, from January 2014 to September 2020.

Two RDT&E Department employees won prestigious Women of Color (WOC) STEM Awards. Dr. Lauren Cosby and Dr. Prabha Dwivedi received the Technology Rising Star Award, one of the STEM industry's most important honors during the WOC STEM Conference, Oct. 7-9.

Dr. Prabha Dwivedi, CBR Laboratory Science Branch scientist

Dr. Lauren Cosby, CBR Detection Branch biomedical detection lead

In September, 16 command employees were recognized at the 2021 Warfare Center Awards.

John C. Mickey Award for Collaboration
(Warfare Centers' Other Ship Gun Ammunition Integrated Product Team): NSWC IHD members included Selena Clark, Brian Cole, Thomas Howes, Earl Humphries, Fred King, Brent Morgan, Anthony Mortola, James Paccioretti and Alex Polster. *(Pictured left to right: Commanding Officer Capt. Eric Correll, Brian Cole and Technical Director Ashley Johnson)*

For dedicated collaboration between acquisition engineers at NSWC IHD Detachment Picatinny, design agents and test engineers at NSWCDD, gauge engineers at NSWC Corona Division, and explosive and propellant engineers at NSWC IHD with international and U.S. suppliers to ensure the on-time delivery of 20 mm to 40 mm ammunition.

John C. Mickey Award for Collaboration
(Warfare Centers' Blast Assisting Munition Team): NSWC IHD members included Victor Bellitto, Christopher Milby and Rudy Morales. *(Pictured left to right: Commanding Officer Capt. Eric Correll, Christopher Milby, Victor Bellitto and Technical Director Ashley Johnson)*

For exemplary collaboration between NSWCDD and NSWC IHD in the design and assessment of the 57 mm reactive material warhead. The team produced a prototype warhead that increases lethality and reduces costs by requiring fewer rounds.

Technical Support Services Award
(NSWC IHD's CBR Shipboard Quarantine and Isolation Team): Bruce Corso, Tyler Schell and Kurt Thoele. *(Pictured: Commanding Officer Capt. Eric Correll, Tyler Schell and Technical Director Ashley Johnson)*

For providing extraordinary contributions in the rapid development of shipboard quarantine and isolation procedures during the COVID-19 pandemic.

2020 Honorary Awards

From handling urgent fleet requests, to working together effectively and efficiently to ensure our workforce had what they needed at all times, the command's Honorary Award winners demonstrated their commitment to the command's tenets, to the fleet and to each other.

Robert B. Dashiell Award for Excellence
Kevin D. Forrestal

Dr. George W. Patterson Award for Outstanding Accomplishment
Dr. Michael L. Soo

Joe L. Browning Award for Managerial Excellence
Dennis G. Brown

Admiral Harold R. Stark Award for Innovation
Shad M. Reese

A.J. Perk Outstanding Operator/Technician of the Year
Charles F. Lansing and Tracy A. Lowe

Captain H.E. Lackey Award for Community Service
Janice M. Hedges

Continuous Process Improvement Award
CAD Test Capacity Improvement Team: Ezekiel B. Lancaster and Jeffrey D. Watts

Equal Employment Opportunity, Diversity & Inclusion Award
M Restart Culture Focus Group: Scott E. Bumgarner, Lexington A. Estes, Tracy C. Gutrick,G. Crystal Keys-Mason,Dr. Crystal Loechler, Ashlee L. Strain and Shari L. Thomas

Internal Customer Service Award
Shannon M. Munoz (Individual Award) and Corporate Budget Team: Mary Grace G. Acosta, Holly L. Santora and Regina R. Taylor-Sawyer

Lance Corporal T.J. Honeycutt Award for Forward Deployed Service
Ryan J. Kelly

Excellence in Business Operations Award
Laura A. McDonald

Excellence in Project Management Award
Daniela Wagus

Excellence in Quality Execution Award
Iris C. Vazquez-Ayala

Excellence in Systems Engineering Award
Charles A. Brown

Excellence in Safety Execution Award
Transportation Focus Group: David C. Carpenter, David D. Clark, Dale R. Cornette, Christopher F. Dorosz, Aaron J. Gentili, Lekisha T. Hodges, Robert D. Kenney, Bryan J. Kilikewich, Kenneth Kulhanek, Floyd X. Proctor, Tara N. Reed, Stuart A. Richman and Cornell A. Travis

