September - October 2020 | Vol. 8 Issue 5

# Coastal COMPASS

THE FORCE BEHIND THE FLEET

## 2020 DIRECTOR'S CUP

## & 75th ANNIVERSARY


NAVSEA WARFARE CENTERS Panama City

NSWC Panama City Division

*Ensuring Warfighting Dominance in the Littoral Battlespace*

Coastal COMPASS
THE FORCE BEHIND THE FLEET
Sep - Oct 2020 | Vol. 8 Issue 5

**Capt. David Back, USN**
*Commanding Officer*

**Dr. Peter Adair, SES**
*Technical Director*

## About the Publication

The *Coastal Compass* is published bimonthly by the Naval Surface Warfare Center Panama City Division (NSWC PCD) and is an authorized medium for news of general interest about employees of NSWC PCD and their work.

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## On the Cover

The E Department's team, Th-E Nuetralizers, engineered their robot with an extended arm to compete against four other teams in the 2020 Director's Cup.

U.S. Navy photo by Eddie Green

## Editorial Staff



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Director's Cup


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# View from the BRIDGE

**Capt. David Back, USN**
*Commanding Officer*

**Dr. Peter Adair, SES**
*Technical Director*

*"Thank you for all you do in support of our great Command, our Sailors and Marines, and our Nation."*

**NSWC PCD Team,**

The months of September and October 2020 have been incredibly busy for our Command! Through the challenges we still face with the COVID-19 pandemic, our team has charged on and continued to provide high quality products and services to the fleet and our customers. We rounded out Fiscal Year 2020 with a laundry list of accomplishments through our team's cumulative efforts. We are looking forward to a successful and exciting Fiscal Year 21.

September 2020 marked NSWC PCD's celebration of its 75th anniversary when our predecessor, the U.S. Navy Mine Countermeasures Station, was commissioned September 1, 1945! Beginning with a small cadre of military and civilian personnel focusing on mine countermeasures, the command has grown to over 1,550 civilian employees supporting a variety of missions in the littoral battlespace for the Navy and Marine Corps. Today, our mission set is broader, but our roots in these critical mission areas remain the same. Cheers to the next 75 years of the U.S. Navy in Panama City!

We also held this year's Director's Cup technical competition. Our three technical teams went head-to-head against each other and teams from NSWC Crane and NSWC Carderock. Competitions such as these reinforce the importance of working together as One Team and fostering collaboration and relationships across the Warfare Center Divisions. Great job to everyone!

October 13th marked the Phase 1 of the Return to Office. Fully returning to the office will be a gradual process that reflects guidance we receive from higher echelon, as well as the COVID-19 numbers and rate of spread in our local community. Your safety is our top priority. As we chart our course through each step of returning to the office environment, we will keep everyone up to date with the latest information as we receive it. Please continue to wear your cloth face masks, practice social distancing, and stay safe.

Again, thank you for all you do in support of our great Command, our Sailors and Marines, and our Nation.

**Maintain Course and Speed,**

**Capt. David Back**
**Commanding Officer**

**Dr. Peter Adair, SES**
**Technical Director**

# WELCOME ABOARD

### CODE 01

| | |
|---|---|
| Jenica Lolley | 0131 |

### CODE 02

| | |
|---|---|
| Brandon Hayes | 023 |

### CODE 10

| | |
|---|---|
| Jaimie Brock | 1061 |
| Tracey Lopez | 1042 |
| Lacie Meeks | 1071 |
| Troy Orender | 1024 |
| Melissa Rix | 1041 |
| Christian Vazquez | 1043 |
| Nekian Travis | 1014 |

### CODE A

| | |
|---|---|
| Zachary Billingham | A14 |
| Dylan Daughety | A13 |
| Alan Esquivel | A14 |
| Adria Rodriguez-Morales | A14 |
| Julian Royal | A14 |
| William Zayas-Rodriguez | A14 |

### CODE E

| | |
|---|---|
| Brandon Bascetta | E15 |
| David Ray | E31 |
| James Chalkley | E50 |
| Arnett Flowers | E24 |
| Michael Kirke | E15 |
| Christine Livingston | E13 |
| Daniel Lopez-Gavilan | E13 |
| Erik Muldowney | E31 |
| Pedro Perez | E23 |
| Luis Pla | E25 |
| Tommy Roland | E25 |
| David Trexler | E13 |

### CODE X

| | |
|---|---|
| Sydney Brooks | X24 |
| Dominic Byrne | X23 |
| Ivan Rodriguez-Pinco | X11 |
| Sonja Smith | X11 |
| Brian Eckert | X12 |
| Wilmer Flores | X11 |
| Tasneem Salman | X23 |
| Thomas Schindler | X14 |

# CIVILIAN LENGTH of SERVICE

**40**
William Sawyer

**35**
Kerry Commander
Scott Dorsch
Michael Taft

**30**
John Link
Keith Senn
Sandra Wicks
Christopher Stanley
Brett Troia
Russell Wilson

**25**
Scott Feenstra
William Buffkin Jr.

**20**
Kelly Boyce
Miguel Camacho Jr
Michael Dawson
Timothy Gibson
James Maupin Jr.
Jackie Sandle
Jeffrey Wit

**15**
Luis Gely
James Skipper

**10**
Lindsey Dupriest
Dennis Gonzales
William Ifode
Walter Santiago

**05**
Ruth Berry
Hernan Carvajal
Erin Cotton
Virginia Daniel
Heath Dittman
Janaya Perry
Keith Rogers
Antonio Williams
Jeffrey King
Donald Kiper
Kevin Larrimore
Zachary Luther
Benjamin McLaughlin


# ABOUT

The NAVSEA Warfare Center Director's Cup event is a competition event between the teams' high-performing engineers, all who have less than five years of experience with the Enterprise. The stakes are high as they race to complete the technical tasks within the time limit.

## Five teams across three Warfare Centers

NAVSEA WARFARE CENTERS

Panama City
Carderock
Crane





# SCORING

## 100 POINTS NAVIGATION CHALLENGE

| | |
|---|---|
| **+50** | crossing center point |
| **+50** | reaching the goal area |
| **-10** | each obstacle hit |

## 100 POINTS CLASSIFICATION CHALLENGE

**10 points per scene**
Only successful classifications receive points

## 100 POINTS NEUTRALIZATION CHALLENGE

**20 points possible per scenario:**

| | |
|---|---|
| **+20** | **Success** ≤ 1 min |
| **+16** | 1 min < **Success** ≤ 2 min |
| **+12** | 2 min < **Success** ≤ 3 min |
| **+8** | 3 min < **Success** ≤ 4 min |
| **+4** | 4 min < **Success** ≤ 5 min |

