



**Naval Surface Warfare Center
Panama City Division**

ANNUAL REPORT

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NAVAL SURFACE WARFARE CENTER
PANAMA CITY DIVISION
110 Vernon Avenue
Panama City, FL 32407

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Foreword

from the Commanding Officer



We are pleased to present the 2021 Annual Report, which showcases how Naval Surface Warfare Center Panama City Division (NSWC PCD) delivers combat power for Naval Sea Systems Command, the Department of Defense, the U.S. Navy, and the nation.

Our command serves to quickly deliver innovative technical capabilities to our nation's warfighters. Our most important role is to provide advanced warfighting capability to the fleet and deliver relevant and innovative solutions for combat-ready ships, submarines, and systems. We are here to ensure the technical capabilities we develop are safe, effective and expand the advantages between our nation and our enemies.

We will remain committed to process improvement, fiscal accountability, and most importantly, taking care of our people, especially our sailors and marines. The technical and business health of the Panama City Division is strong! Our work remains important to the Department of the Navy, and our people continue to excel and deliver innovative, cost effective solutions.

There's so much to be proud of in this most unusual year. In these pages, you will read about the people and projects that have enhanced our command's reputation as the Center of Excellence for Research, Development, Test, and Evaluation in naval surface warfare, which enables our fleet to maintain warfare superiority.

Despite many obstacles and unexpected diversions—namely navigating through the COVID-19 pandemic—we performed well beyond measure and continue to promote a culture of excellence as we move forward in 2022. We are an extraordinary and resilient team who models the Navy's core values of Honor, Courage and Commitment. Adversity has not hindered our vision to Ensure Warfighting Dominance in the Littoral Battlespace.

We strive to promote a culture of inclusion, engagement, and one where we all excel together; which is shaped by living the values of Honesty, Integrity, Unity, Empowerment, and Service.

These operational principles guide our actions and drive us forward in support of our great nation. When we all focus on the same goals, we can achieve greatness together. I am humbled and honored to serve as your commanding officer and I look forward to serving you in this next year.

Thank you for your dedication,

Capt. David N. Back, USN
Commanding Officer
NSWC PCD

ABOUT

Panama City Division

Located on St. Andrew Bay in Panama City, Fla., Naval Surface Warfare Center, Panama City Division (NSWC PCD) is the U.S. Navy's principal organization responsible for Research, Development, Test, and Evaluation (RDT&E), in its core mission areas and other missions that take place in the coastal region. By virtue of its geographical location on the Gulf of Mexico and the Department of Defense's Joint Gulf Test Range, and coupled with its recognized mission areas and technical expertise, the Division is a leading contributor in developing, fielding, and testing joint expeditionary and coastal operations systems in the littoral environment. This report documents accomplishments achieved in fiscal year 2021.

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Mission



The mission of NSWC PCD is to conduct research, development, test, and evaluation, in-service support of mine warfare systems, mines, naval special warfare systems, diving and life support systems, amphibious/expeditionary maneuver warfare systems, other missions that occur primarily in coastal (littoral) regions and to execute other responsibilities as assigned by Commander, NSWC.



1,626
WORKFORCE

Vision



Ensuring Warfighting Dominance in the Littoral Battlespace.

195
NEW HIRES

Technical Capabilities



- Personal Protective Systems for Extreme Environments
- Expeditionary, Littoral, and Maritime Security System Engineering and Integration
- Air Cushion Vehicle Systems
- Expeditionary Maneuver Warfare Systems Engineering and Integration
- Special Warfare Maritime Mobility Mission Systems and Mission Support Equipment
- Surface Life Support Systems for Extreme Environments
- Mine Sensor and Target Detection Technology, Mine Delivery Platform Integration, and Minefield Architecture
- Unmanned Systems Engineering & Integration, Autonomous Operations, Joint Interoperability and Common Control
- Diving and Life Support Systems
- Mine Countermeasure Detect and Engage Systems, Modular Mission Packaging, and Platform Integration and Handling
- Littoral Mission Systems Integration and Modular Mission Packages Certification
- Subsea and Seabed Systems

64
RETIREES



804
BACHELOR'S
DEGREES

431
MASTER'S
DEGREES

72
DOCTORATE
DEGREES

LEADERSHIP

New Leadership

NAME	CODE	TITLE	
Ivan Periera	00E	Chief Engineer	00E
Stacy Gibson	01	Comptroller Department	01
Chris Meissner	01B	Deputy, Comptroller Department	
Anna Furbush	024	Small Purchases Division	02
Jaimie Brock	10B	Deputy, Corporate Operations Department	
Monica Queen	10E	Deputy, Equality Employment Opportunity (EEO) Diversity & Inclusion	
Edward Buczek	103	Director, Corporate Communication Division	
Cody Allers	105	Director, Security Division	
Laura Shepherd	106	Corporate Business Office Division	
Cindy Ratlif	101B	Deputy Human Resources Division	10
Sally Mellen	1013	Staffing & Classification Branch	
Kelly Close	1021	Facilities Branch	
Katherine Mapp	1031	Public Affairs Officer, Internal/External Communication and Community Relations Branch	
Robert (Bob) Lindee	1032	Visual Information Branch	
Stacy Faison	1043	Information Systems Security Manager	
Bobby Burt	A30	Modular Integration Division	
Chuck Brooks	A25	Organic Systems Branch	
Erin Cotton	A31	Platform Integration Branch	A
Cary Martin	A43	Fleet Tactical Software Branch	
Jeremy Hatcher	A44	Modeling & Simulation Branch	
Dominic Gabresleski	E10	Maritime Mission Systems Division	
Ivan Lugo	E30	Expeditionary Systems Division	
Jesse Miles	E12	Special Operations Fleet Support Branch	
William Hughes	E15	Underwater Systems Dev. & Acquisition Branch	
Wayne Vickers	E23	Command & Control In-Service Engineering Branch	
Stephen Howell	E26	Coastal & Maritime Systems Branch	E
Donald Hainline	E32	Air Cushion Vehicle Technical Services Branch	
Seth Edewaard	E35	Expeditionary Cyber Security Branch	
Tracey Lopez	E51	Surface & Undersea Product Support Branch	
Sviatlana John	E53	Logistics Technical Information Branch	
Richard Bodine	E55	Logistics Technical Data Branch	
George Johnson	E56	Training Systems Branch	
Brian Sauer	X14	Deployed Systems Branch	
Curtis Bruce	X13	Mission Applications Branch	X
Robert Gibson	X15	Threat Analysis Branch	

Forum

The Leadership Forum is the primary leadership and decision-making body for NSWC PCD. These senior leaders work together to cross organizational boundaries to achieve solutions that will move the organization forward toward achieving its strategic vision. The Leadership Forum ensures Panama City Division operates in the most effective, efficient, and safe manor in support of current and future Naval, Joint, and National Objectives both internal and across the Warfare Center enterprise.

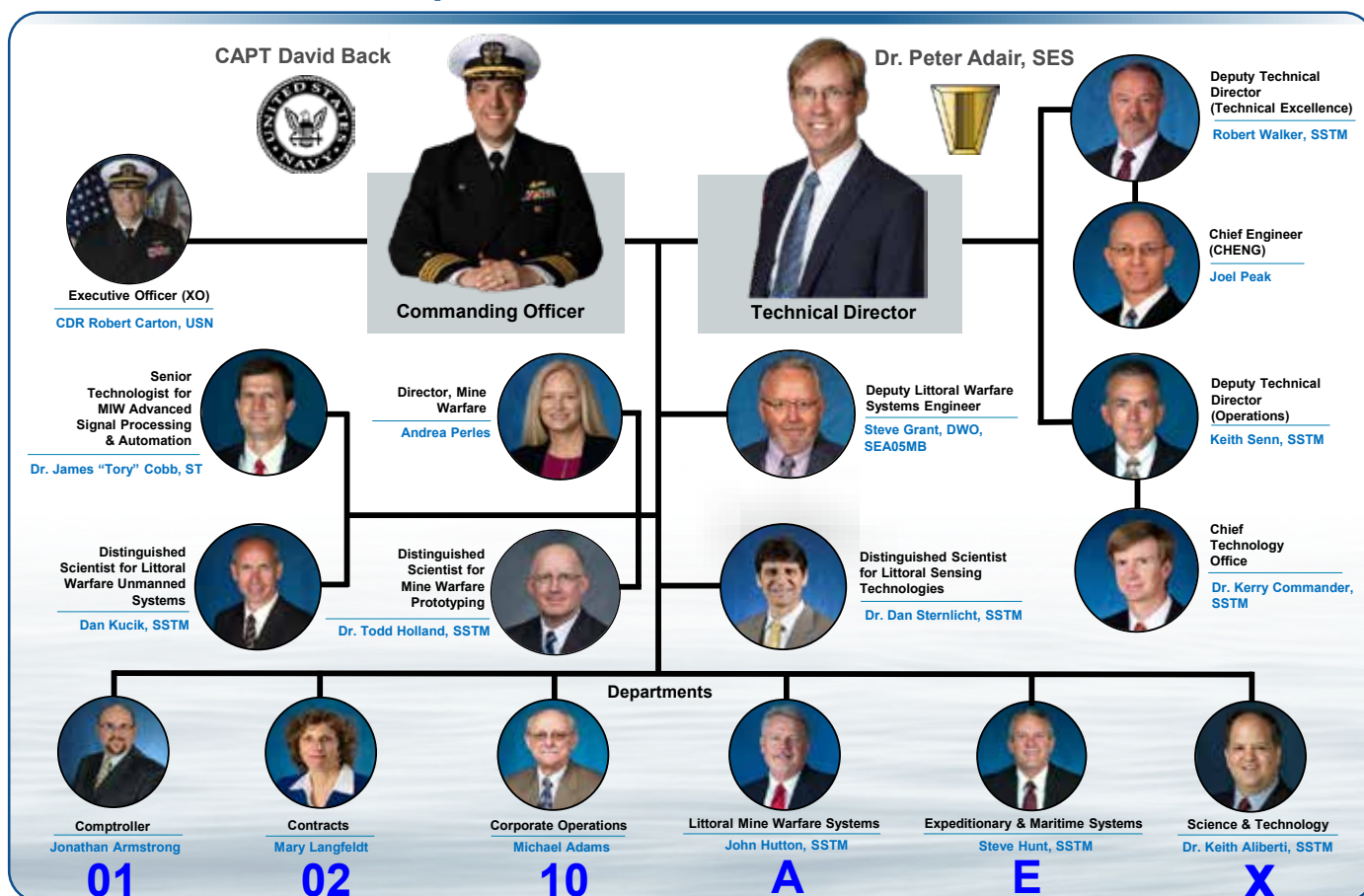
POSITION LEGEND:

SES - Senior Executive Service

SSTM - Senior Scientific Technical Manager

ST - Senior Technologist

NSWC PCD Leadership



CHANGES DURING FY21:



New CHENG:
Ivan Periera



New Comptroller head:
Stacy Gibson

DEPARTMENTS & MISSION AREAS

Chief Engineer (CHENG) Office

The purpose of the CHENG Office is to provide Navy technical expertise in the areas of research, development, test and evaluation (RDT&E), and lifecycle sustainment of Littoral Warfare Systems for NSWC PCD. The office oversees engineering investigations, analyses, and technical program developments at the Command level across the full lifecycle of the Division's assigned mission areas and responsibilities. Additionally, the office is responsible for directing the implementation of engineering policies, instructions, and agreements to ensure that policy is consistently implemented and that quality products are developed in a consistent and repeatable manner. The CHENG Office includes the Chief Engineer and the Competency Leads for key technical competency domains.