Roger M. Smith Team Award
Task Force Shutdown Extrusion Operations/Facilities: Connie J. Adams, Lisa A. Aliff, Daniel A. Arnold, Robert W. Atkinson, Eldon M. Ayala Roman, Daniel M. Bachman, Donald E. Bacote, Briana Jean Balboni Kalin, Gregory W. Ballinger, Darrius A. Bannister, Sterling D. Bannister, Lydia R. Berry, Dennis J. Bituin, Randolph J. Bland, Daniel J. Bouch, Brandon C. Bowie, Tyler L. Bowie, William W. Bowie, Ivan R. Bowman, Lashawn Y. Bowman, Timothy J. Boyd, Robert L. Branson, Timothy L. Brennan, Lynn Brown Dunnington, Jackeline L. Bulls, George C. Burke, Christopher D. Burrows, Kevin L. Campbell, Keshia D. Capers, Michael F. Carey, Brenda A. Carroll, Keith A. Carter, Shavone N. Cobey, Denise C. Cobey-Warren, Austin L. Collins, Francis S. Cooper, Robin L. Cromer, Courtney A. Davis, Blake A. Dickinson, Christopher S. Digges, Stephen J. Dolina, Clifford J. Dunnington, Paul A. Dunnington, Jeffery A. Dyson, Jerad T. Fike, Caroline R. Foster, Thomas J. Foster, Robert G. Frederick, Gregory Gibbs, Christopher Gonzalez, Meghan A. Griffiths, Nicholas J. Grinder, Kevin W. Gross , Giovanni B. Harley, John W. Harley, Linda C. Hawkins, Gerard Heard, Jesse A. Hitch, Richard W. Hunter, Patrick W. Huntt, Aaron S. Jenkins, Cynthia L. Johnson, Bryan J. Kilikewich, Andre C. King, Anthony L. King, Daryl K. Lee, John A. Lopes, Bianca Marie Lopez Pagan, Paula E. Loucas, Tracy A. Lowe, Brandon A. Lynch, Scott W. Marshall, Bradley A. Martin, Daniel B. Martin, Franklin E. Martin, Sandy M. Matthews-Green, Christopher P. Mcdevitt, Janice E. Mckinney, Katherine V. Mejia, Eric C. Meyer, Yonatan T. Mikre, Hailey K. Muhler, Christopher W. Murphy, Nievo B. Namata, Joseph A. Petitto, Patricia L. Pickeral, Dwyne F. Proctor, Kimberly D. Proctor, Colin S. Qualters, Donald K. Rogers , Emilia S. Roldan, Steven Romero, Valeria D. Santana De La Rosa, Jacob T. Schutte, Amy M. Sexton, Shaan Shakeel, Francis A. Showalter, John D. Shumpert, Earl C. Simms, Dwayne Antione Smith, Virginia J. Smith, Ashlee L. Strain, Carrie C. Swann, Davin W. Swann, James N. Thomasson, Donna L. Tibbs, John P. Trevathan, Barry D. Trotter, Sibyl L. Turner, Barry L. Underwood, Dorinda M. Warren, Nicolette R. Whitaker, and Jonathan D. Wright

Spirit of Indian Head Award – The Rising Star
Bonnie Lee

Spirit of Indian Head Award – The Emerging Legend
Michael Hagn

Spirit of Indian Head Award – The Legend
Carl Gotzmer

The command wished outgoing Chief of Staff Cmdr. Shawn Donovan fair winds and following seas July 30, at Autumn Fest Park during a potluck luncheon as he departed the command.

Before the command transitioned to a maximum telework environment, the EEO Diversity and Inclusion (D&I) Office hosted a D&I Maturity Matrix Model pilot. The pilot's initiative included 30 employees encompassing every command department and detachment. Participants met, discussed and established four initiatives to improve inclusion and diversity. One initiative was the "Hello!" campaign. The campaign's goal was to create an atmosphere of courtesy and respect among employees and officially kicked off in March. Then EEO, D&I Office hosted a "100 Hellos of May," on May 26 with the objective that command employees share a total of 100 hellos within the workforce. The campaign surpassed that goal and recorded 111 intentional greetings between co-workers on that day.