**20% point bonus** to a scene's base point value for autonomous neutralization of that target

# JUDGES

### NSWC Panama City

**Capt. David Back, USN**
*Commanding Officer*

**Dr. Peter Adair, SES**
*Technical Director*

**Robert O. Walker, SSTM**
*Deputy Technical Director, Technical Excellence*

**Craig Pajak**
*Chief Strategist, Littoral & Mine Warfare Systems Department*

**Garrett Leavitt**
*Expeditionary & Maritime Systems Dept CHENG*

**Dr. Isaac Sledge**
*Senior Machine Learning Research Scientist*

**Dr. Kerry Commander, SSTM**
*Chief Technology Officer*

**Dr. Todd Holland, SSTM**
*Distinguished Scientist for Mine Warfare Prototyping, NSWC PCD*

### NSWC Crane

**Capt. Thomas Duncan McKay, USN**
*Commanding Officer*

**Janna Foxx**
*Deputy Technical Director*

**Robert L. Walker**
*Chief Technology Officer*

**Dr. Amy Wagoner**
*Roboticist, Engineer*

**Nick Loufersweiler**
*NSA Crane Police Instructor*

**Alyssa Robertson**
*Hardware Cybersecurity Branch Manager*

**Monica Hutchins**
*Chief Strategist for the Strategic Mission Department*

**Dr. Jonathan Dilger**
*Director of Research*

### NSWC Carderock

**Rodney Peterson**
*Marine Corps Vulnerability & Protection Program Manager*

**John Vorwald**
*Aerospace Engineer*

**Joe Teter**
*Director of Technology Transfer*

**Eric Silberg**
*Aerospace Engineer*

**Reid McAllister**
*Director of Integrated Unmanned Maritime Mobility Systems*

**Samuel Cubbage**
*Branch Head, Hydrodynamics & Maneuvering Testing Branch*

# PANAMA CITY CODE A TEAM DEPARTMENT

**Tyler Moak**
***Electrical Engineer***
Team Mentor

**Brandon Barner**
***Software Developer***
Automatic Target Recognition

**Brandon Sheffield**
***Computer Scientist***
Software Consultant

**Jared Wampler**
***Team Captain, Mechanical Engineer***
Strategist, Mechanical & Electrical Design

**Nick Torres**
***Software Developer***
Navigation

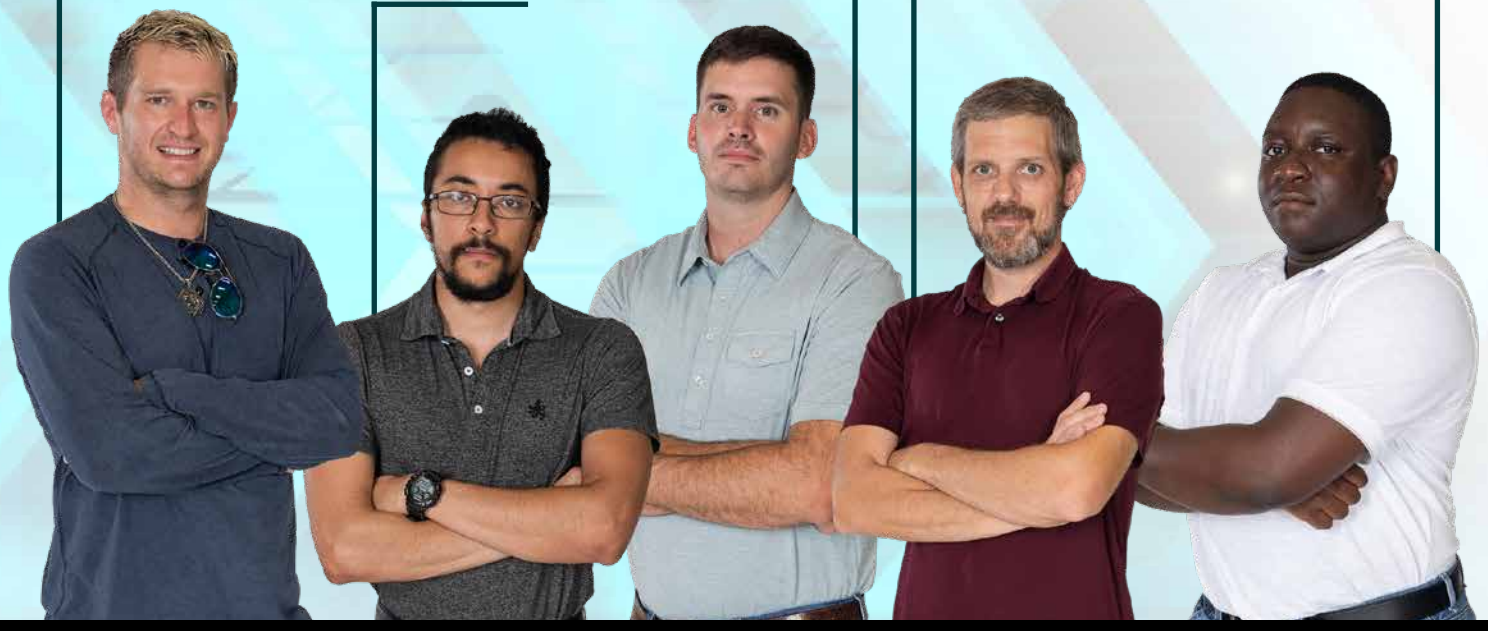


*Photo-composite of team

# OTHER FEATURES

**About the software used:**

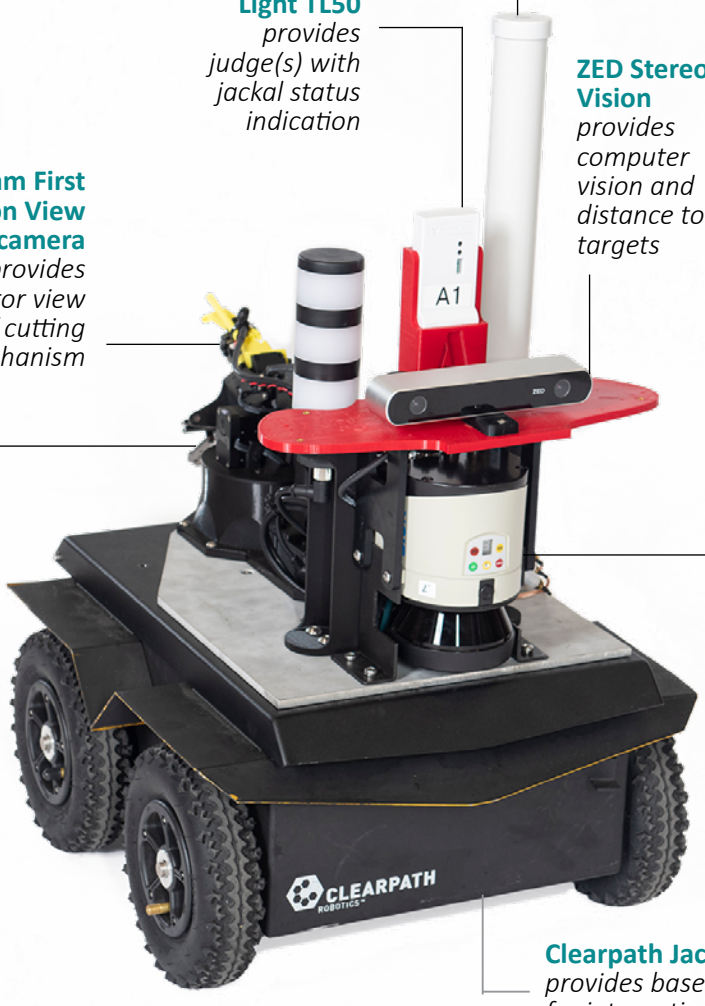
- The A Department Team jackal utilizes two NVIDIA XAVIER's running NVIDIA Jetpack (Ubuntu 18.04) and ROS Melodic. XAVIER #1 is utilized for navigation and core functionality whereas XAVIER #2 is utilized for ATR.
- Navigation software – *SLAM Gmapping*
- Target Recognition – *Darknet YOLO*
- Neutralization – *Interbotix_ros_arms*
- Tower Light Node – *Custom python control of relay board for Red, Yellow, Green lights & power on/off of RX200 arm*

**Ubiquiti Rocket 5AC radio communication system**
*providing increased bandwidth and range*

**Banner Tower Light TL50**
*provides judge(s) with jackal status indication*

**ZED Stereo Vision**
*provides computer vision and distance to targets*

**RunCam First Person View (FPV) camera**
*provides operator view of cutting mechanism*




**Sick LMS-111 Light Detection and Ranging (LIDAR)**
*provides obstacle detection and avoidance*

**Clearpath Jackal UGV**
*provides base platform for integration of hardware and sensors*

**Interbotix RX200 robotic arm**
*provides reach, mobility, and cutting force to neutralize backpack targets in a small form factor*

# PANAMA CITY
# CODE E

**Miguel Salinas**
***Electrical Engineer***
Electrical Components/
Mechanical Design

**Dominic Nguyen**
***Computer Scientist***
Classification Software

**Matthew Wadle**
***Computer Scientist***
Autonomous Navigation/
Neutralization Software

**James Sovel**
***Systems/Mechanical Engineer***
Mentor

*Photo-composite of team

# OTHER FEATURES

**About the software used:**

- ROS Melodic - *Linux OS*
- Gstreamer - *Embedded Video Transmission*
- Python on Arduino - *Arm Control*
- Explore Lite - *Exploration*
- Gmapping - *Navigation*