Code A: Littoral & Mine Warfare Systems Department

NSWC PCD is the Navy's designated full-spectrum Mine Warfare RDT&E laboratory with over 75 years of in-house knowledge and expertise. The Littoral & Mine Warfare Systems Department capabilities include the development and implementation of new technologies, mission systems integration, and applied system engineering to conduct mining and mine countermeasures. Mine countermeasures include detecting, localizing, identifying, and neutralizing mine threats from deep water through the beach zone. Detection and identification may use magnetics, acoustics, and electro-optics, as well as other technologies. Neutralization uses systems ranging from minesweeping to explosive clearance.

Code E: Expeditionary & Maritime Systems Department

The Expeditionary & Maritime Systems Department conducts and manages research, technology transitions, systems development, integration, test and evaluation, and sustainment programs for Naval Special Warfare, Diving & Life Support, Amphibious/Expeditionary Warfare, and other missions in support of homeland defense and force protection. The Department's activities span the full spectrum of acquisition lifecycle support required to enable Navy, Marine Corps, Special Operation Forces (SOF), Joint Forces, and other related Federal agencies to successfully conduct their mission and to operate globally. In support of the above missions, the Department maintains the health of seven Technical Capabilities and the associated personnel, equipment, facilities, and related processes.



Code X:
**Science &
Technology
Department**

The Science and Technology (S&T) Department performs basic and applied research supporting Navy and Marine Corps missions in Mine Warfare, Expeditionary Warfare, Special Operations, Diving and Life Support, and other applications for Littoral Warfare and Coastal Defense. Maturing technology are integrated into advanced technology demonstrations to provide visibility to the fleet and to support the transitions. The S&T Department maintains the health of eight Technical Capabilities and the associated personnel, equipment, facilities, and related processes.

Code 01:
**Comptroller
Department**

The Comptroller Department is responsible for all financial management functions, including fiscal policy and regulations, budget, accounting, and financial services. In addition, the Comptroller provides command management with technical advice and guidance in the areas of budget formulation and execution, managerial accounting, financial review and management analysis, program analysis, internal control systems, and integrated financial systems. The Department is also responsible for administering all laws, policies, regulations, and directives pertaining to financial management. The Comptroller reports directly to the Commanding Officer, serves as the Chief Financial Advisor to the Division, and is delegated fiduciary authority under Title 31 USC 1517.

Code 02:
**Contracts
Department**

The Contracts Department is responsible for the end-to-end management and execution of the contract process from solicitation, proposal, evaluation, and award through contract closeout. Code 02 manages and directs the contract functions, which support the Warfare Center's technical programs and missions. Contracting is the process by which NSWC PCD acquires supplies and services. Code 02 is organized around three Contract Divisions and an Engineering Liaison Office. The three Contract Divisions are composed of the Littoral and Mine Systems Contracts Division, Expeditionary and Maritime Systems Contracts Division, and a Small Purchase Division.

Code 10:
**Corporate
Operations
Department**

Corporate Operations Department manages and directs the business functions, which support the Warfare Center's technical programs and missions. Key functions include Human Resources Management, Infrastructure, Public and Congressional Affairs, Information Technology, Security, Corporate Business Office, and Property Management.



Strategic Campaign Plan Fiscal Year (FY) 21

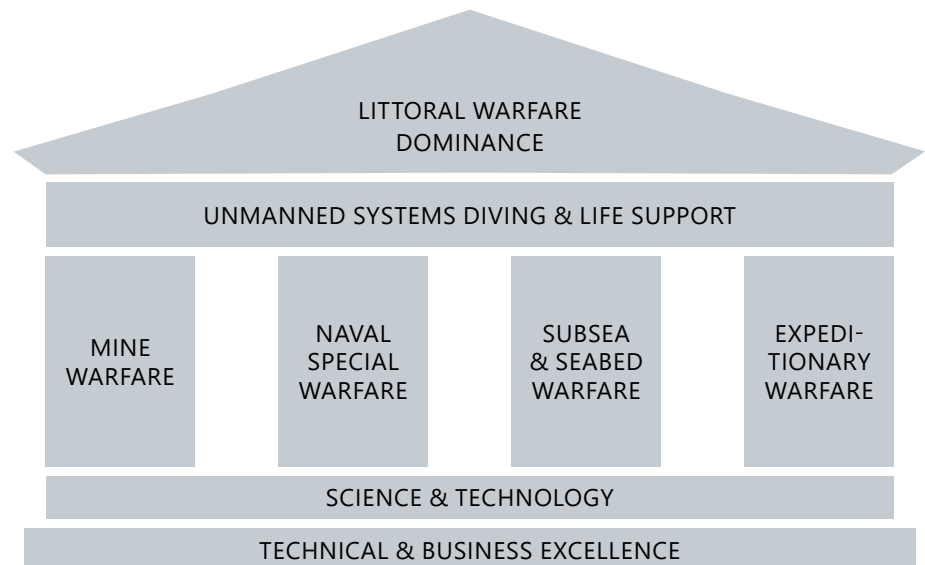
Since the launch of the FY19 – FY23 NSWC PCD Strategic Campaign Plan, strategy efforts at NSWC PCD have been in full swing. FY21 was no exception, with many accomplishments related to both strategic planning and execution.

From a strategic planning perspective, NSWC PCD held two strategic offsite events in FY21. In the spirit of Dr. Adair's approach to uniting all of NSWC PCD's Departments as One Team, attendance included the broad leadership team from the Business Departments and the Technical Departments.

The first strategic offsite event was held as hybrid virtual and in-person event in April 2021. The event focused on thinking about the future of each of the Division's Technical Pillars, as well as a future look at key business functions of Information Technology and Facilities. At the event, the Division's new Chief Strategists, Technical Program Managers, and Department Heads in Littoral and Mine Warfare Department (A Department), Expeditionary and Maritime Systems Department (E Department), and Science and Technology Department (X Department) presented a forward look at opportunities and needs in their respective mission areas.

By asking the question of "Who do we want to be as an organization?", Dr. Adair invited the leadership team to consider how we can be intentional with decision making and resources to ensure NSWC PCD provides meaningful support for today's Navy, tomorrow's Navy, and the Navy after next.

The second strategic offsite event was held in August 2021 as a fully virtual event using Flank Speed Teams. The strategic offsite took an in-depth look at the vision for strategic planning at NSWC PCD, as well as plans for FY22 related to the Division priorities of enabling effective execution and supporting our most valuable resource – our people. Teams in the Strategic Planning Office (00X), CHENG's Office (00E) and Quality Office (00Q), EEO, Diversity, and Inclusion (10E), Human Resources (101), Information Technology (IT), and the Corporate Business Office (106) presented during the two-day session. Focused discussion occurred to determine how the Command can support the key managerial role of Branch Heads, and to determine how to prepare employees to take on these important leadership positions in the future.





Strategic Execution

From a strategic execution perspective, NSWC PCD celebrated several notable accomplishments in FY21:

GOAL 1 Rapidly Deliver Solutions to Ensure Warfighting Dominance

- Under the leadership of NSWC PCD's Director for Rapid Prototyping for Mine Warfare Dr. Todd Holland, the Center for Innovation opened the doors to the Maker Space and Collaboration Space in Command buildings.
- The NSWC PCD Quality office and the Property Management Division partnered to improve the efficiency and effectiveness of the procurement timeline.
- In partnership with Naval Meteorology and Oceanography Command and Naval Research Lab Stennis, NSWC PCD launched the Gulf Coast Tech Bridge under the leadership of the Director of Strategy and Engagement, Holly Gardner.

GOAL 2 Be the Undisputed Technical Experts in the Littoral Battlespace

- Based on deficiencies identified in the Business Capability Health Assessment, staffing was increased in key areas which enable NSWC PCD Strategic Goals including the Chief Technology Office, EEO, Diversity, and Inclusion Office, Human Resources, and the Corporate Business Office.
- Being an undisputed technical expert implies the ability to gauge emerging trends and opportunities so as to prepare for the future fight. Given an obvious extension of our long-term expertise in seabed sensing and acoustic target characterization, NSWC PCD established a new Technical Capability (TC) in Subsea and Seabed Systems. This TC has allowed strategic alignment of personnel and strengths throughout multiple departments towards specific growth opportunities supporting our Technical pillar of Subsea and Seabed Warfare.



GOAL 3

Be Recognized as a Model Organization

- The Division welcomed our new Deputy Director for EEO, Diversity and Inclusion (ED&I), Monica Queen, and several key personnel in the ED&I Office.
- Twenty participants completed the pilot of the Level three Leadership Development Program offered by NSWC PCD's Workforce Development. Level three focuses on the Advanced Leadership skills required to Lead People.
- The Corporate Operations Department helped NSWC Panama City Division embrace the virtual environment by supplying tools to the entire workforce including cellular mobile devices, a long awaited technical refresh of computers, webcams and headsets, and even customized NSWC PCD backgrounds for use on video conferences.
- With the leadership of the Command's new full time Science, Technology, Engineering, and Mathematics (STEM) Outreach Program Manager, Chris Voorheis, the STEM Outreach Program expanded activities to inspire and encourage the Navy's next generation of scientists and engineers.
- Lean In Circles continued to host monthly meetings with the purpose of creating a more diverse and inclusive environment by empowering employees to bring their whole-self to the workplace.
- New Employee Network continued hosting engagement activities in the community for employees who are new to NSWC PCD and are looking to network with others.
- Finally, the Corporate Communication Division doubled efforts to ensure the lines of communication remained open with the workforce despite the remote work environment. Communication methods included the Commanding Officer's Daily All Hands, Fusion posts, Digital Signage, Facebook posts, LinkedIn posts, the *Coastal Compass* magazine, the Stall Seat Journal, informational video spots and campaigns, various newsletters, and more!





Procurement Initiative Optimization Project (PIOP)

- PIOP began in the Command Quality and Continuous Process Improvement Office (00Q) as a way to find improvements within the purchasing process.
- The 00Q team began working with the Purchasing Branch (Code 1071) to establish and solidify a Quality Management System (QMS).
 - A QMS is required by NAVSEA. All Warfare Centers must have an established QMS.
 - A QMS is a tool that will help our organization achieve control and consistency of our processes and services. Establishing this QMS will ensure everyone within a project/group has the training they need and it is up to date, everyone is following the same standard operating procedures (SOPs) and has a hand in improving those procedures, and that the group is reviewing good metrics to see how they are doing and what they can do to work toward continual improvement.
- Code 1071 has made excellent gains (listed below) through this process:
 - The creation of an “URGENT” purchase category that significantly speeds up the time needed to receive time-sensitive material.
 - The establishment of written SOPs that enable processes to be documented, auditable, and repeatable.
 - The identification of desirable metrics that provide trend analysis for continual improvement.
 - P-card full cycle times decreased over an 18-month period and the standard deviation of those orders also decreased.
- 00Q developed QMS training that will be implemented across the Command.
- 00Q continues to investigate business risk.