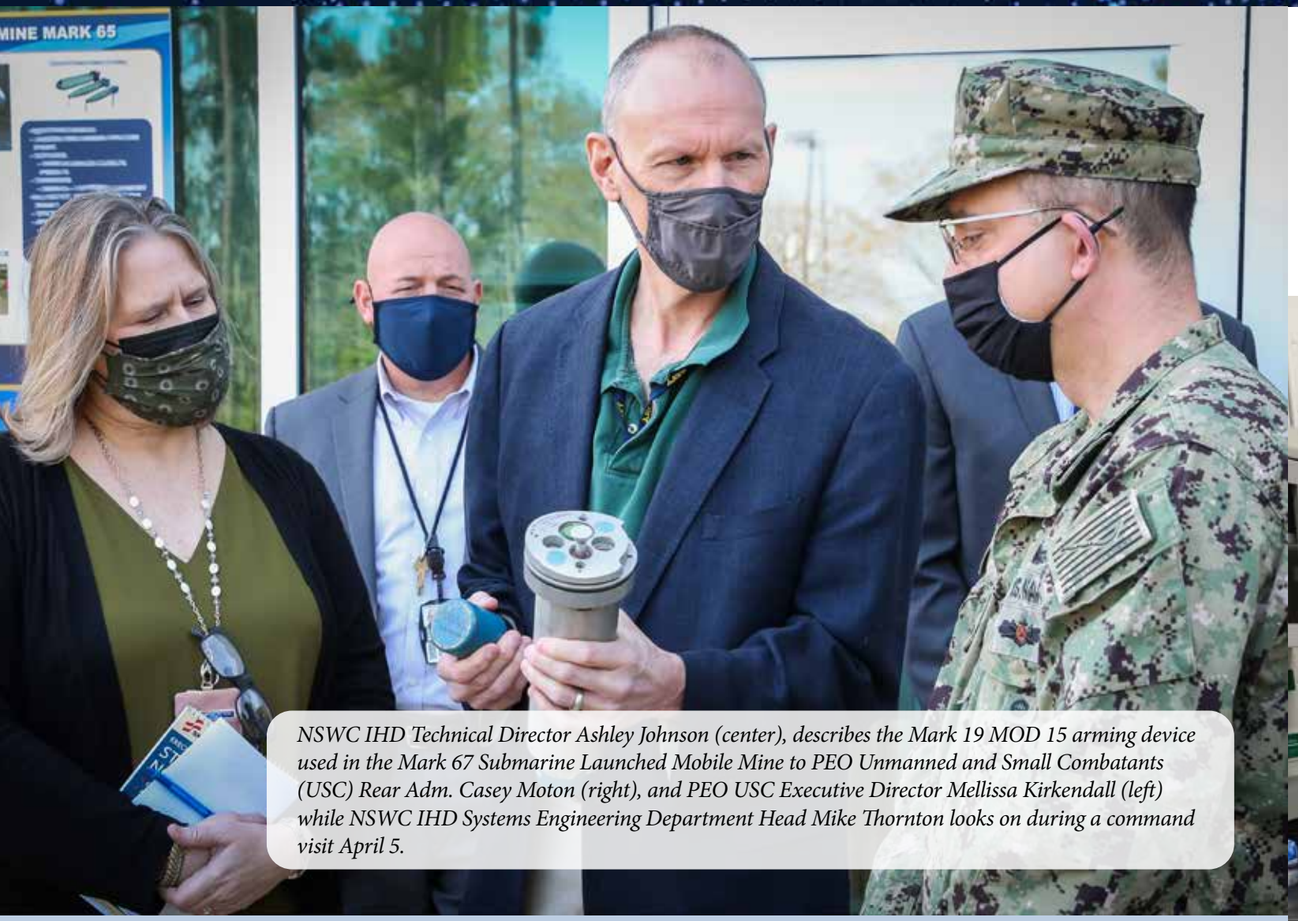
The command saw the end of the Commercial Virtual Remote (CVR) environment in June, which was critical in the early days of extensive teleworking due to the COVID-19 pandemic. CVR was designed as a temporary solution to support remote collaboration and was classified as an Impact Level 2 environment and could be utilized for Distribution Statement A. The CVR environment was decommissioned June 15 and the command transitioned to Flank Speed (FS). While still based on the Microsoft Teams software, FS offers a much more secure environment.

In April, the command released the new Failure Investigation Process instruction. The new process applies to engineering failure investigations on projects conducted at the command and is adaptable to the needs of each failure. Key elements of the directive include communicating what happened during the engineering failure, involving all the affected departments in the investigation, and the command's guidance on procuring evidence as a part of the investigation. ♦

NSWC IHD personnel got a glimpse into DoD's role in the Arctic area of responsibility (AOR) during a Product Accelerated Concept Engine (PACE) event held by the command's Velocity Lab, April 8. Led by the command's Chief Innovation Officer Dan Pines, Deputy Innovation Officer Samantha Gray, and Customer Advocate Office's Dr. Sam Emery, presentations detailed the need for a renewed focus on the Arctic AOR. According to Pines, this is the reason PACE exists: to facilitate cross-department collaboration to address mission-specific issues. The PACE concept was created by NSWC IHD Technical Director Ashley Johnson as a vehicle for strategic intent and product acceleration. ♦

The command began a workplace utilization management program (WUMP) in July to develop a feasible telework program in response to the command's increasing need for employee workspace. WUMP seeks to meet the current demand for space; connect space utilization with mission accomplishment; prioritize and support new business development; reduce or avoid facility expenses; and comply with the Chief of Naval Operations strategy to build an effective telework policy. From Aug. 2 to Oct. 29, the Comptroller and Contracts Departments maximized telework with every department employee coming on-site at least once a month and incorporating either the hot desk or "hoteling" desk sharing methods. ♦

EVENTS AND VISITS



NSWC IHD Technical Director Ashley Johnson (center), describes the Mark 19 MOD 15 arming device used in the Mark 67 Submarine Launched Mobile Mine to PEO Unmanned and Small Combatants (USC) Rear Adm. Casey Moton (right), and PEO USC Executive Director Mellissa Kirkendall (left) while NSWC IHD Systems Engineering Department Head Mike Thornton looks on during a command visit April 5.