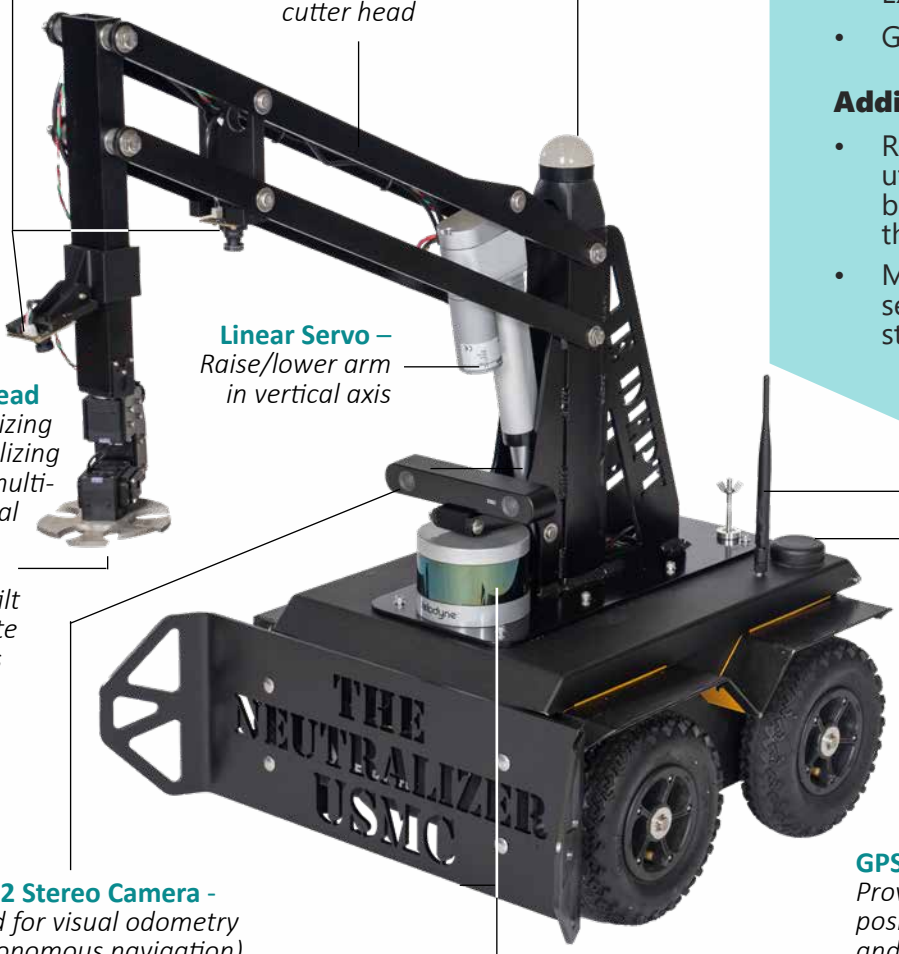
**Additional robot features:**

- Remote control capability utilizes a Jetson Xavier NX base station and PS4 remote that integrates all inputs
- Multi-stream real-time video sent from robot to base station via 2.4Ghz data link

**Situational Awareness Cameras –** *Provide multi-angle view of target for manual neutralization*

**Custom Arm and Weldment** *– Original Design that provides quick neutralization of targets, and physical support for navigational sensors and the cutter head*

**Status Indicator light** - *Indicates which operation mode the robot is currently in*




**Linear Servo –** *Raise/lower arm in vertical axis*

**Cutter Head** *- Neutralizing cutter utilizing a novel multi-directional shearing capability with tilt and rotate functions*

**Microhard Radio** *– Provides wireless data transmission for remote control, telemetry, and video transmission*

**GPS Receiver –** *Provides satellite based position of the robot and timing*

**ZED 2 Stereo Camera** - *Used for visual odometry (autonomous navigation) and classification*

**Velodyne LIDAR** - *Used for obstacle avoidance of surrounding environment and for laser odometry (autonomous navigation)*

# PANAMA CITY CODE X


**Megan Driggers**
***Engineer***
Team Lead/ Electrical

**Daniel Avedikian**
***Scientist***
Software/Automatic Target Recognition

**Harryel Philippeaux**
***Engineer***
Software

**Marcus Real**
***Engineer***
Mechanical

**Patrick Amy**
***Engineer***
Autonomy Software & Vehicle Control

**Gabrielle Furrow**
***Engineer***
Substitute Team Lead / Electrical

*Photo-composite of team

# OTHER FEATURES

- The Robotic Operating System (ROS) middleware is used for most of the vehicle software development.
- Sensors and effectors communicate directly to the main vehicle computer through software drivers within ROS.
- The ROS 'Robot Localization' Package is used for fusing wheel encoders, GPS, and the INS solution to provide accurate vehicle localization.
- LIDAR data is fed into the 'Hector Mapping' Package to develop an occupancy grid for the environment around the vehicle.
- Obstacle avoidance and path planning is facilitated by the ROS 'Move Base' package which outputs simple velocity commands to move the Jackal.
- The 'Darknet ROS' package leverages the popular 'YOLO' object detection algorithm to detect targets.
- The 'Interbotix ROS Arms' package ran the remote control interface for the 5-dof manipulator.


**Viper VX300 Interbotix** - *5 DOF robotic manipulator*

**Emlid RTK GNSS** - *Vehicle positioning to cm accuracy*

**LIDAR Velodyne VLP-16** - *3D point cloud generation, obstacle avoidance*

**EOD Blade** - *cutting wheel provided by BLDC motor*

**XSENS MTI-G-710 AHRS** - *navigation and magnetic compass heading*

# CARDEROCK


**Steph Blease**
***Mechanical Engineer***
*Team Lead/Software/ Integration*

**Isaac Downey**
***Mechanical Engineer***
Software/Mechanical Design/Integration

**Benjamin Gordon**
***Electrical EngineerTeam***
Mentor

**Alexandra Lechner**
***Electrical Engineer***
Software

**Mei Ling Mcafee**
***Mechanical Engineer***
Software/Integration

*Photo-composite of team

# OTHER FEATURES

**About the software used:**

SSD-MobileNet object detection software. Custom Python operating program for control and mode switching. ROS and RVIZ for vehicle control, mission planning, and simulation.

**Any other additional features describe:**

Raspberry Pi and Element 14 Raspberry Pi Camera Module for view of cutting mechanism. Custom designed box moving bracket on front of vehicle.