Warfare Center (WC) Quality Management Community of Practice (CoP) Virtual Assist Visit

- 00Q participated in the Warfare Center Quality Assist Visit Assessment on April 27-29, 2021.
- The assessment was to determine if NSWC PCD has met the intent of the NUWC/NSWC INST 4855.1B - Quality Management System Policy and ISO 9001:2015 Quality Management Systems requirements.
 - The assessment was performed by Division Quality Directors from NSWC Indian Head, NSWC Corona, and NSWC Port Hueneme.
 - NSWC PCD's QMS and associated documents were reviewed and evaluated.
- The findings indicated that NSWC PCD's QMS implementation under the responsibility of NSWC PCD Code 00Q appears to be trending towards mature.
- This is significant not only due to the Naval Sea Systems Command (NAVSEA) requirement but because a mature QMS will enable NSWC PCD to identify, measure and control, and improve various core processes that will ultimately lead to improved performance.

SEAL Delivery Vehicle Audit

July 12-16, 2021

- A five-day internal audit was conducted by 00Q for the Special Operations Fleet Support Branch for NAVSEA NOTE 5000 certification in support of the MK 11 SEAL Delivery Vehicle project. The purpose of the audit was to determine adequacy and conformance to the NAVSEA Deep Submergence System Functional Audit requirements. The audit was scheduled to evaluate E12's readiness to provide both In-Service Engineering Agent and Depot support to the SDV MK 11 ahead of the NAVSEA functional audit in FY22.
 - Audits are a point-in-time look at the overall system with this audit having its focus primarily on the Deep Submergence Systems – Scope of Certification NOTE 5000 requirements.
- The audit team consisted of eight independent auditors including the Wet Combat Submersible Technical Warrant Holder who resides at NSWC PCD. The auditors performed an extensive review, spanning a five-day period, covering all of the functional areas in the Audit.

OUR PEOPLE

2021 Awards



OCTOBER - DECEMBER 2020

BLACK ENGINEERS YEARLY
AWARDS OUTSTANDING
ACHIEVEMENT AWARD,
MODERN-DAY
TECHNOLOGY LEADER
Chinyere Ukazim

NAVY CIVILIAN SERVICE
COMMENDATION MEDAL
Lynn Sokoloski

BLACK ENGINEERS YEARLY
AWARDS OUTSTANDING
ACHIEVEMENT AWARD,
SCIENCE SPECTRUM
TRAILBLAZER
Sarah "Ashley" Catlin

NAVWAR LIGHTNING BOLT
AWARDS FOR CY₂₀ QTR 3
Kent Snyder

NAVY CIVILIAN SERVICE
MERITORIOUS MEDAL
David Vickers
Lynn Sokoloski

NAVWAR LIGHTNING BOLT
AWARDS FOR
CY₂₀ QTR 2
X2J Team

JANUARY - FEBRUARY 2021

NAVY CIVILIAN SERVICE
MERITORIOUS MEDAL
DR. JOHN CAMPERMAN

COPERNICUS AWARDS
Stephen Howell

MARCH - APRIL 2021

TESTER IN THE SPOTLIGHT
Randy Hetzel
Darryl Odgen

OFFICE OF SECRETARY
OF DEFENSE JOINT
CAPABILITY TECHNOLOGY
DEMONSTRATION
PROGRAM OF THE YEAR
Quick Strike Extended
Range Team

NAVY CIVILIAN SERVICE
COMMENDATION MEDAL
Ronald Stonecypher

DoN INFORMATION
TECHNOLOGY EXCELLENCE
RISING STAR OF THE
YEAR AWARD
Daniel Jermyn

NAVY CIVILIAN SERVICE
ACHIEVEMENT MEDAL
Anthony Bleichner
Jacob Cornman
Kirk Vanzandt
Zhen Zhang
Jeffery Eichler
Joshua Kogot
Travis Hand
Jonathan Chapman
Dr. Chris Musto
Andrew Schicho
Jesse Waymire
Lacie Meeks
Dustin Bride
Gavin Taylor
Greg Murphy
Holly Gardner

JULY - AUGUST 2021

NAVY CIVILIAN SERVICE
MERITORIOUS MEDAL
Wes Hughson

WARFARE CENTER
INNOVATION AWARD
Alex Dence

Clandestine Delivered
Mine Project Team
The Naval Sea Systems
Command Live Virtual
Constructive Team

SEPTEMBER - OCTOBER 2021

NATIONAL DEFENSE
INDUSTRIAL
ASSOCIATION (NDIA)
BRONZE MEDAL
Dr. Daniel Sternlicht

Annual Awards

The NSWC PCD Annual Awards, also known as the Commanding Officer and Technical Director (CO/TD) Awards, is a prestigious event that provides the Command with the opportunity to showcase and acknowledge the great work accomplished by our civilian employees here at NSWC PCD. This event highlights achievements and provides knowledge about future initiatives. This event has been held for many years with hundreds of recipients.

Each year, individuals are selected amongst a highly competitive pool of nominees. The accomplishments, accolades, and the great work of our people here at NSWC PCD are too numerous to count. To every nominee and each member of the NSWC PCD family who impacts our mission daily, the CO/TD say "thank you" to all.

Each year, one individual is inducted into the NSWC PCD Hall of Fame. The employee must have been retired from NSWC PCD a minimum of 5 years.

BUSINESS EXCELLENCE

Katherine Mapp

CAREER ACHIEVEMENT

John Dudinsky

COLLABORATION EXCELLENCE

Barracuda Team

DR. DAVID P. SKINNER OUTSTANDING SCIENTIFIC & ENGINEERING

Neil Matson

EXCELLENCE IN BUSINESS INNOVATION

Support Agreement Routing Tool (SART) Team

EXCEPTIONAL TECHNICAL SUPPORT

Dr. Melissa Marchand

EXEMPLARY LEADERSHIP

Brian Brock

DeAnna Pedersen

NEW EMPLOYEE EXCEPTIONAL ACHIEVEMENT

Tinsley Ihaksi

OUTSTANDING FLEET SUPPORT Landing Craft Air Cushion (LCAC) Support Services

OUTSTANDING INNOVATION

Stephen Weathers

OUTSTANDING ORGANIZATIONAL SUPPORT

Donald Stanfill

IM CUSTOMER SERVICES TEAM

OUTSTANDING PROGRAM SUCCESS

Multi-Vehicle Communication Systems (MVCS) Team

OUTSTANDING TEAM ACHIEVEMENT

Precise Integrated Navigation System (PINS) In-Service Engineering Agent (ISEA) Team

TECHNICAL EXCELLENCE

Stefanie Barron

HALL OF FAME

BARRY MILLER

Patents

SELF-SURVEYING NAVIGATION SYSTEM FOR UNDERWATER NAVIGATION

*John Dudinsky
Philip Bernstein
Paul Moser
Daniel Kucik*

MAGNETICALLY ACTUATED FLUID CONTROL VALVE

Bryan Reynoso

PRESSURE DIFFERENTIAL PAYLOAD RELEASE MECHANISM

*Joseph Jacquemin
Bryan Reynoso*

VEHICLE RAMP RESTRAINT APPARATUS

*James Sovel
John Ducote
Hal Rhea*

MARINE BIODEGRADABLE COMPOSITION FOR 3D PRINTING

*Joshua Kogot
Matthew Kincer
April Hirsch*

NON-INVASIVE METHOD OF AFFIXING SURFACE COMPONENTS TO MARITIME EQUIPMENT

Robert Conner

TUNABLE CONTACT MICROPHONE

Frank Downs, Jr.

TELESCOPIC-WIDTH MINE ROLLER

*Jeremy Croom
Dustin Bride
Daniel Coats
Patrick Delay
Bobbi Wood*

MODULAR & SCALABLE

*MINE ROLLER
Dustin Bride
Patrick Delay
Jeremy Croom
Bobbi Wood
Daniel Coats*

VETERANS



Michael Adams
U.S. Navy



Alvin Albright
U.S. Navy



Wynne Bischoff
U.S. Air Force



Greg Boone
U.S. Navy



Greg Brakey
U.S. Air Force



Shelby Cornelius
U.S. Navy



Jennifer Davis
U.S. Air Force



Byron Diltz
U.S. Air Force



Lee Dittman
U.S. Navy



David Hawes
U.S. Navy



Robert Lindee
U.S. Army



Corey Lounsbury
U.S. Navy; USN Reserves



Shauna Love-vonKnoblauch
U.S. Air Force



Tory Lynch
U.S. Air Force



Dave Neet
U.S. Navy



Ronnie Newsome
U.S. Navy



Joshua Peters
U.S. Marine Corps



Anthony Powers
U.S. Air Force



Eric Queen
U.S. Marine Corps



Christopher Sutton
U.S. Army;
Florida Army National Guard



Mary (Kay) Thomas
U.S. Navy



Curtis Turner
U.S. Navy



Jeremy vonKnoblauch
U.S. Air Force



David Brown
U.S. Navy



Edward Buczek
U.S. Navy



James Burks
U.S. Navy



Tommy Bushman
U.S. Marine Corps



Eric Carlson
U.S. Air Force



Anthony Jones
U.S. Air Force



Donald Kiper
U.S. Navy



Eric Kosmoski
U.S. Marine Corps



Jeffrey Krajewski
U.S. Army



Sally Mellen
U.S. Air Force



Johnnie Messer
U.S. Navy



David Miller
U.S. Marine Corps



Lena Moretz
U.S. Air Force



Steven Rutledge
U.S. Navy



John Sanderson
U.S. Navy



Evan Sarantos
U.S. Navy



Ann Marie Shover
U.S. Air Force



Robert Smith
U.S. Navy



Cornelia Watkins
U.S. Army



Christopher Weller
U.S. Navy



Cindy Williams
U.S. Navy



Shayna Zeleznik
U.S. Marine Corps



CHENG

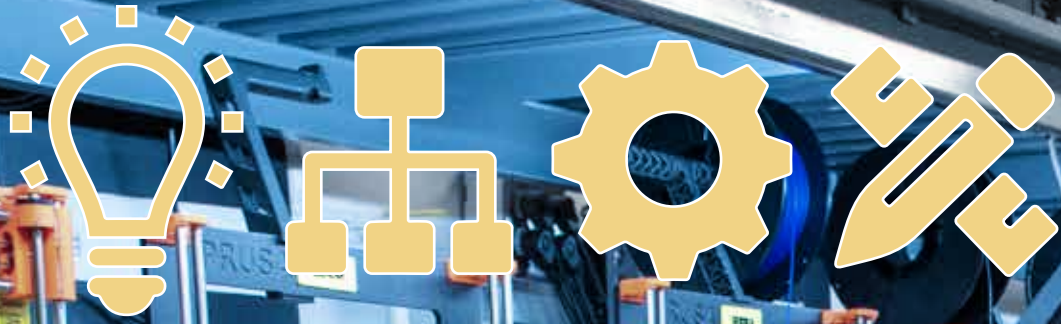
CHIEF ENGINEER OFFICE

Completed and signed out NSWCPD-DINST 5000.1 – Project Management (PM) Policy which establishes minimum requirements for project management at NSW PCD. The PM policy identifies the fundamental best practices in project management applicable to all NSW PCD technical projects. It allows for the consistent delivery of quality products that are on time and within budget, satisfy our sponsor's requirements, and enable our warfighters with suitable and effective capabilities.