NSWC IHD hosted the Joint Warfare Centers Asian American and Pacific Islander Heritage Month special observance event, May 11. Following a welcome from Commanding Officer Capt. Eric Correll and Technical Director Ashley Johnson, Systems Engineering Department Chief Engineer Frank Tse introduced keynote speaker NAVSEA Executive Director Giao Phan.

In April, the command safely resumed visits and welcomed guests to tour NSWC IHD on a case-by-case basis. Distinguished visitors included: Mine Warfare Senior Lead Dr. Sam Taylor; Program Manager, Expeditionary Missions (PMS 408) Capt. Dan Malatesta; Deputy Program Manager, PMS 408 Mike Alperi; Program Manager, Mine Warfare (PMS 495) Capt. Danielle George; Deputy Program Manager; PMS 495 Gary Jones; Deputy for Test and Evaluation, Assistant Secretary of the Navy (Research, Development and Acquisition) Rick Quade; Senior Scientist, Innovation, Technology Requirements and Test and Evaluation Division Mark Pugh; Operational Test and Evaluation Force Experimentation Officer Dennis Heidenthal, and Navy Expeditionary Combat Branch Head Capt. Stephen Jackson. ♦

Physics and Engineering Branch scientist Dr. Rohit Jacob (left) discusses an apparatus used to conduct testing of advanced fuel concepts to Naval Inspector General Vice Adm. Rick Snyder (center) and Deputy Naval Inspector General Catherine Donovan (right) during a tour of the command, May 19. U.S. Navy Flag Aide to the Naval Inspector General Lt. Matthew Wellens observed from the back.

EXU-1 Electronics Engineering Department lead Alejandro Loya discusses the exploitation process of a recently acquired training hydrophone with midshipmen visiting from the U.S. Naval Academy, June 16. Pictured from left to right: EXU-1 Lt. Patrick Gest and Midshipmen Lian Dunlevy, Aidan Leavy, Sydney Means and Zach Shieh.

Physics and Engineering Branch Senior Technical Lead Dr. Trevor Hedman (left) and Materials Science Branch Scientist Dr. Danielle Woodall (far right) demonstrated laser initiation testing of a propellant sample to Naval Expeditionary Programs and Urgent Needs Dr. Lynwood Townsend (left center); Deputy Director, Expeditionary Warfare Dr. Frank DiGiovanni (center); and Office of the Chief of Naval Operations EOD Crew Requirements Cmdr. Jason Shell (right) during a tour of the command, July 20.

NAVSEA Comptroller Karla Horn (left), Director, Navy Working Capital Fund Division NAVSEA Comptroller Jeffrey Meidinger (left center), NSWC IHD Infrastructure Division Director Greg Simmons (right center), and NSWC IHD CAD/PAD Manufacturing Branch manager Justin Gamble (right) discussed infrastructure challenges during a tour of NSWC IHD, Nov. 5.

In May and June, the command welcomed Navy Expeditionary Combat Command Commander Rear Adm. Joseph DiGuardo Jr., NAVSEA Executive Director Giao Phan and EOD Group 2 Commanding Officer Capt. Charles Eckhart. ♦

July saw visits from the National Nuclear Security Administration Defense Program Office, Directorate of Countering Weapons of Mass Destruction and U.S. Special Operations Command Director Rear Adm. Bradley Andros. In addition, Air Force Research Laboratory Directed Energy Directorate Senior Technologist Dr. Donald Shiffler Jr. toured the command and was briefed on polar impacts to weapons and arctic topical areas. ♦

The command returned to the Charles County Fairgrounds in La Plata, Maryland, for the 97th annual Charles County Fair Sept. 16-19, after its 2020 postponement due to the pandemic. "It was really great to get back to the fairgrounds after a year off and interact with the community," said Commanding Officer Capt. Eric Correll, who took time to visit the fair and operate the EOD robots. "As the county's second largest employer, many members of our command are the community, and it is important that we continue to affirm our commitment as good neighbors to the residents of Charles County. Any time that we can go out and explain what we do and why we do it to the community, we strengthen those ties and show appreciation to our friends and families." ♦

NAVSEA
WARFARE CENTERS
Indian Head

STRONGER TOGETHER