# CRANE

2020
DIRECTOR'S CUP
ATORMEMT
AuTonomous OutdooR MobilE ManipulaTor
Naval Surface Warfare Crane Division

**Stephen Taylor**
***Computer Scientist***
Safety Observer/ Alternate
Test Director

**Tim Murphy**
***Physicist***
Project Manager

**James Sowinski**
***Physicist / Computer Scientist***
Test Director /
Systems Test Engineer

**Dave Emerson**
***Computer Scientist***
SME Object
Recognition

**Avery Pratt**
***Computer Engineer***
Safety Observer/Alternate
Test Director

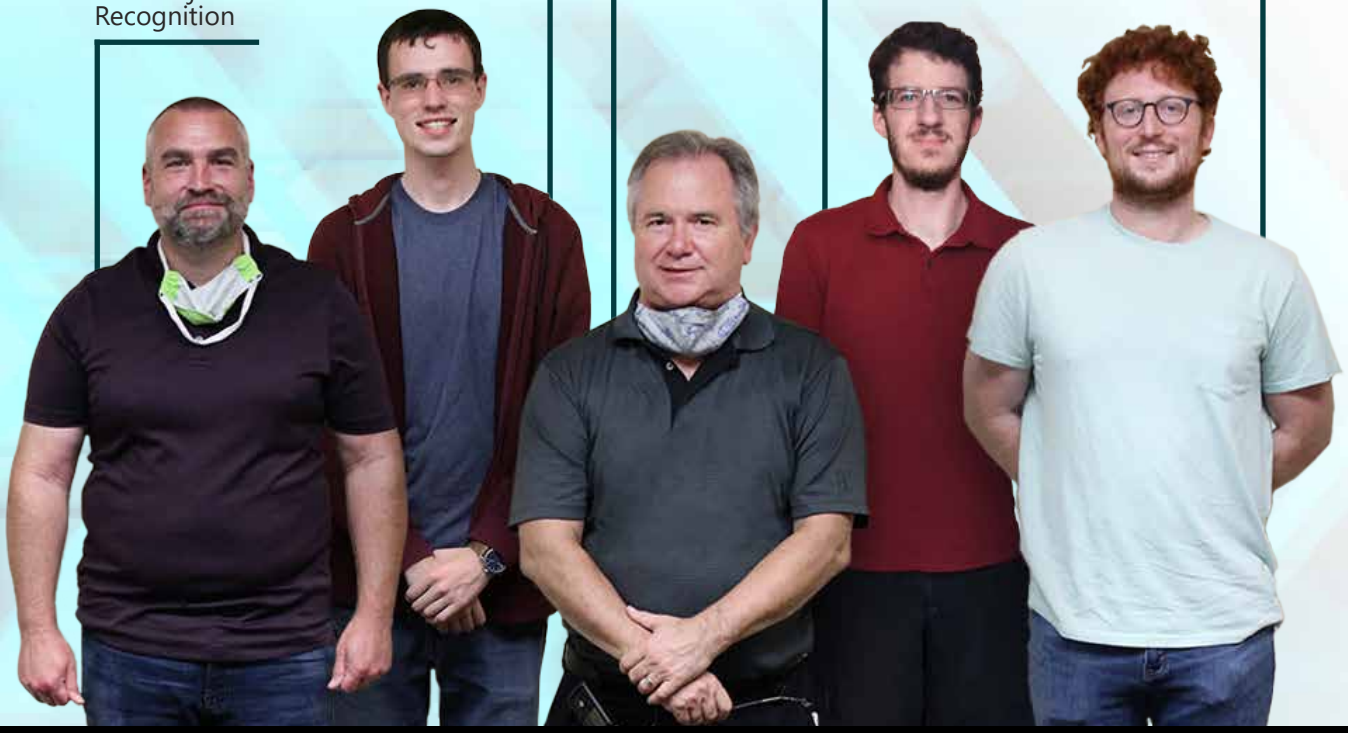


*Photo-composite of team

# OTHER FEATURES

- Abotix-M Arm and Pan/Tilt controller
- NVIDIA TX2
- NVIDIA XAVIER
- Status Light Controller
- Power Module
- Slip steering motor controller, IMU, and GPS
- Lithium battery pack

U.S. Navy photos by Cierra Burch


*X-PLOSION*

*X-PLOSION ROBOT*

*TH-E NUETRALIZERS ROBOT*

*TH-E NUETRALIZERS*

*THE A TEAM DEPARTMENT ROBOT*

*THE A TEAM DEPARTMENT*


*Photo-composite of team

# NSWC PANAMA CITY'S TH-E NEUTRALIZERS

## GO FOR GOLD, WIN DIRECTOR'S CUP 2020

**By Katherine Mapp, NSWC PCD Public Affairs**

PANAMA CITY, Fla —The Expeditionary and Maritime Systems E-Department team "Th-E Neutralizers" from Naval Surface Warfare Center Panama City Division (NSWC PCD) was named the 2020 Naval Sea Systems Command (NAVSEA) Warfare Center Director's Cup champions during a streaming event 10/14/2020.

"I am immensely proud of all of the hard work that each of the teams put into their robots," said Dr. Peter Adair, SES, NSWC PCD technical director. "Ultimately, NSWC PCD's Th-E Neutralizers took home the gold with a small 38-point margin of victory over the second place team."

This year's Director's Cup competition challenged technical department teams from NSWC PCD, NSWC Crane, and NSWC Carderock to create and field a fully autonomous, artificially intelligent, ground-based vehicle to neutralize a dangerous battlespace. This cross-Warfare Center collaboration is the first of its kind for Director's Cup and was expanded to other Divisions as way to further One Team Warfare Center efforts.

Due to COVID-19 restrictions of events and gatherings, this year's Director's Cup testing events were held separately and prerecorded to form streamed competition event.

Director's Cup teams consist of new professionals with less than five years of experience in the workforce. The first Director's Cup was held in 2015 and stemmed from a desire to facilitate working relationships.

Dr. Patrick Walters, NSWC PCD Director's Cup lead, said he has appreciated the opportunity to lead this year's competition for NSWC PCD.

"Director's Cup is a truly unique experience. There are few opportunities that allow entry-level engineers to learn and apply state-of-the-art techniques in a friendly competition," said Walters. "It has been fascinating to see how each team has tackled the challenges of the competition."

Walters added that it is important to be ready and expect the unexpected.

"With COVID-19, the 2020 Director's Cup has thrown quite a few unexpected challenges to both the teams and those that make this competition possible," said Walters. "Each team has done an excellent job of recognizing that traditional methods would not work in this environment, quickly adapted, and overcame." ■

| TEAMS | PRESENTATION | POSTER | NAVIGATION | CLASSIFICATION | NUETRALIZATION | EOA | TOTAL |
|---|---|---|---|---|---|---|---|
| NSWC PCD TH-E NUETRALIZERS | 86 | 92 | 50 | 60 | 100 | 685 | 1073 |
| NSWC PCD THE A TEAM | 89 | 89 | 100 | 80 | 96 | 581 | 1035 |
| NSWC PCD X-PLOSION | 86 | 83 | 40 | 60 | 68 | 611 | 948 |
| NSWC Carderock GOOSEBUSTERS | 92 | 94 | 0 | 50 | 76 | 482 | 794 |
| NSWC Crane ATORMENT | 89 | 90 | 100 | 30 | 84 | 348 | 741 |

# COVID-19 & HURRICANES DEFEATED, LIVE ANTX EVENT PREVAILS


**NSWC PCD recently collaborated with Commander, Naval Meteorology and Oceanography Command in coordination with the Naval Oceanographic Office's Fleet Survey Team, and Klein Marine to conduct a live ANTX at NSWC PCD. Seafloor Systems' HydroCat-180 Unmanned Surface Vehicle with towed Multi-Angle X-Pattern side scan sonar from Klein Marine Systems is displayed to conduct fully autonomous hydrographic surveying during testing at NSWC PCD.**

By Susan H. Lawson, NSWC PCD Public Affairs

U.S. Navy photo by Anthony Powers

PANAMA CITY, Fla. – Despite COVID-19 limitations and planning challenges caused by Hurricanes Laura and Marco, a collaborative team prevailed in conducting a live Advanced Naval Technology Exercise (ANTX).

Naval Surface Warfare Center Panama City Division (NSWC PCD) recently collaborated with Commander, Naval Meteorology and Oceanography Command (CNMOC) in coordination with the Naval Oceanographic Office's Fleet Survey Team (FST), and Klein Marine to conduct the testing at NSWC PCD.

The government and industry teams overcame potential setbacks by implementing safety protocols, maintaining a flexible schedule, and keeping a can-do attitude. With participants coming from across the country, one team travelling over 40 hours by vehicle, to both Gulfport, Miss., and Panama City, Fla., this synergy led to successes that far outweighed the struggle.

"The ANTX 20 vignette highlighted technology that is important to the Navy in maintaining a warfighting edge," said Capt. Micah Weltmer, CNMOC ANTX director.

"The main benefits of ANTX are two-fold, the government gains first-hand interaction with emerging technology and the innovation providers gain warfighter feedback and insight on how to better work with government," said Todd Holland, director, mine warfare prototyping at NSWC PCD. "Our team here at Panama City Division, including our test directors, test engineers, range managers, and public affairs personnel did a great job of responding to various challenges while hosting an outstanding ANTX event in collaboration with Klein Marine Systems."

Collaborating on tests of this nature further strengthens the strategic collaboration between the two commands on the Gulf Coast. For the test event, NSWC PCD provided test documentation, test personnel, a support craft, and rigging support for Klein Marine Systems' Multi-Angle X-Pattern Side Scan Sonar (SSS) system. The system was towed by an Unmanned Surface Vehicle (USV), Seafloor Systems' HydroCat-180. In addition, FST provided skilled personnel with useful insights towards the operational utility of these technologies.

"Naval Oceanography must be an early adopter of new technology to stay ahead of the competition," said Weltmer. "Conducting vignette-based demonstrations like the ones developed for ANTX helps us identify areas where current technology, much like Klein's, could be incorporated as an improvement to our existing capability, and a venue to provide direct operator feedback to our industry partners on directions to further advance their technical solutions for operational use."

For FST and other Navy commands, the new technology should reduce time on station for hydrographic surveys, due to improved data quality and an increase in SSS coverage by 40 percent. An Ultra-Short Baseline attached to the USV enables highly accurate navigation data on a towed SSS, allowing for precise positions of any hazards to navigation detected, strengthening the protection of naval assets.

"We continue to look for opportunities to support the warfighter in collaboration with our Gulf Coast regional partner CNMOC," said Dr. Peter Adair, technical director at NSWC PCD. "This is another great example where we are able to collaborate and leverage our facilities and resources to support their mission during this ANTX event."

Klein's algorithms for data transmission allowed an increase in the amount of data able to be streamed to the base station in real-time at an efficient data rate, enhancing the radio connection to the USV and improving identification of hazards to navigation. Seafloor Systems demonstrated advanced autonomy behaviors and a well-designed launch and recovery system. These technologies provide potential cost-saving solutions for the U.S. Navy while expanding sonar-based sensing capabilities for use in related efforts at NSWC PCD.