Rolling out the Competency Proficiency Program (CPP) to the Department Chief Engineers, Senior Systems Engineers, Technical Project Managers, Senior Software Engineers, and Chief/Senior Logisticians so senior personnel in several competencies could attain their required proficiency levels. These positions attaining their CPP proficiency levels allows them to become Subject Matter Experts and mentors for junior personnel completing their CPP proficiency packages. The CPP ensures that our technical workforce demonstrates proficiency in their applicable competencies by documenting their experience in the competency.

Established the Cybersecurity competency proficiency standards and updated the Project Management and Systems Engineering proficiency standards. The addition of the Cybersecurity proficiency standards allows for another competency to be added to the CPP and for our senior personnel in the Cybersecurity competency to demonstrate their proficiency. Future competency proficiency standards will be added to the CPP in the next fiscal year.

STEM Outreach



Science,
Technology,
Math &
Engineering
(STEM) REACHED

3,900+
STUDENTS



via STEM Camps and
NSWC PCD Scientist
@ School programs.

NSWC PCD's area of influence increased to five counties
through partnerships with Florida State University Panama City's

STEM-ON-THE-MOVE CAMPS:

WASHINGTON BAY SEMINOLE WALTON CALHOUN

NSWC PCD STEM **445** 
Competitions reached STUDENTS

FIRST
ROBOTICS

22
grants
awarded

11
new
teams

20
title 1
schools

SeaPerch
COMPETITION

51
teams

6
counties

12 
HIGH SCHOOL
STUDENTS
PARTICIPATED
IN NSWC PCD
APPRENTICESHIP
PROGRAMS



8 week long
design
project

Used the NSWC PCD
**Center for
Innovation**

**Science &
Engineering
Apprentice
Program**
experience

Continued
mentorship
beyond
apprenticeship

A20 - Mine Warfare Sustainment Division

HIGHLIGHT:

A Department's A20 Division, the Mine Warfare Sustainment Division, significantly enhanced and supported surface and airborne mine countermeasures system operators deployed across the globe in FY21 through on-site tiger teams as well as reach-back support. On-going support for mine countermeasures (MCM) systems has resulted in some of the highest operational availability (Ao) and materiel availability (Am) and lowest down-time for these operational systems ever seen in their 30+ years of operational use.

DESCRIPTION:

To ensure legacy Surface and Airborne MCM systems were able to meet Fleet requirements as the platforms continue to be extended beyond their initial planned life, NSWCD implemented Conditional Assessment Repair and Evaluation (CARE) visits to the ships and Squadrons starting in June 2010. This has paid great dividends over the years. For FY21, our CARE visits included installing the AN/SSN-2(V)5 Precise Integrated Navigation System (PINS) Build 5.1 and Voyage Management System (VMS) 9. This major navigation upgrade was conducted on all eight MCM ships within FY21. The PINS and VMS joint navigation upgrade resolved major obsolescence issues and brought the MCM 1 Class ships into compliance with Navy cybersecurity requirements.

Additional CARE visits were conducted on *USS Gladiator* (MCM-11) where the AN/SLQ-60 SeaFox In-Service Engineering Agent (ISEA) team provided fiber-optic link-loss training to the ship's crew, *USS Devastator* (MCM 6) where the ISEA demonstrated maintenance procedures found in the AN/SLQ-60 Interactive Electronic Tech Manual (IETM), and *USS Chief* (MCM 14) where the AN/SQQ-32(V)4 ISEA provided Towed Body Detect Sonar electronics booster board removal and replacement training to the sailors.



Fleet tactical data collection was conducted through the Mine Warfare Readiness and Effectiveness Measuring project, which completed planning and execution of two major events in FY21. The first major event centered on the AN/AQS-24B sonar and MK 18 Mod 2 Small Synthetic Aperture Minehunter cross-hatching planning tools and tactics. The second major event was an Intelligence Preparation of the Operational Environment event in conjunction with Commander U.S. 6th Fleet during Baltic Operations.

The AN/AQS-24C Mine Detection Set ISEA provided introductory maintenance training to Helicopter Mine Counter Measures Squadron FIFTEEN. This system provides a volume search capability. The Mine Warfare Program Office delivered nine systems to the squadron.

The AN/AES-1 Airborne Mine Laser Detection System (ALMDS) ISEA fielded one additional ALMDS Pod to the Fleet, completed a software upgrade via NAVAIR 20-2 Product Test Verification (PTV) 20-2, submitted and received approval to expand the periodic maintenance from 1-year to 2-years, and received a new ALMDS MK-835 aluminum shipping container. These combined efforts resulted in an Ao of 0.94 and an Am that is 18% higher than Fleet demand.

The AN/SQQ-235, Airborne Mine Neutralization System Archerfish ISEA fielded 10 additional systems to the Fleet, validated the Tooele Army Depot (TEAD) depot capabilities, conducted battery, motor controller, and software upgrades to the MK 64 and MK 65

Destructors at TEAD, resolved a sonar/video pause issue with older systems, and implemented a change to the overhaul schedule. These combined efforts resulted in a cost avoidance of \$66.6M over the life of the program.

IMPACT:

The Mine Warfare Sustainment Division continues to provide world class service to the surface and airborne mine countermeasures communities. A20's efforts resulted in Ao and Am increases across their portfolio of systems, whilst avoiding substantial life cycle costs to ensure the systems they support remain relevant, effective, and suitable to the Warfighter.



The Underwater Mine Countermeasures Tactics team executed five MINEnet Tactical Operational Planning courses, four Real Aperture Sonar Post Mission Analysis sustainment courses and five MCM Commander Continuum courses in support of Explosive Ordnance Disposal (EOD) forces, as well as completing thirty EOD master boards.

A10 - Mine Warfare Systems Development Division
A30 - Modular Integration Division
A40 - Analysis, Tactics, & Simulation Division

A40 - Analysis, Tactics, & Simulation Division

HIGHLIGHT:

In FY21, A Department's A40 Division, the Analysis, Tactics, and Simulation Division, provided critical Fleet mine countermeasures (MCM) tactical training support, as well as Fleet tactical data collection. This ongoing process allows for continual improvement of Fleet tactical readiness and efficiency.

DESCRIPTION:

Several teams within the Tactics Branch/Analysis, Tactics, and Simulation Division provided critical Fleet MCM tactical training support, as well as Fleet tactical data collection. The Integrated Tactics team provided in-theater training and on-site tactical support to several Fleet commands, including Mine Countermeasures Squadron (MCMRON) 3, Explosive Ordnance Disposal (EOD) Mobile Unit 8, and NATO units during Baltic Operations Exercise 2021. Additionally, the team executed two virtual MCM Staff Continuums classes in support of MCMRON 3 and Commander Task Group 68.3, and one on-site Continuum class in support of Commander Task Force 52.

HIGHLIGHT:

Three of A Department's divisions led critical shipboard and environmental test events throughout FY21 required for the Mine Countermeasures Mission Package Unmanned Surface Vehicle (MCM USV) to achieve Milestone C / Initial Operating Capability. The MCM USV will provide the first fleeted organic unmanned minesweeping capability to the surface fleet.

DESCRIPTION:

A coalition of projects and teams in Code A, supported by other NSWC PCD personnel and working with multiple other warfare centers and organizations, successfully completed critical major shipboard and environmental tests of the MCM USV in FY21 required to achieve Milestone C / Initial Operating Capability. These tests include the MCM USV Minehunting Pruning and Near Surface Airborne Laser Mine Detection System Overlap Test (June – July 2021 in Panama City, Fla.); MCM USV Unmanned Influence Sweep System (UISS) Cyber Security Evaluation (September 2021, Aberdeen Test Center, Md.); MCM USV UISS Underwater Explosion (UNDEX) Survivability test (August 2021, Aberdeen Proving Grounds, Md.); UISS Technical Evaluation (TECHEVAL) Phase 1 (October-November 2020, *USS Cincinnati* (LCS 20), San Diego, Calif.); UISS TECHEVAL Phase 2 (March-April 2021, *USS Manchester* (LCS 14), San Diego, Calif.); and UISS Initial Operational Test & Evaluation (May-June 2021, LCS 20, San Diego, Calif.).

CODEE

EXPEDITIONARY & MARITIME SYSTEMS DEPARTMENT

E10 - Maritime Mission Systems Division

HIGHLIGHT:

E Department's E10 Division, the Maritime Mission Systems Division, significantly enhanced the capabilities of military diving in 2021 through two game-changing achievements by its Rebreather Systems Development Team.

- The team designed, tested, and delivered a first-of-its-kind Inhalation Breathing Gas Temperature Enhancement System with improved thermal performance for diver's Inhalation Gas.
- Facilitated the approval of an Emergency Gas Supply (EGS) used for training with a mixed gas rebreather.

DESCRIPTION:

Unsuccessful experimental cold water dives at the Navy Experimental Diving Unit (NEDU) lead to an urgent need for a device that would raise the inhalation breathing gas. With much dedication and a heavy focus on innovation, in three short months the NSW PCD personnel were able to design, test, and deliver production units in support of certification testing for a revolutionary Inhalation Breathing Gas Temperature Enhancement System. This system increased inspired gas temperature substantially and required no ancillary power. Furthermore the system provides improved performance to the fleet operators due to

its current materials and component list which have removed obsolescence cost and procurement issues with current systems. In 2021, another experimental cold water dive was conducted at NEDU with the new technology. The results were successful and unprecedented, as the divers were able to complete the duration required for the challenging dive profile.

The Rebreather Systems Development Team's second game-changing achievement in 2021 involved helping certify the first-ever portable mixed gas EGS for Navy diving.

Neither of these accomplishments would have been possible without NSW PCD's unequalled knowledge of diving & life support systems, Hydrospace's testing capability, and utilization of on-base and contractor production resources. Both efforts were sponsored by the Advanced Undersea Systems Program Office's Research and Development projects.

IMPACT:

Both of these accomplishments will allow the Special Research Diving Detachment to increase operational effectiveness with less equipment than ever before. This technology could also be used for additional cold water diving applications, keeping navy divers warmer and safer by the improved performance.

E30 - Expeditionary Systems Division



HIGHLIGHT:

In FY 2021, E Department's E30 Division, the Expeditionary Systems Division, took a big step in advancing the Landing Craft, Air Cushion (LCAC) 100/Ship-to-Shore Connector (SSC) program's first in class LCAC by successfully accomplishing Post-Delivery Test & Trials (PDT&T) test objectives and resolving engineering challenges as the program marches towards fleet introduction in FY22. The SSC program is providing the fleet with the replacement capability to the aging legacy LCAC.

DESCRIPTION:

NSWC PCD employs the Navy's premier Air Cushion Vehicle (ACV) experts capable of taking ACVs from technical development to fleet integration and sustainment. The NSWC PCD ACV Center of Excellence is the team behind the pointy end of the spear of the Expeditionary Force's most advanced connectors, LCAC and SSC. In FY21, the NSWC PCD Hull, Mechanical, and Electrical Engineering Team, the Command, Control, Communication, Computers, and Navigation Team, the Cyber Team, and the LSS Team supported

the SSC program by accomplishing PDT&T test objectives, as well as troubleshooting and resolving various engineering challenges that emerged following delivery from the production facility. PDT&T progress is a critical, required acquisition activity for a program as it makes its way to fleet delivery, verifying and validating the Key Performance Parameters of the craft and characterizing the safe operating envelope of the craft for Fleet use. The team's FY21 accomplishments supported the grooming of the craft for a successful fleet introduction in FY22, where LCAC 101 and 102 will transition from Panama City, Fla. to ACU4. LCAC 102 was delivered to the Navy in FY21, and transited from Textron to Panama City, Fla. in June of 2021.