"It is critical for the naval research and development establishment to develop and deploy a culture of agility and innovation," said Holland. "One way of doing that is to create 'low barrier of entry' events like ANTX, to support the warfighter through exposure to the newest technologies and prototypes developed outside of traditional military pathways. This venue connects industry, academia, Warfare Center personnel, and warfighters in an innovation environment where technology's 'push' meets Navy's 'pull'." ■

# FIRST OF CLASS LCAC 100 & 101 ARRIVE AT NSWC PCD

By Katherine Mapp, NSWC PCD Public Affairs

U.S. Navy photos by
Ron Newsome & Anthony Powers

PANAMA CITY, Fla. —The Navy's newest Landing Craft Air Cushion (LCAC) hovercraft arrived at Naval Surface Warfare Center Panama City Division (NSWC PCD) Sept. 2.

The two craft, LCAC-100 and LCAC-101, were escorted by NSWC PCD's research, development, test and evaluation craft (RDT&E) craft, LCAC-91. This significant milestone marks the first new LCAC to arrive in Panama City in 19 years. The last LCAC, LCAC-91, was delivered in 2001. This effort is part of the Navy's Ship to Shore Connector program which calls for the procurement of 72 craft with a separate craft serving as a test and training craft.

LCAC-100 and LCAC-101 class hovercraft will replace the legacy LCAC to provide the U.S. Navy and United States Marine Corps expeditionary team with a more reliable and capable high speed, amphibious connector to deliver Sailors and Marines and their equipment from ship to shore.

Capt. David Back, NSWC PCD commanding officer, said the two crafts are a welcomed addition to the lab and is proud of NSWC PCD's contribution to the fleet.

"Arrival of the 100-Class LCACs is a significant milestone in our command's history," said Back. "NSWC PCD will continue our tradition of air cushion vehicle technical excellence by delivering solutions that enable the amphibious fleet to meet mission requirements."

LCAC-100 will serve as a RDT&E craft residing at NSWC PCD for continual development and integration of new technology and enhancements into the Fleet. LCAC 101 will also support first of class T&E prior to entering the fleet.

Mitch Martin, NSWC PCD LCAC operator and former fleet operator said he is excited about the craft delivery and seeing this come to fruition.

"Having been in the LCAC program for over 30 years as a Sailor and a civilian, I witnessed and was involved in some way for most of the evolution of the legacy and service life extension program craft," said Martin. "Being able to do that now as part of the team that transits the next generation, first of class LCAC to NSWC PCD, completes the full circle of my LCAC career."

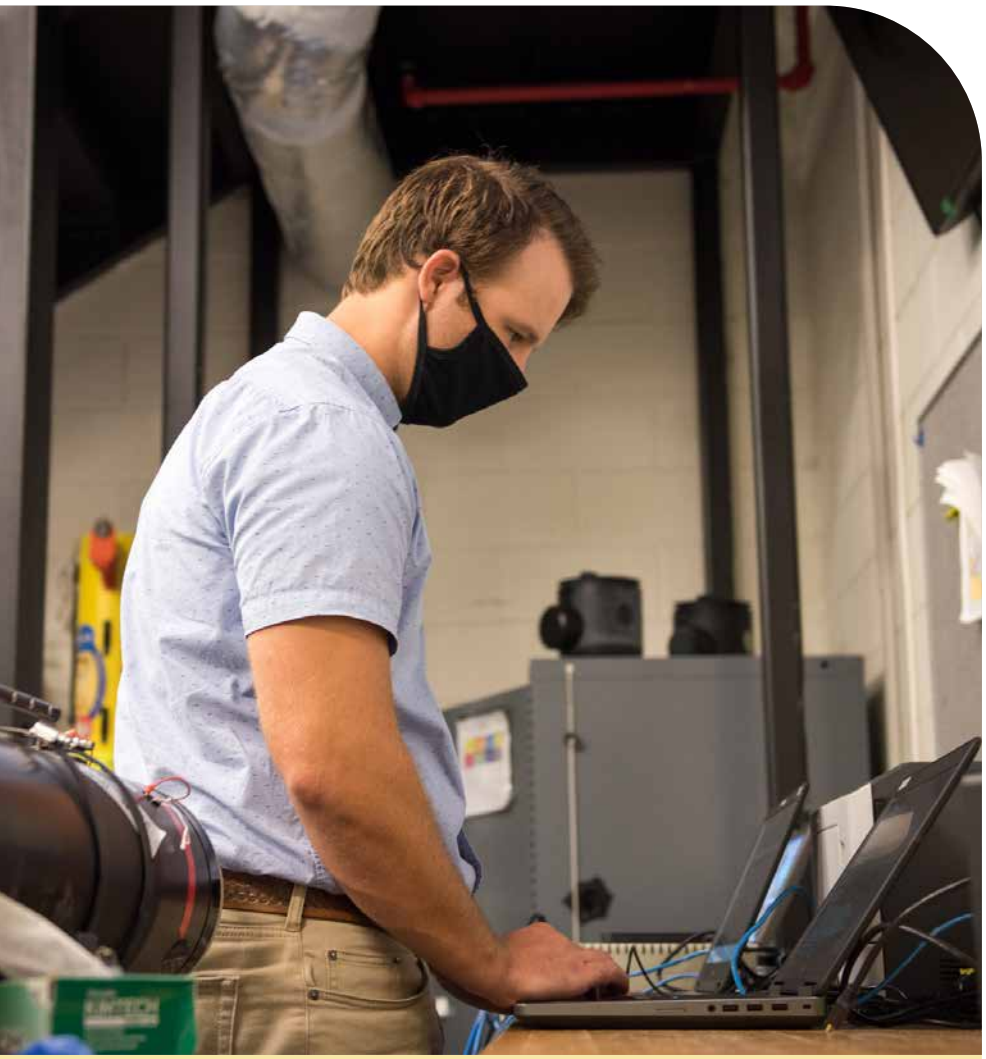
LCAC vehicles have been essential to U.S. Navy and Marine Corps amphibious operations and have provided humanitarian aid during natural disasters such as Hurricane Katrina in 2005 and the catastrophic 7.0 magnitude earthquake that devastated Haiti in 2010.

This delivery is significant to advancing the National Defense Strategy by enabling U.S. Navy and Marine Corps amphibious forces the increased capability to maneuver in key maritime terrain and to maintain warfighting dominance.

Martin added that many individuals have invested significant time and effort into this program over the years and it is very rewarding to the NSWC PCD team to play a prominent role in the delivery of the LCACs. ■

**The Navy's newest LCAC hovercraft arrived at NSWC PCD Sept. 2. The two craft, LCAC-100 and LCAC-101, were escorted by NSWC PCD's research, development, test and evaluation craft, LCAC-91.This effort is part of the Navy's Ship to Shore Connector program, which calls for the procurement of 72 craft with a separate craft serving as a test and training craft.**


**The Navy's newest LCAC hovercraft, LCAC-100 and LCAC-101, arrived at NSWC PCD Sept. 2.**



**Adam Coffman, NSWC PCD computer engineer, performs cyber reconnaissance of the unmanned system.**

# CYBER CAPABILITIES STRENGTHENED THROUGH COLLABORATIVE UNMANNED VEHICLE EXERCISES

By Katherine Mapp, NSWC PCD Public Affairs

U.S. Navy photo by Anthony Powers

PANAMA CITY, Fla. – Scientists and engineers at the Naval Surface Warfare Center Panama City Division (NSWC PCD) are conducting cybersecurity exercises in an effort to strengthen naval capabilities.

NSWC PCD's Cyber Defense of Unmanned Systems and the NSWC PCD CyberLab project teams collaborated to put their unmanned systems capabilities to the test.

Dr. Matthew Bays, Cyber Defense of Unmanned Systems project lead at NSWC PCD, said the goal of the cybersecurity exercise was to analyze any vulnerabilities in unmanned systems.

"The experiment provided a practical, real-world exercise for the engineers in the CyberLab while providing information to improve the cyber hardening technologies that were developed under the Cyber Defense Project," said Bays.

According to Bays, the exercise was a scenario where an adversary captured an unmanned system and attempted to extract information from it. The team used commercial-off-the-shelf systems coupled with locally developed software to conduct the tests.

Joshua Davis, NSWC PCD cybersecurity engineer serving in support of both projects, said conducting these type of exercises are essential to further the development and strengthening of cyber networks.

"Events such as this are significant because it provides an opportunity for both teams to gain experience and information of value to the Navy in the domain of cybersecurity," said Davis.

Kate Maglio, NSWC PCD CyberLab project lead, said the collaboration across the technical departments operating as one team have proved to be a benefit in mission successes.

"Cross-departmental and cross-mission area collaborations are a good thing for the command and the Navy because they allow scientists and engineers in multiple mission areas to gain knowledge, experience, and understanding," said Maglio.

Both teams agreed that these type of exercises are win-wins for the Navy.

"The CyberLab team provided a real-world cybersecurity task and the Cyber Defense team received valuable information on how to make the cybersecurity technologies they developed for unmanned systems better," said Bays.

The teams gained valuable knowledge and understanding in the areas of cybersecurity and unmanned systems, as well as insight into how to improve the cybersecurity of unmanned systems. ■

# LIVE FIRE TEST & EVALUATION TEAM WINS NAVY AWARD AFTER YEARS IN THE MAKING

By Cierra Burch, NSWC PCD Public Affairs

**RANDY HORNE**
DoD photo by EJ Hersom

PANAMA CITY, Fla. – Two Naval Surface Warfare Center Panama City Division (NSWC PCD) personnel were awarded for supporting an effort to complete a Live Fire Test and Evaluation (LFT&E) program. During this program, the team expanded the understanding of the mine susceptibility of both Littoral Combat Ship (LCS) Variants through simulation and sea testing.

Nicole Waters, E42 branch head and former Advanced Mine Simulation System (AMISS) test director, and Randy Horne, technical program manager for threat analysis and exploitation, contributed to an AMISS mission that was ready to enter the test and evaluation phase when Category 5 Hurricane Michael hit the Florida Panhandle.

"I was sitting on a ship in California watching Hurricane Michael coverage in October 2018 with ten other NSWC PCD team members as a drone flew over Mexico Beach showing the damage," said Waters. "I had to make the hardest professional call of my life that day to Randy Horne and tell him our personnel needed to come back as many of us didn't know what remained and many could not get ahold of our families."

Waters served as the lead test director for the AMISS trial. Her responsibilities included planning, re-planning, logistics, test direction, execution of ship trial, safety, and reporting all AMISS events. Horne managed the overall LCS effort, which included the AMISS sea testing, a tremendous amount of computer simulations, and documentation of the overall efforts. Horne also wrote the Total Mine Simulation System verification, validation, and accreditation report for which the sea test data using AMISS was paramount. In addition, he wrote roughly 75% of the Mine Susceptibility portion of the LCS LFT&E report.

Waters and Horne played vital roles in the making and success of this project. They were among over 50 other key players and teams, including technical experts from the LCS Shipbuilding Program Office, Combat System Programs, NSWC Carderock, NSWC Philadelphia, and fleet organizations including U.S. Fleet Forces Command, and LCS Squadrons One and Two.

After Hurricane Michael, the team re-planned the entire event on the opposite side of the country and executed a safe and successful AMISS trial less than six months later in March 2019 on USS Sioux City by basing the new plan from the original plan for the cancelled West Coast testing.

Waters said the team showed "the utmost resilience and perseverance in the face of adversity" when the mission was put on pause due to Hurricane Michael.

Waters and Horne both stated they felt honored when hearing the news about the team winning the Department of the Navy Test and Evaluation Team Award. Horne noted the magnitude of the effort in the midst of adversity is significant.

The team's hard work, resilience, determination, and commitment to ensuring warfighting dominance in the littoral battlespace further solidified the critical role NSWC PCD provides in supporting the fleet. ■

**NICOLE WATERS**
U.S. Navy photo by Eddie Green

# NSWC PCD CELEBRATES 75 YEARS OF THE U.S. NAVY IN PANAMA CITY

By NSWC PCD Public Affairs and Command History Office

**Naval Surface Warfare Center Panama City Division is celebrating 75 years in Panama City, Florida since its humble beginnings and establishment of a permanent presence on St. Andrew Bay with a small test and evaluation organization known as the Mine Countermeasures Station.**

## Our story begins in July 1945

when Secretary of the Navy James Forrestal ordered the former amphibious base designated as a mine countermeasures station. During World War II, research had been conducted at a test station in Solomons, Maryland, but milder temperatures and a warmer climate were needed to conduct year-round testing. Equipment, facilities, and personnel were transferred to Panama City to prepare the base for its new mission.

### September 1, 1945

The U. S. Navy Mine Countermeasures (MCM) Station was officially commissioned with an initial complement of 30 officers and 150 enlisted Sailors. Mine Division 43 would subsequently be homeported at the new research and development station, which would ensure ship services were immediately available to the Research and Development (R&D) community emerging over the coming months.

## 1950

The station began as a military organization in the months immediately after the end of World War II. In the ensuing years, it transitioned to a mainly civilian workforce focused on research and development of mine countermeasures systems. However, the need for strengthening the nation's mine countermeasures became crucial when the U.S Navy attempted to bring forces and supplies ashore at Wonsan Bay during the Korean War in **1950.**

*It was at Wonsan Bay, where 50,000 allies in a powerful 250-ship armada were held at bay for nearly a week by sea mines.*

## 1960

MCM Pioneer Dr. Julius Hagemann developed and patented the first side scan sonar known as the **SHADOWGRAPH** to meet fleet minehunting demands. His specialized research would eventually be known as Acoustic Minehunting and set the stage for future minehunting capabilities.

**1954**

The station achieved laboratory status and was renamed the U.S. Navy Mine Defense Laboratory. Its mission expanded to include torpedo mine countermeasures, helicopter mine countermeasures, mine hunting and mine watching study projects, as well as other advanced countermeasures. During the Korean War, helicopters were used to visually spot minefields.

**1955**

### Early 1960s

the Navy embarked upon an aggressive Man-in-the-Sea program. Its principle aim was to demonstrate man could live and work undersea at extreme depths. This endeavor initiated three separate projects, SEALAB I, II, and III. These Diving and Life Support/Saturation diving experiments later transferred to a controlled environment known as the Ocean Simulation Facility, which is now part of Navy Experimental Diving Unit in Panama City.

### 1964

Panama City's laboratory developed the first two-man SEAL Swimmer Delivery Vehicle (SDV) systems. This was a clandestine vessel with the capability to transit long distances underwater by carrying large payloads. The program firmly established NSWC PCD as the nation's principle activity associated with the design and development of the SDVs. Today, the laboratory continues to produce a series of SDVs that are used worldwide by the special operations forces.

### November 1, 1967

The laboratory became an activity of the Naval Research & Development Center, Carderock, MD

### November 1968

Renamed the Naval Ship Research & Development Laboratory, Panama City

*A naval internal reorganization effort to combine several of the closely related R&D laboratories resulted in the Panama City and Annapolis laboratories combining with the David Taylor Naval Ship Research & Development Center at Carderock.*

# 1970

**February 1972**

It was renamed the Naval Coastal Systems Laboratory. Its mission expanded to include naval special warfare areas such as inshore undersea warfare and amphibious operations. In its separate command status, the laboratory reported directly to the Chief of Naval Material (NMC).

**By the mid-1970s,**

NSWC PCD was selected as the test and evaluation site for the air cushion amphibious assault vehicles program. After participating in the trials of experimental vessels, the command was employed as the Technical Direction Agent for the amphibious assault ship program office.

**March 1978**

The name changed to Naval Coastal Systems Center (NCSC) to more accurately reflect the broad range of products and services provided and to bring its name into alignment with the other (then) seven research, development, test and evaluation (RDT&E) centers commanded by the Chief of NMC.

# 1980

The first Landing Craft Air Cushion (LCAC) was delivered to the Fleet.
**1984**

Upon disestablishment of the NMC, NCSC reported to the Office of the Chief of Naval Research.
**1985**

NSWC PCD was designated as the LCAC In-Service Engineering Agent.
**1986**

NCSC reported to the Space and Naval Warfare Systems Command. In October 1991, it was realigned under the Naval Sea Systems Command (NAVSEA).
**1986 - 1991**

# 1990

**January 1992**

NCSC was redesignated the Coastal Systems Station (CSS), Dahlgren Division, Naval Surface Warfare Center, and reported to NAVSEA. Its mission was to support the mission of the Dahlgren Division by providing RDT&E and in-service engineering for mine warfare, special warfare, amphibious warfare, diving and other naval missions that take place primarily in the coastal region.