IMPACT:

The big beneficiary of PCD's LCAC 100/SSC efforts is the Navy's expeditionary Force, providing both the expertise to support progress against acquisition milestones and, ultimately, a more capable craft to support the Fleet.



HIGHLIGHT:

Code E40, the Test & Evaluation and Prototype Fabrication Division, supported the testing of an important Defense Advanced Research Projects Agency (DARPA) project in FY21 called the Electra, which involved a Very Low Frequency (VLF) Transmission system tethered via a kite onto NSWC PCD's *Sea Fighter* vessel.

DESCRIPTION:

This Electra program was created to develop and demonstrate the capabilities of electrically-small apertures within the VLF band that could be transported and rapidly deployed from small, mobile platforms. This goal required shrinking the traditionally large, fixed antennas that normally operate in this band down to practical sizes on the order of hundreds of meters. Test and evaluation receivers are used to evaluate the system. During the first test event, new characterizations of VLF transmission that have never recorded before were achieved. The final goal of the program is to experimentally verify the boundaries between output and transmit power by pursuing a series of one-way propagation experiments within the maritime environment. DARPA is developing the technology with plans to transition it to the Navy.

NSWC PCD was best positioned to achieve successful testing of the novel VLF transmission system due to the unique capabilities offered onsite and its geographical location. E40 offered a very experienced group of test personnel well versed in executing complex test events required for the DARPA Strategic Technology Office level Testing. NSWC PCD's operational platform R/V *Sea Fighter* also presented various unique capabilities required for this test event. For example, the *Sea Fighter* offered a large deck space for an abnormally large custom CONEX box and two transmitter systems, large mission bay for addition berthing and lab space, as well as the ability to operate offshore in raised sea states and remain offshore for an extended period of time. The mission bay also provided additional radiofrequency shielding for personnel.

NSWC PCD is flanked by Eglin Air Force Base, Fla., which controls the W-151 Warning airspace within the Gulf of Mexico south of NSWC PCD. NSWC PCD maintains an active Test Directive with Eglin that includes the *Sea Fighter*, allowing for streamline collaboration and scheduling of require Airspace.

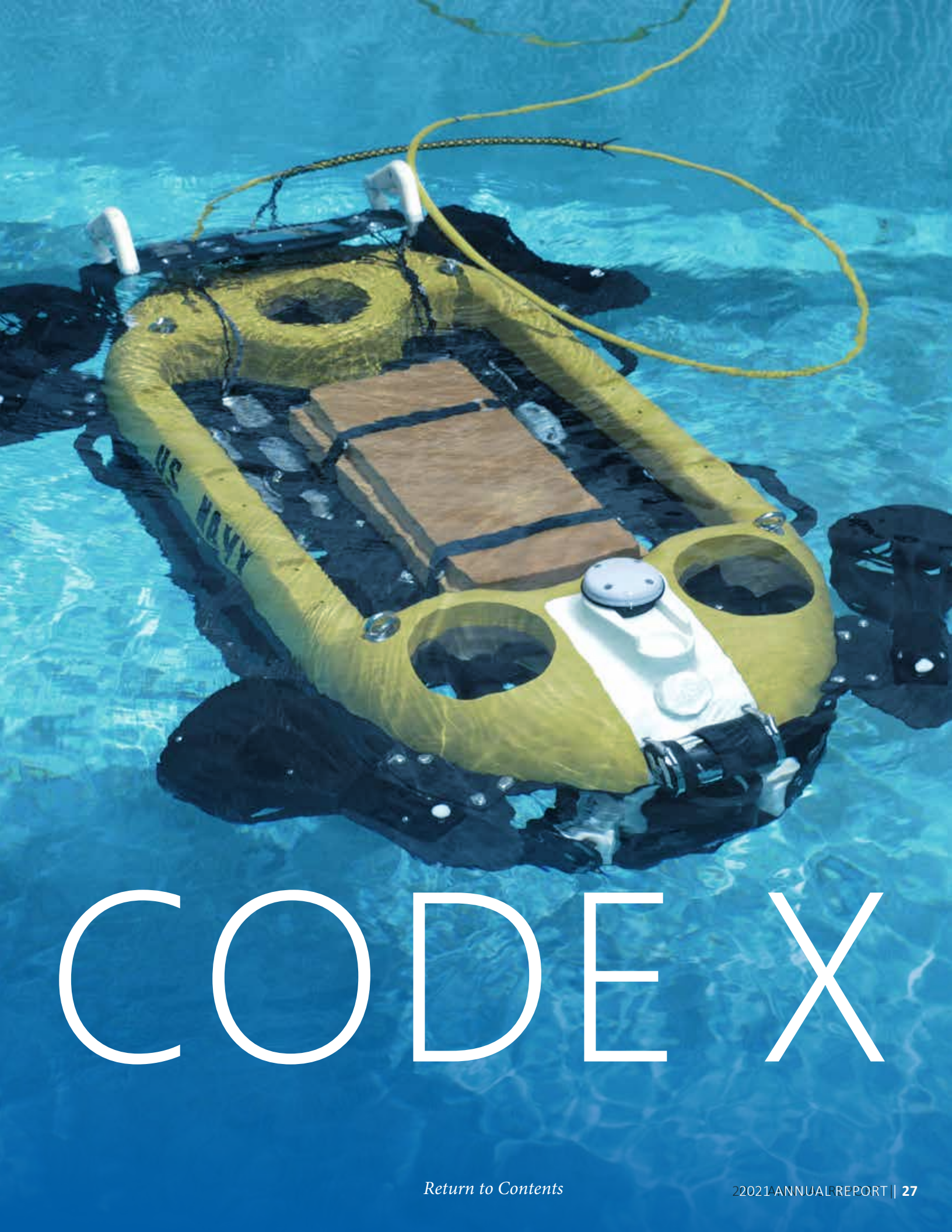


The VLF transmission system operated at a height of 950 meters and require a large Department of Defense-controlled operation area.

NSWC PCD's geographic location also presented a special opportunity to allow multiple receiver sites be set up along the Louisiana/Mississippi Gulf Coast and the Florida panhandle and peninsula. This allowed partner Naval Undersea Warfare Center Newport to provide a complete evaluation of the transmit area to better characterize the VLF transmissions without incurring additional cost of offshore vessel receiver sites.

IMPACT:

Implementing a maritime deployed electrically-small aperture mobile transmitter in the VLF spectrum has never been done before. During the testing, the system was also able to demonstrate frequency changing agility that has never been seen with VLF transmitters. Future tests are being planned to develop and demonstrate digital beam forming in the VLF spectrum along with improving signal strength utilizing an array of transmitters.



CODE X

Application of Computational Fluid Dynamics and Numerical Techniques to the Calculation of Equilibrium Sail Shapes and Integrated Aerodynamic Properties for an America's Cup AC75 Mast/Mainsail System

DESCRIPTION:

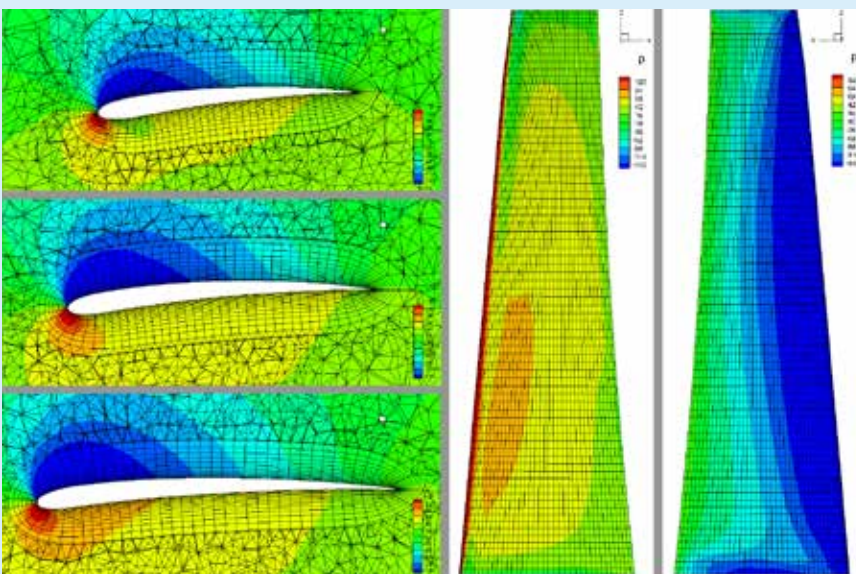
For more than two decades, hydrodynamics researchers have developed software to support computational fluid dynamics research that has supported answering basic questions aligned with mission areas such as mine countermeasures (MCM). Over the years, we have had many successes supporting programs both internal and external to X Department. Due to the sensitive nature of some of our work, we are not always able to publish our work to receive the critical review required to validate our research, as is typically done in academic settings; without this feedback, it is not always possible to properly judge the validity or quality of one's own research. To balance the sides of protecting sensitive information and validation through the peer review process, we have applied our expertise and techniques to the problem of yacht sail equilibrium. In doing so, we receive validation for our techniques, while simultaneously avoiding divulging any project-specific sensitive information. Recognizing the connections and similarities between hydrodynamics and aerodynamics, we now describe the ship sail problem and our approach to analyze its equilibrium state using a novel Fluid-Structure-Interaction (FSI) algorithm. Not only do we validate our underlying numerical approaches, but we also contribute to the larger body of scientific research, as well.

It is our understanding that during the design process for an AC75 Class yacht, many sail shapes are proposed and analyzed aerodynamically under the explicit assumption that the sails are rigid structures.

The associated implicit assumption being that virtually any 'flying' sail shape can be achieved via a combination of sail-making techniques and on-the-water sail shape controls. In this context, it's natural to ask if a proposed sail shape - along with its associated tension field and aerodynamic properties - is indeed in equilibrium with the applied aerodynamic and control loads, and is in fact a physically realizable 'flying' sail shape. This basic question - whether a proposed sail shape is indeed an equilibrium shape under a specific set of conditions - is the primary motivation for pursuing an aeroelastic simulation of an AC75 Class mast/mainsail system.

IMPACT:

Here, we use a novel FSI algorithm to investigate the equilibrium aeroelastic configuration and aerodynamic characteristics of an AC75 mast/mainsail system that is consistent with the published AC75 Class Rule. In the study, we use the Euler equations to simulate the aerodynamic properties of the sail while the sail shape is simulated using a geometrically nonlinear structural model of an elastic membrane incorporating a novel constitutive prescription for the sailcloth that maintains a tension field within the sail during the iterative solution procedure. Some initial computed results from the study can be seen in the figure. The result matches the expected outcome and provides validation for our underlying software and techniques, while also allowing us to contribute to the larger body of science without divulging sensitive details associated with any of our projects.



Computed aerodynamic pressure contours for an elastic AC75 mast/main-sail system. Equilibrium sail cross sectional shapes and pressure contours (left), windward pressure (middle) and leeward pressure (right).

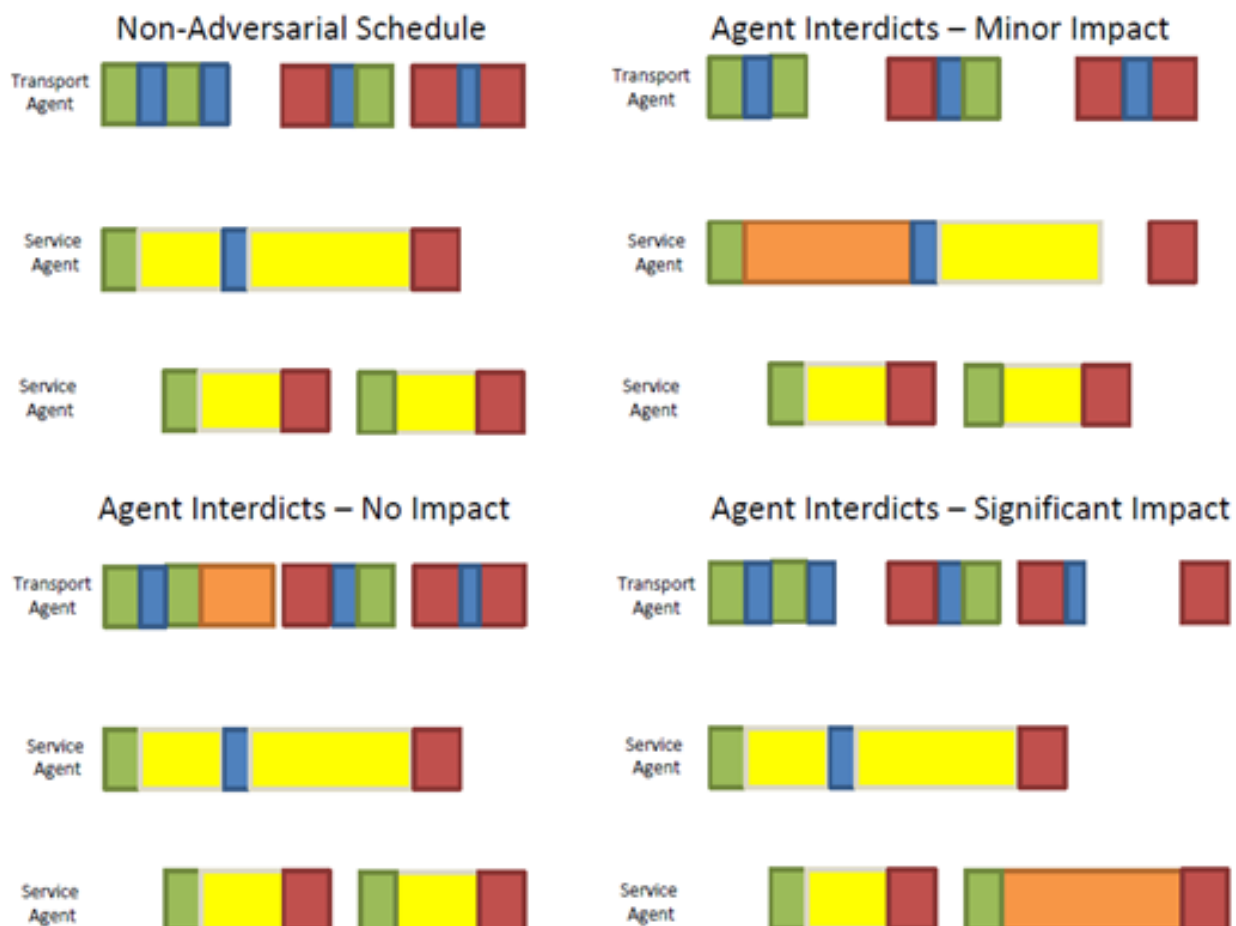
Game-theoretic Mine Countermeasure Scheduling and Adversarial Action

DESCRIPTION:

Maritime search operations involve complicated logistics and operational components to search, identify, and manipulate objects of interest. Due to its complexity, there is an increasing opportunity for adversaries to interfere with and mitigate these operations to degrade and delay the search process. Researchers at NSW PCD and Arizona State University are developing formal theory and algorithms for an

adversarial game of service agents performing search operations and an interdictor agent attempting to stop them by increasing the time required for search tasks. Here, we assume there exists a set of assets with varying capabilities currently performing search tasks within an area. The assets perform the tasks under a pre-defined but estimated schedule based on initial knowledge of the environment and desired outcome.

Figure 1. Agent schedule Gantt chart for a service agent - transport agent scenario. Service agents (e.g. unmanned underwater vehicles performing MCM operations) are transported transport agents (e.g. USVs). Green and red represent docking and deployment actions of the vehicles. Yellow represent servicing actions. Blue represent movements. Orange represents actions that have been affected by an interdiction event, and thus significantly increased in duration. As shown in the figure, some actions may cause significant increases in overall mission duration compared to others.



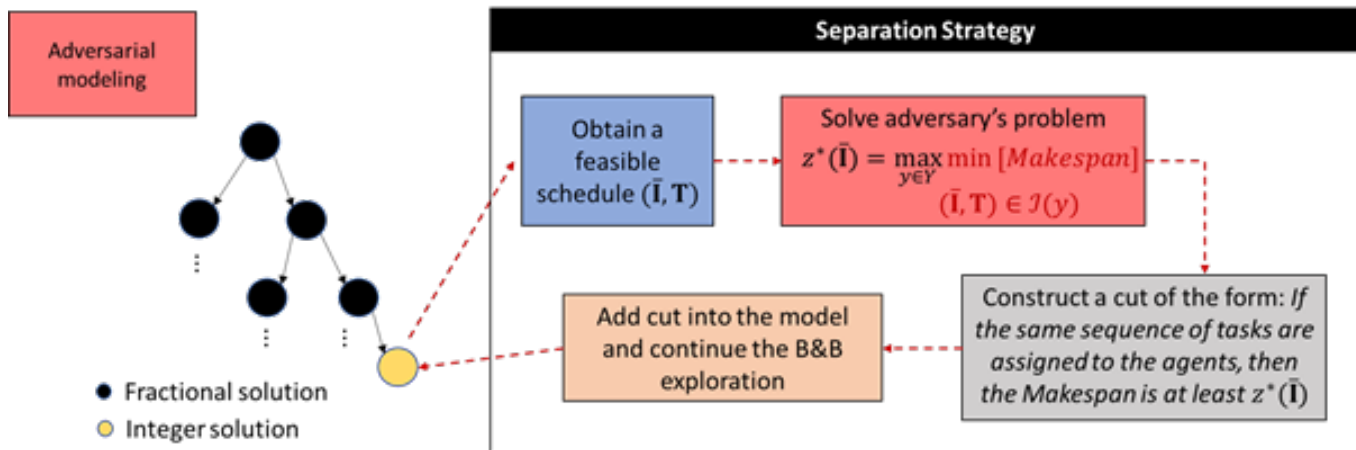


Figure 2. Separation strategy for solving adversarial game. At each iteration of the MILP, a feasible integer solution may be found (yellow circle). For an integer solution, a separate LP program is initiated to solve the adversarial game found in the Separation Strategy. The solution to the separation strategy is then saved, and the Branch & Bound approach to the original problem continues to find more potential solutions.

However, there also exists resource-constrained interdiction agents that may arbitrarily increase the duration of a subset of search tasks. The goal would then be to develop formal methods to assess the optimal strategy for both the search agents and interdiction agent. Figure 1 shows a nominal schedule for search operations and potential interdiction for a service agent - transport agent scenario. Service agents, e.g. unmanned underwater vehicles (UUVs) performing mine countermeasure (MCM) operations, are transported transport agents such as unmanned surface vehicles (USVs).

IMPACT:

We develop the adversarial game involving unique theoretical conditions commonly found in logistics operations such as MCM operations with cross-schedule constraints. Cross-schedule constraints are constraints on different agents such as precedence that have a mutual impact on their schedule. An example within the MCM domain is that of a UUV being transported by a USV which needs to be deployed at a given location before it starts a search operation. We solve this adversarial game by combining game-theoretic methods and optimization techniques.

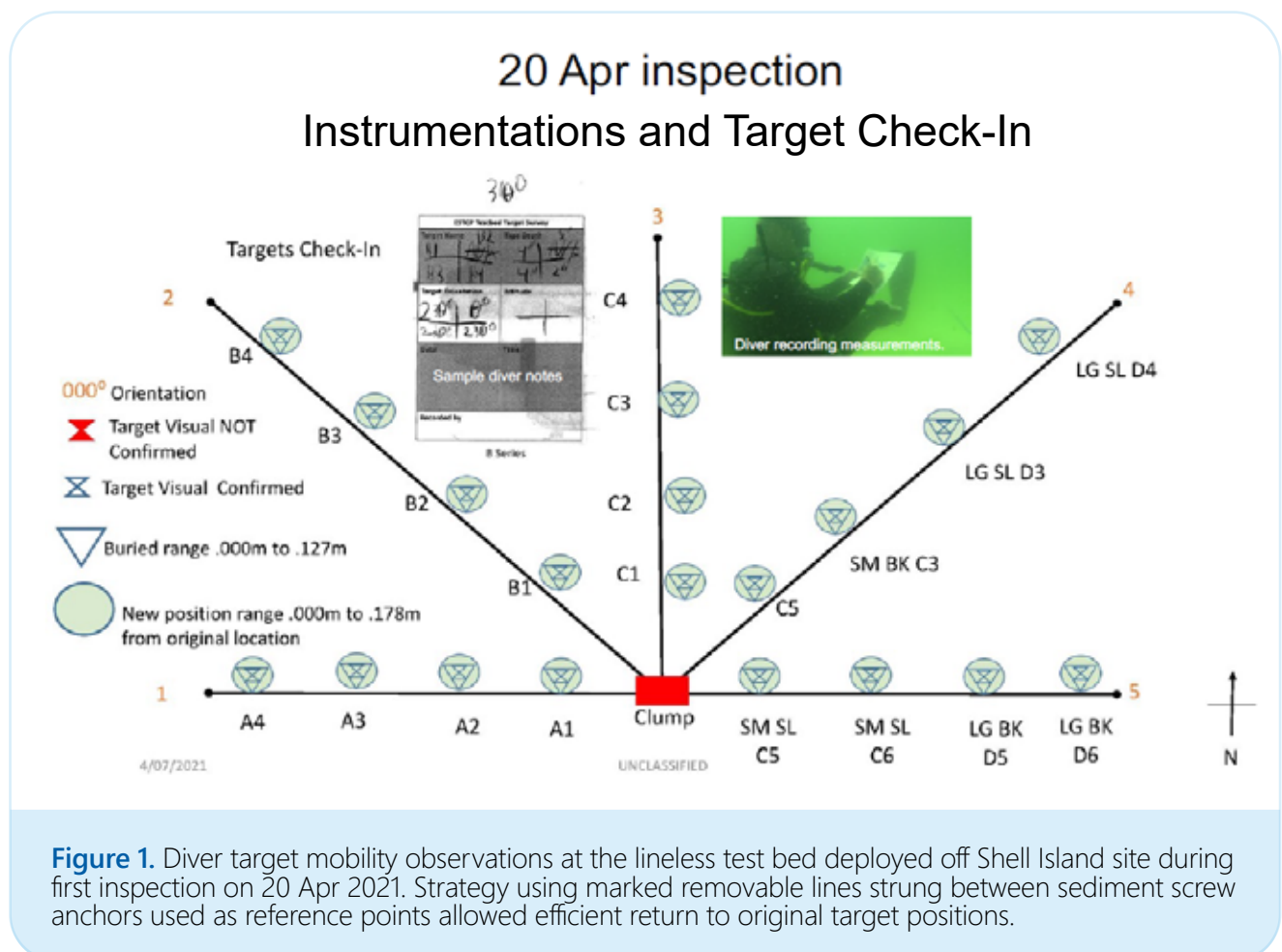
In our framework, we solve a novel instantiation of the service-agent transport problem as an efficient mixed-integer linear program (MILP). For a subset of feasible solutions, we then solve a linear program (LP) in polynomial time. Due to a layered approach to the adversarial game, a number of potential solutions can be simultaneously solved in polynomial time using the proposed approach seen in Figure 2.