# 2000

**2003**

CSS was reorganized as part of the base realignment under Commander, Navy Installations Command in which the NSWC PCD we know today would divide as a tenant command of the base.

**October 2007**

CSS Panama City was brought out from under Dahlgren Division and established as its own echelon four division within NAVSEA known as Naval Surface Warfare Center Panama City Division.

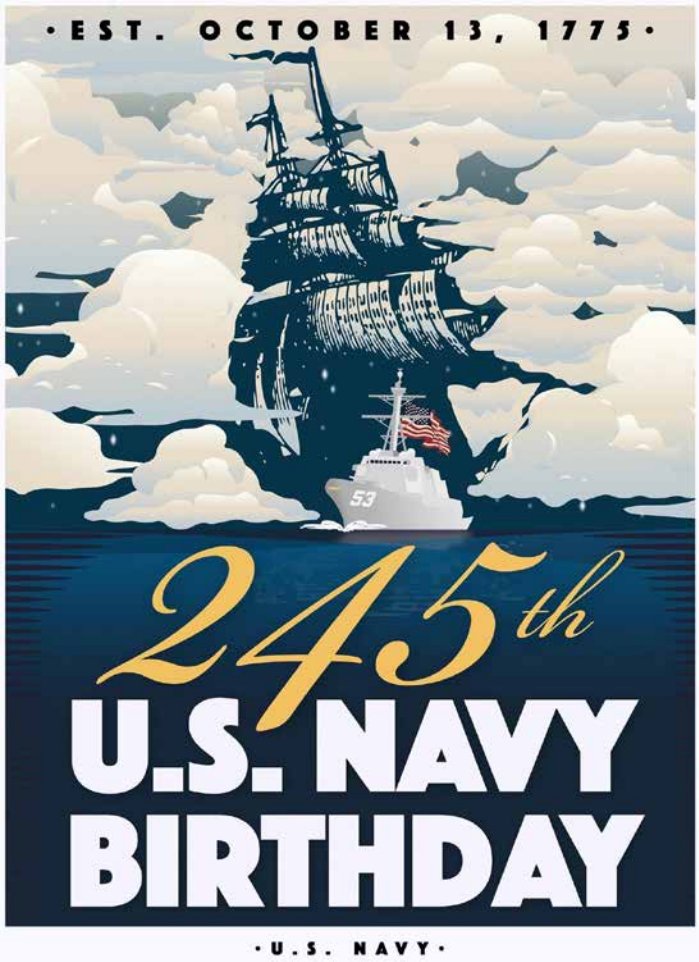
## 2020 marks the 75th year of the U.S. Navy in Panama City, Fl.

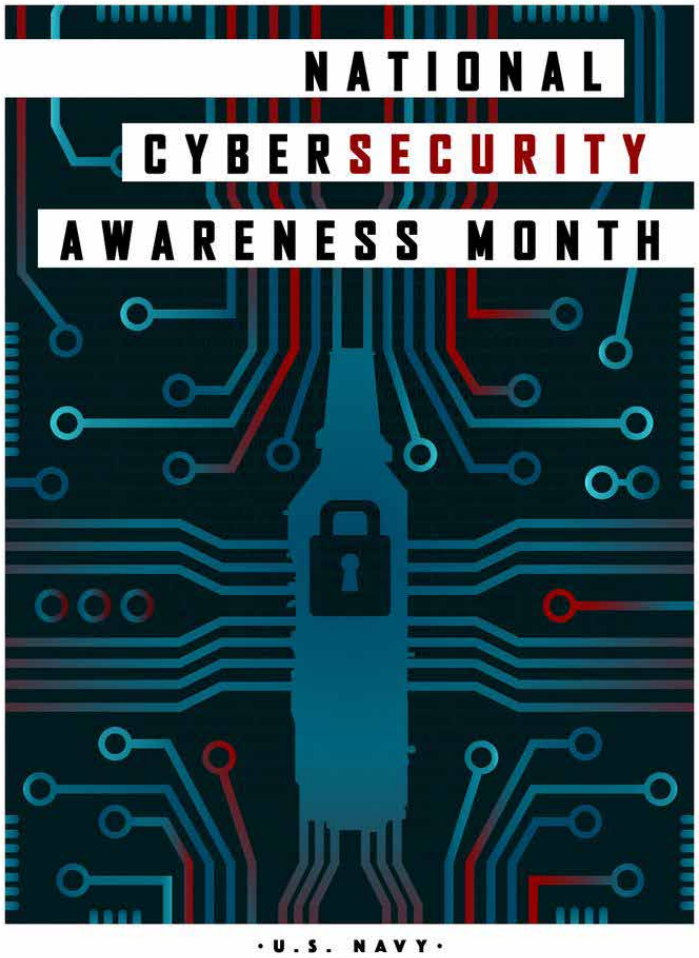
As the mission over the years has grown, so has the size of the installation; 657 acres in all. The unique conditions of the Gulf of Mexico, coupled with mission synergy, make Panama City an ideal location for fleet training and littoral warfare missions.

NSWC PCD has a national reputation for innovation, particularly with regard to coastal defense technologies. However, the actual success has always been due to the resolve, resiliency and patriotic dedication from its workforce at every level, whether people were serving as scientists, engineers and/or someone serving in a support roles.

NSWC PCD's employees have been serving in support of the nation's warfighter for over 75 years. It has a rich history of doing so rapidly and responding to all national crises with urgency and patriotic dedication. It truly exemplifies the U.S. Navy's Core Values of honor, courage and commitment. A force for good, NSWC PCD embodies all the characteristic traits needed to be an essential part of the Naval Sea Systems Command's One Warfare Center team, which combines the strength of all 10 of its Warfare Centers. That is what will enable us to continue providing world-class warfighting support for the next 75 years to come, from seabed to space.

NSWC PCD is the largest tenant command aboard Naval Support Activity Panama City employing more than 1,500 scientists, engineers and support staff in the areas of research, development, test and evaluation, and in-service support in Mine Warfare, Naval Special Warfare, Diving and Life Support, Amphibious and Expeditionary Maneuver Warfare Systems, as well as other missions in the Littoral Battlespace.




## People's Integrated Essential Resource (PIER)

**About Page**
https://wiki.navsea.navy.mil/display/PIER/NAVSEA+Enterprise+About

**PIER Panama City Division Link**
https://wiki.navsea.navy.mil/display/PIER/PC

## Upcoming Awards

| | |
|---|---|
| 11/05 | National Environmental Excellence Award |
| 11/16 | FLC Laboratory Director of the Year Award |
| 11/16 | NAVSEA Engineer, Scientist, and Technician Authority of the Year Award |
| 11/20 | DoD Packaging Excellence and Packaging Achievement |
| 11/20 | DoN CHREEO |
| 12/01 | Thompson-Ravitz Awards |
| Continuous | DoN Agility Awards (Formerly SECNAV Innovation Awards) |

Please contact Cierra Burch for nomination requirements and forms.
Dates provided are due dates for completed package(s) to be received.
*Non-government agency award submissions now require approved public release documentation.

# Safe Helpline

**Safe Helpline is the Department of Defense's (DoD) sole 24/7, confidential, anonymous, and secure hotline for members of the DoD community affected by sexual assault**

### Telephone Helpline
**877-995-5247**

Speak directly with a Safe Helpline staff member over the phone, 24/7.

### Online Helpline
**SafeHelpline.org**

Access one-on-one, anonymous, and secure support, 24/7, through Safe Helpline's online chat portal.

### Safe Helpline App
**Download on the App Store and Google Play**

Create a personalized self-care plan, access self-care exercises, and access other Safe Helpline services via an easy-to-use free mobile app.

### Safe HelpRoom
**SafeHelproom.org**

Connect with and support other survivors of sexual assault through Safe Helpline's 24/7, online, moderated, peer-to-peer chat service.

### Responders Near Me
**Local Responders and Resources**

Receive information about local responders and resources, anytime, anywhere via SafeHelpline.org, via text (55-247 CONUS and 001-202-470-5546 OCONUS) and on the Safe Helpline app.

### Self-paced Educational Programs
**SafeHelpline.org**

Learn more about issues related to sexual assault, the services Safe Helpline offers, and how to support a friend or loved one. Some programs are eligible for D-SAACP credit.

## 877-995-5247 | SafeHelpline.org

Safe Helpline is available 24/7, worldwide and is operated by RAINN, the nation's largest anti-sexual violence organization, through a contract with the DoD Sexual Assault Prevention and Response Office (DoD SAPRO). RAINN will not share your name or any other personally identifying information with DoD or your chain of command.

# NSWC PCD DAWIA

**Defense Acquisition Workforce Improvement Act**

Monthly DAWIA Achievements: individuals who have completed their DAWIA Certification requirements in the last reporting period.

Mike Monroe, DAWIA Program Manager
850-230-7913

| | |
|---|---|
| Emily Astrom | Donald Moses (Subsidiary) |
| Virginia Daniel | Dominic Nguyen |
| Aaron Deich | Omar O'farrill Rivera |
| Jade Douglas | Nicole Pagan-Montanez |
| Lindsey Dupriest | Jonathan Propst |
| Kyle Hansen | Michael Rabb |
| Bryan Le | Jason Reyes |
| Tory Lynch | Shelby Scotese |
| Melanie Macbain | Boris Yekaterinoslavskiy |
| Ronald Morton | |

**Congrats to our employees for completing their DAWIA requirements this month.**

## RUNNING IN REMEMBRANCE

Courtesy photo by Angela Walker

A team of engineers from Naval Surface Warfare Center Panama City Division's (NSWC PCD) E Department participated in the 7th Annual Naval Sea Systems Command (NAVSEA) Remembrance Run-Walk.

NSWC PCD's Angela Walker, Jennifer Louie, Marc Miller, Richard Childress, and Churchill Okello gathered as a team to finish their 5k run.

This run/walk honors the 7th anniversary of the tragic shooting at the United States Navy Yard in Washinton D.C. Sept. 16, 2013 and remembers the lives that were lost. 12 members of the NAVSEA family were fatally shot and three wounded.

**We will never forget.**

# F.I.A.R.

**F**inancial
**I**mprovement &
**A**udit
**R**emediation

## NSWC PCD QUICK REFERENCE GUIDE

### NSWC PCD SUPPLEMENTAL GUIDANCE UNDERSTANDING LEAVE TYPES AND LEAVE BALANCES

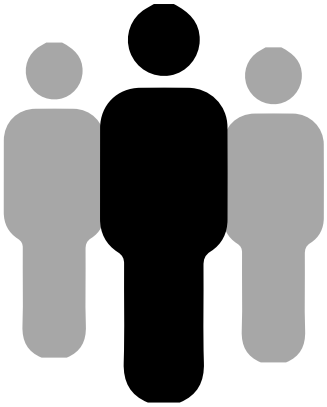
| DESCRIPTION | ANNUAL LEAVE | SICK LEAVE (3 day or less) | SICK LEAVE (over 3 days) | HOLIDAY LEAVE | ADMINISTRATIVE LEAVE | LEAVE WITHOUT PAY (LWOP) |
|---|---|---|---|---|---|---|
| A/A CODE | LA | LS | LS | LH | LN | KA |
| NWA | NO | NO | NO | NO | NO | NO |
| AUTHORIZATION FORM* | ERP LEAVE REQUEST | ERP LEAVE REQUEST | ERP LEAVE REQUEST & Physician Documentation (No Hippa) | OPM Federal Holiday Schedule on File | ERP LEAVE REQUEST | ERP LEAVE REQUEST |
| EXPIRATION | NO | NO | NO | N/A | N/A | N/A |
| CARRY OVER | 240 HRS PER CALENDAR YEAR (extra is fortified) | YES | YES | N/A | N/A | N/A |
| TRANSFER | YES | YES | YES | N/A | N/A | N/A |
| PAY OUT ON SEPARATION | YES | NO | NO | N/A | N/A | N/A |

| DESCRIPTION | TIME OFF LEAVE AWARD | COURT | COMPENSATORY TIME TAKEN | TRAVEL COMP TIME USED | CREDIT HOURS TAKEN |
|---|---|---|---|---|---|
| A/A CODE | LY | LC | CT | CF | CN |
| NWA | NO | NO | NO | NO | NO |
| AUTHORIZATION FORM* | ERP LEAVE REQUEST | ERP LEAVE REQUEST & Court House "Certificate of Attendance" | ERP LEAVE REQUEST | ERP LEAVE REQUEST | ERP LEAVE REQUEST |
| EXPIRATION | 26 PAY PERIODS AFTER EARNING (is not paid out) | N/A | PAYS OUT 26 PAY PERIODS AFTER EARNING OVERTIME RATE AT THE TIME IT WAS EARNED | 26 PAY PERIODS AFTER EARNING (is not paid out) | NO |
| CARRY OVER | 240 HRS PER CALENDAR YEAR (extra is fortified) | N/A | YES | 26 PAY PERIODS AFTER EARNING | UP TO 24 HOURS PER PAY PERIOD |
| TRANSFER | NO | N/A | YES | NO | If new agency uses credit hours |
| PAY OUT ON SEPARATION | NO | N/A | YES | NO | YES |

# NSWC PCD OPERATIONS SECURITY (OPSEC) BULLETIN

September - October 2020

## PERSONNEL SECURITY



A Personnel Security Investigation is an inquiry into the character, reputation, discretion, integrity, and loyalty of an individual in order to determine their suitability for appointment or access to classified and/or sensitive information.

**There are 13 Adjudicative Guidelines used in determining initial and continued eligibility to perform sensitive duties:**

1. Allegiance to the US
2. Foreign Influence
3. Foreign Preference
4. Sexual Behavior
5. Personal Conduct
6. Financial Considerations
7. Alcohol Consumption
8. Drug Involvement and Substance Misuse
9. Psychological Conditions
10. Criminal Conduct
11. Handling Protected Information
12. Outside Activities
13. Use of Information Technology

# SAFETY

Prepared by: Patrick Beacom, NSWC PCD Safety Specialist

# SAFETY ISN'T A MATTER OF LUCK

**ACCIDENT:** an unforeseen and unplanned event or circumstance causing loss or injury.

When an unexpected event occurs, it sometimes appears to be a stroke of luck that something serious didn't happen – especially when feeling the pressure to complete a task with a rapidly approaching deadline.

Safety professionals are strong believers in statistical probability. We are not too big on rabbit's feet, amulets, and charms. Avoiding incidents that result in an "oops", "ouch", first-aid kit, sirens, and sutures is a matter of what you know and how you act – it is not a matter of luck.

In this issue, instead of looking at the hazards we face every day and providing tips to prevent workplace accidents, I want to recognize the NSWC PCD team of employees who have done things for the cause of accident prevention.

**If *safety* is not a matter of *luck*,**

## WHAT IS *IT*?

## SAFETY IS...

... something you have strived and worked towards – maybe without even knowing it.

... recognizing a hazard when you see it.

... being prepared to take action to prevent an accident from occurring – perhaps unconsciously.

... the emergence of a culture of safety – things become second nature and so easy that it appears to be nothing but pure 'luck'.

**Take a look at the list of behaviors observed while performing your assigned duties and responsibilities:**

1. **You took the time to get the right tool.** You were in a hurry. It was inconvenient to stop what you were doing. However, you knew a screwdriver is not a chisel and that a swivel chair is not a ladder.
2. **You wore the personal protective equipment that was issued to you** – even when it was uncomfortable and had not proven its effectiveness in a while. You knew that it did not mean your safety glasses, goggles, or face shield were unnecessary just because you had not experienced the splash of liquid, the spray of mist, or the sting of solid debris striking your face.
3. **You checked the technical manual or you followed a checklist**, even though you were sure that you have the process memorized or you know the sequence of the steps to be taken by heart.
4. **You taught someone the right way to do something** – instead of teaching some half-baked bad habit you have gotten away with and they never would have thought of in the first place.
5. **You spoke up when you saw a coworker about to do something wrong.** If you did not speak up, they may think what they are doing is safe and sound. The other person does not always listen, but when they do, it is all worthwhile.
6. **You made a plan and followed it**, fighting impulsive decisions, hail-Mary passes, and 'just-this-one-time' inspirations.
7. **You recognized when you got distracted,** complacent or sleepy, and then did something about it.

If you did any of these things, please award yourself a virtual pat on the back.

Keep up the good work.


NAVSEA
WARFARE CENTERS
Panama City

**Naval Surface Warfare Center**
**Panama City Division**
**110 Vernon Avenue**
**Panama City, Florida 32407**
**(850) 230-7400**