DESCRIPTION:

Sponsored by Environmental Security Technology Certification Program (ESTCP), NSWC PCD, in collaboration with U.S. Naval Research Laboratory Stennis Space Center, has demonstrated an initial concept of operations for establishing and maintaining a “non-mobile”, underwater test bed at NSWC PCD, where sensor systems developed for detection and classification of underwater unexploded ordnance (UXO) may be assessed for performance. The test bed’s geometry is approximately a 100 meter by 50 meter (LxW) sand site located in a 0-5 meter depth area off Shell Island, FL with nominally uniform sediment properties and minimal acoustic and magnetic clutter, both on the surface and within the first meter of sediment.

The primary objective is to maintain a field of surrogate and inert certified UXO with sufficient ground truth precision and environmental characterization to

enable an unambiguous performance assessment of sensor systems. Systems to be deployed will include those based on acoustic, magnetic, electromagnetic induction (EMI), and optical sensors. Challenges exist: UXO burial and mobility resulting from hydrodynamic forces experienced in the nearshore increase the difficulty of using seabed cues to assess target status and maintain accurate ground truth. The range of UXO calibers of interest also span the size range of small clutter often occurring in underwater environments of interest. Standard tools to facilitate relocation/recovery of test bed targets such as reference lines can interfere with some sensor platforms (e.g., sleds and crawlers) expected to be used in the nearshore, mandating minimization or elimination of these tools. These challenges prompted development and testing of nonstandard deployment and environmental monitoring strategies.



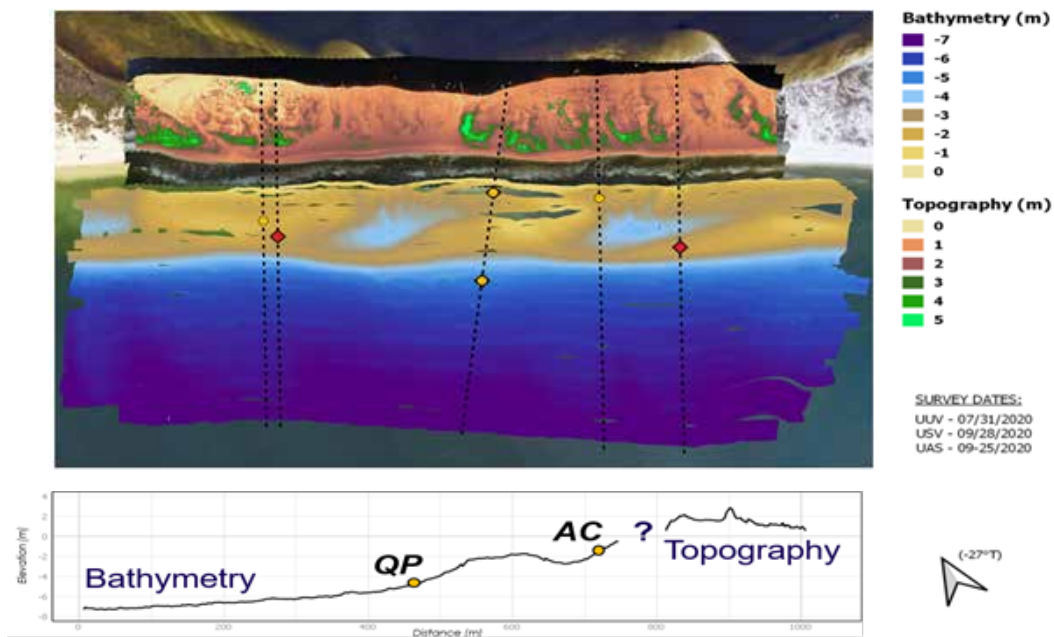


Figure 2. Combined high resolution topography and bathymetry maps of the pilot test bed area with deployed (red squares) and recovered (orange dots) instrumentation frame positions overlaid.

IMPACT:

In the most recent field exercise performed for ESTCP, test procedures were developed for untethered targets within the test bed, demonstrating target mobility of no more than 2 ft in horizontal displacement over a continuous 2-month deployment in 10 ft deep water. All target field and environmental monitoring instrumentation were successfully recovered after two months with no losses in targets, instrumentation, monuments, or screw anchors used as reference points. Without line tethering, the target movement observed is unavoidable in dynamic nearshore underwater environments but a capability to monitor and quantify the movement to within an error of 6" with the current deployment strategy was demonstrated. This is deemed acceptable for sensor system assessment. (Figure 1)

Hydrodynamic, morphodynamic, and geologic characterization was completed and environmental modeling was established. Collection of environmental data occurred with various sensors (acoustic, optical, magnetic) on platforms including unmanned aircraft systems, USV, unmanned underwater vehicles, and towed systems. (Figure 2) The environmental data collections have proved very interesting, revealing possible correlations between sub-bottom geology and bathymetric seabed stability.

Where target line tethers are unavoidable for setting up a test bed due to regulatory constraints or the need to ensure target recovery in particularly difficult environments (e.g., mud/silt seabeds), the impact of line detection by sonar-based sensor systems is also an issue since such systems may be able to use that detection as an unintended clue. To help test bed managers reduce the impact of tethering lines for assessing acoustic sensing systems, sonar backscatter measurements to quantify line visibility for the most popular line choices used have been carried out. Analysis of collected data and modeling are currently on-going in partnership with Applied Physics Laboratory University of Washington to predict line detectability by sonars operating over frequencies from 10 kHz to 2 MHz over various seabed types.

NSWC PCD's underwater test bed provides a unique benefit to DoD by enabling ESTCP to qualify and quantify the effectiveness of technologies developed for detection and classification of UXO. Test bed demonstrations are critical to inform operational customers and other stakeholders of potential future technology transitions.

100 YEARS OF

COMPTROLLER DEPARTMENT

We **MET** and **EXCEEDED** our financial targets for FY21 while overcoming the challenges and obstacles presented by COVID.

	Target	Result
Net Operating Results	\$12.5M	\$18.9M
Reimbursable Authority	\$438M	\$418M
Carryover	\$171M	\$150M



ECONOMIC IMPACT

ANNUAL INCOMING FUNDING	569M
NAVY	394.6M
SPONSORED ON CONTRACT	150.1M
DOD OTHER	11.2M
AIR FORCE	3.4M
OTHER GOV'T	8.9M
ARMY	0.05M
PRIVATE PARTY	0.03M

The Budget Division developed and implemented the **SUPPORT AGREEMENT ROUTING TOOL (SART)**. This routing tool notifies users when actions are required, enables all users to see the status of the agreement and where it is at in the routing process, and streamlined a process moving it away from individual emails. The SART tool has an estimated time savings of three hours per agreement submitted with an estimated annual savings of \$50k.

The Employee Services Division (ESD) in conjunction with Human Resources Division successfully implemented new leave programs established in FY21.

PAID PARENTAL LEAVE

Allows government employees up to **12 WEEKS** of administrative leave for the birth, adoption, or providing foster care for a child.

EMERGENCY PAID LEAVE

Allowed government employees to take administrative leave for COVID. The EPL administrative leave hours are reimbursed to the command through DFAS in which ESD collaborated with the Accounting Division to ensure these hours were reimbursed and posted correctly in ERP.

CODE 02

CONTRACTS DEPARTMENT

ABOUT:

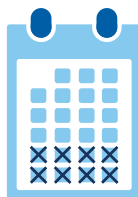
The Contracts Department (Code 02) continues to be the Command's backbone for acquisition strategies and contributes to core equity by serving as the anchor between the Command and Industry. Leading the contract process, Code 02 provides contracting expertise to its customers by participating in the development of acquisition strategies; defining contracting methods; soliciting, negotiating, awarding, and administering contracts. Code 02 delivers high-quality products and services at a fair and reasonable cost in a timely manner to support warfighter readiness, while adhering to the statutes, regulations, and policies governing NAVSEA contracts. Code 02 has instituted highly effective management and internal controls to execute its mission and avoid fraud, waste, and abuse. Code 02 is comprised of acquisition professionals, including warranted Contracting Officers, contract specialists, engineers, and Government Purchase Card Agency Program Coordinators (APCs).

FY21 CONTRACT OBLIGATIONS TOTAL **\$212.1M**



CODE 02 AWARDED THE **FIRST TWO CONSTRUCTION CONTRACTS UTILIZING NATIONAL DEFENSE AUTHORIZATION ACT 2017 SECTION 233.**

IMPACT: Responsiveness to facility requirements on the installation will be expedited & have additional quality over-

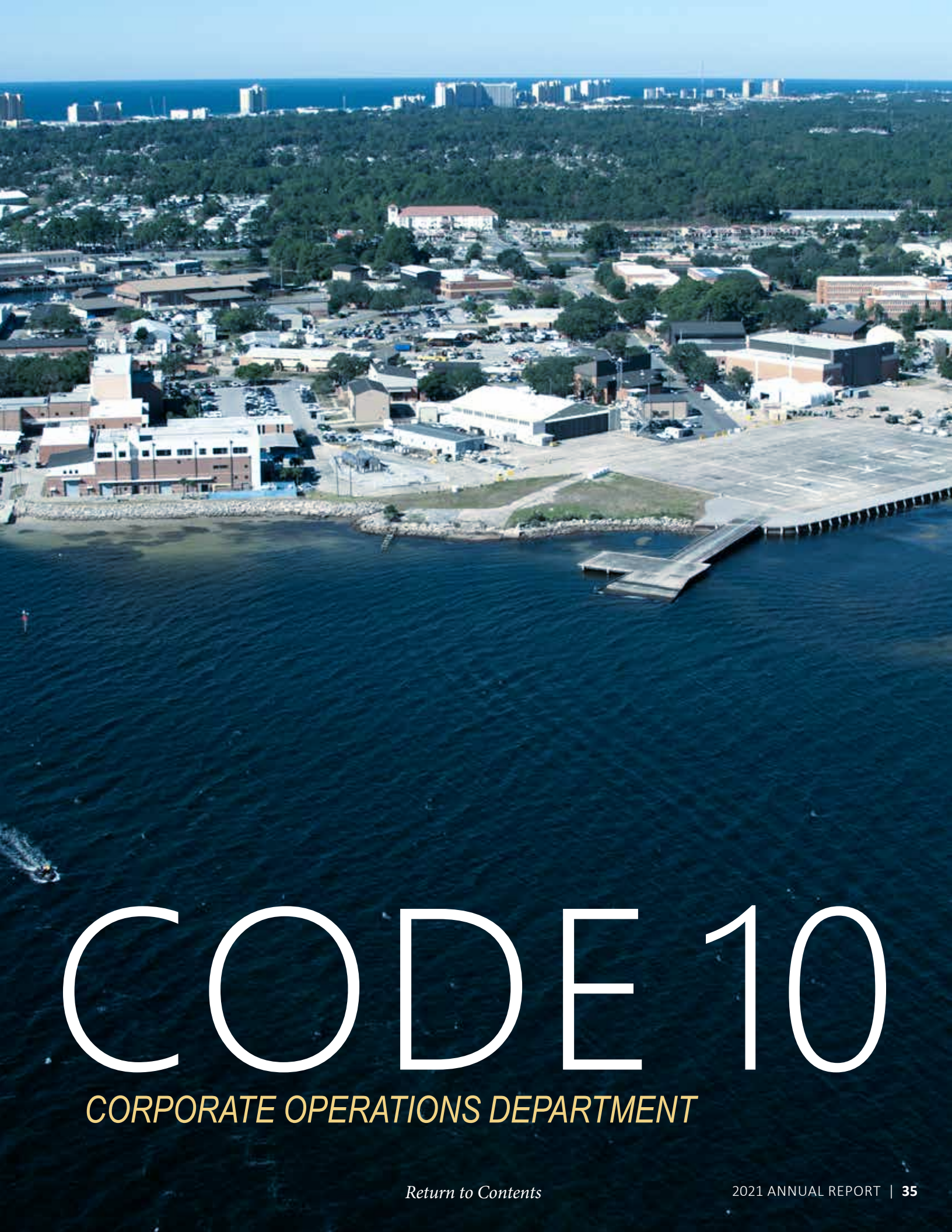


15 LARGE CONTRACTS reduced average time-line from **365 → 268** days.

These reflect date of requirement receipt in the Contracting Office.



SUCCESSFULLY executed the absorption of the **SWIPE SEA CARD**, allowing approved users access to purchase fuel for vessels.



CODE 10

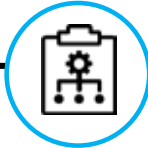
CORPORATE OPERATIONS DEPARTMENT

CODE 10 THRUST AREAS



Contextual Communication

Giving timely and concise information relevant to the mission.



Innovative Integration

Planning for tomorrow while executing the requirements of today.



Seamless Solutions

Leveraging partnerships to simplify processes and improve customer experiences.

Delivering quality service and business solutions that meet our customers' needs

10E - E,D, & I

- Fully staffed the Equal Employment Opportunity (EEO), Diversity & Inclusion (ED&I) office
- We have established the Leads and Vice Leads for Hispanic Employment Program, Federal Women's Program and Individuals with Disability Program
- Reasonable Accommodation Program has been stood up and requests are now being properly processed and tracked
- All FY21 complaints have been timely processed in accordance with 29 CFR 1614

101 - Human Resources

- 177 New Hires (as of 27 Sept)
- Held 23 Virtual Onboarding Classes
- 69 Virtual On-Site Training Classes offered
- 40 New Professionals Obtained through Recruiting Events
- 97% Compliance for Mandatory Training
- 100% Compliance for Propel
- Defense Acquisition Workforce Improvement Act (DAWIA) Certification at 99%
- DAWIA Continuous Learning Points at 99.5%
- \$573,474.19 investment in Tuition Assistance
- Stand Up of E56: 15 Transfer of Work employees from Orlando, Fla.
- Moving towards being a fully staffed Human Resources Division (HR) by adding 8 additional team members in Code 101 (FY21)
- 370 Awards processed
- Monthly HR reports provided to senior leadership- Increased timeliness of reporting and effectiveness of metrics utilized

102 - Infrastructure

1021 - FACILITIES

Worked with Naval Facilities Engineering Command to execute \$30M worth of major renovations and Capital Investment Program projects to include the Expeditionary Warfare Interoperability Facility Renovation, Landing Craft Air Cushion Depot Support Facility, Test Range Support Facility, and renovations to future NSWC PCD office space formerly belonging to Naval Support Activity..

1022 - INFRASTRUCTURE SUPPORT BRANCH

Stood up new branch and awarded the first 2 Section 233 projects (Open Storage Five Fencing, and NSWC PCD Headquarters Office Renovations) as well as provided oversight of the P-407 design effort to 65% completion.

1023 - ENVIRONMENTAL

Maintained overall environmental compliance at the command and provided environmental support to over 40 test plans assuring our project testing reflects the U.S. Navy's environmental goals.

1024 - SAFETY AND EXPLOSIVES SAFETY

Command mishap rate remained below Bureau of Labor Statistics mishap rate for like industries (NAIC 5417) in FY21. Explosives Safety Officer, Explosives Safety Specialist and Ordnance Officer duties supported visiting squadron explosives storage requirements and target requests for the command throughout FY21.



Adm. Mike Gilday, Chief of Naval Operations (CNO) and Master Chief Petty Officer of the Navy (MCPON) Russell Smith, visited NSWC PCD to learn more about progress on unmanned, artificial intelligence and machine learning technology. Mar. 4 2021

103 - Public Affairs & Congressional Affairs

1031 - INTERNAL/EXTERNAL COMMUNICATION & COMMUNITY RELATIONS BRANCH (PUBLIC AFFAIRS OFFICE)

The Internal/External Communication and Community Relations Office planned, coordinated and executed extensive filming and coverage of the Landing Craft Air Cushion Ship to Shore Connector with the Discovery Channel for a recent episode of "Impossible Engineering" featuring the command to demonstrate why we are undisputed technical leaders in our critical mission areas.

1032 - VISUAL INFORMATION BRANCH

Visual Information created a virtual ceremony to honor the recipients of the 2020 Commanding Officer/Technical Director (CO/TD) Awards. The branch provided a world-class video ceremony, accompanied by a stunning graphic program, all while maintaining strict COVID protocols. This involved filming and photographing several dozen people separately over the course of four weeks, and then putting them back in to their respective groups on print and in the video, without any of them ever being in the same room at the same time.

1033 - TECHNICAL INFORMATION LIBRARY

The library maintained a pre-pandemic quality of service and accommodation provided to the command via remote and in person assistance. For example, acquiring engineering, scientific, and security resources that others cannot find, or do not have the time to do an in-depth search to find.

Codes 1031 and 1032 worked together to organize and refresh the design for the 2021 CO/TD Awards.



104 - Information Technology

1041 - INFORMATION TECHNOLOGY OPERATIONS

Implemented Mobile Office Community networking and System Security Services Daemon for Linux authentication in Microsoft Active Directory allowing Linux systems to be properly authenticated on the Research, Development, Test, and Evaluation core network.

1042 - INFORMATION MANAGEMENT CUSTOMER SERVICES

Processed approximately 12,000 work orders and issued approximately 1600 iPhones.

1043 - CYBER SECURITY

The Assessment and Authorization team completed the NSWC HQ Risk Management Framework strategy and boundary reduction effort with the receipt of ATO's for the Centrally Managed Systems, Classified (CMSc) and Littoral Combat Ship Mission Package Integration Lab Virtual Desktop Infrastructure systems. These final ATO's gave the command a 100% authorization status for 1043 supported packages. In addition to these ATO's, the 1043 A&A team also received an ATO for the NSWC PCD Base Site Package, which provides site level control inheritance to all systems on the base. The Cybersecurity Workforce Program completed the migration to the Enterprise Data Warehouse (EDW) Privileged Access Agreement (PAA) tool in FY21. Department, Division, and Branch administrators have all received training by 1043 staff covering usage of the tool. The local tool will still be utilized for a small set of PAA's that fall outside the scope of EDW based one.

105 - Security

1051 - SECURITY POLICY & PROGRAMS

Reviewed 51 pieces of information for proposed Public Release: Coordinated 118 Foreign National Visitors and disclosure of information. Generated/Coordinated 28 DD 254's, Contract Security Classification Specification. Processed 239 government civilian personnel for access to classified information. Processed 37 contractor personnel for access to controlled unclassified



information. Initiated 333 background investigations for personnel in the command. Ensured physical security requirements, Intrusion Detection System capability, and Automated Entry Control Systems for all Secure Rooms, and conducted 2,270 enrollment actions for Secure Rooms and Building Access. Completed inventory of over 2,000 controlled keys, which are in the Key and Lock Program. This is the first time completed in over four years.

1052 - EMERGENCY MANAGEMENT

Facilitated 150 antiterrorism travel briefings through a new on-line system that incorporated ISOPREP, Foreign travel and Geographic Combatant Commander review. Conducted 26 Random Antiterrorism Measures as directed by Naval Support Activity Panama City. Received, reported, tracked, and input 311 COVID-19 positive cases in the Warfare Center Enterprise Data Warehouse Tool. Revalidated Mission Essential Functions, and identified 167 Mission Essential Personnel critical to maintaining Mission Essential Functions.

1053 - SPECIAL PROGRAMS

Controlled and maintained 879 Keying Material/ Controlled Cryptographic Items, 19 Secure Telephone Equipment, three vIPer phones, and seven OMNI Secure Terminals. Ensured 136 Communication Security (COMSEC) Users were trained to safeguard and use COMSEC material in their possession. Received an OUTSTANDING on the COMSEC Central Office of Record Audit, with no COMSEC incidents or practices dangerous to security. Received 63,206 unclassified messages, and 32,083 classified messages. Sent 98 unclassified messages, and nine classified messages. Reviewed, updated and implemented new security fast fact to include CUI in Test and Evaluation Plans to ensure Operations Security measures were considered in 35 test events.

106 - Corporate Business Office

1061 - CORPORATE PLANNING, 1064 - RECORDS MANAGEMENT, FORMS & DIRECTIVES

Very successful Inspector General (IG) Inspection for the Managers Internal Control Program, Records management, and Forms and Directives. No open IG findings.

106 - CORPORATE BUSINESS OFFICE

Hiring actions to fill and backfill six positions in the Corporate Business department. We went from RED to GREEN in the Business Capability Health Assessment assessment this year. New Corporate Operations Support Contract activated in March 2021 with over 48 contractors supporting 01, Deputy Technical Director, 00X, A, E, X and 10.

107 - Property Management

1071 - PURCHASE REQUISITION

Established the Customer Acquisition Group and the Grainger Fourth-Party Logistics Program, a new purchasing vehicle for the command. Screened over 7,300 Requirements Forms and created over 7,700 Purchase Requisitions encompassing Military Standard Requisitioning and Issue Procedures/General Services Administration, Contracts, Other Funding Documents and Purchase card methods of purchase, processing a total of over \$340M.

1072 - SUPPLY BRANCH

Assumed tasking of Product Data Reporting and Evaluation Program, Counterfeit Material and Calibration (including the Service Cost Center programs from OOO). Established 38 Pre-Expended Bins / Work in Process programs totaling 4,825 line items valued at \$13,436,680.00. Conducted inventory spot check of over 3,500 line items.

1073 - GENERAL EQUIPMENT BRANCH

Inventoried over 4,600 General Equipment assets. Processed over 1,300 General Equipment assets for Defense Reutilization and Marketing Office.





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**Distribution A -
Approved for public release**