EXWC

# EDGE

eMagazine

## ExPO in Review

## New High Performance Computing Lab

## NAVFAC EXWC Civilian & Supervisor of the Year

## Meaningful Conversations with William W. Anderson, Jr., PhD

NAVFAC EXWC

ISSUE #0005

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## COVER ARTWORK

*Graphic Illustration representing the seven primary programs of ExPO. Expeditionary Basing, Mobile Mission Support, Industrial Production and Handling, Construction Equipment, Sealift Support, Tactical Vehicles, and Personal Gear Infantry.*

*Happy 154th Birthday to the Civil Engineer Corps and 79th Birthday to the Naval Construction Force – U.S. Navy Seabees. Can Do!*



# A Message from Capt. Jay Cavnar, Expeditionary Programs Office Director

## Greetings Team EXWC,

I'm honored to introduce this edition of the EXWC EDGE, one that highlights our Expeditionary Programs Office, a.k.a ExPO, and some of the incredible work being done by the ExPO Team in support of today's, and tomorrow's, Naval Expeditionary Forces.

Aligned under the Warfare Center's Technical Director, ExPO's roughly 400 dedicated civilian and military teammates provide crucial capability to the warfighter across three core business areas: 1) acquisition and lifecycle management of expeditionary systems, 2) equipment maintenance, and 3) future expeditionary capability development and enhancement.

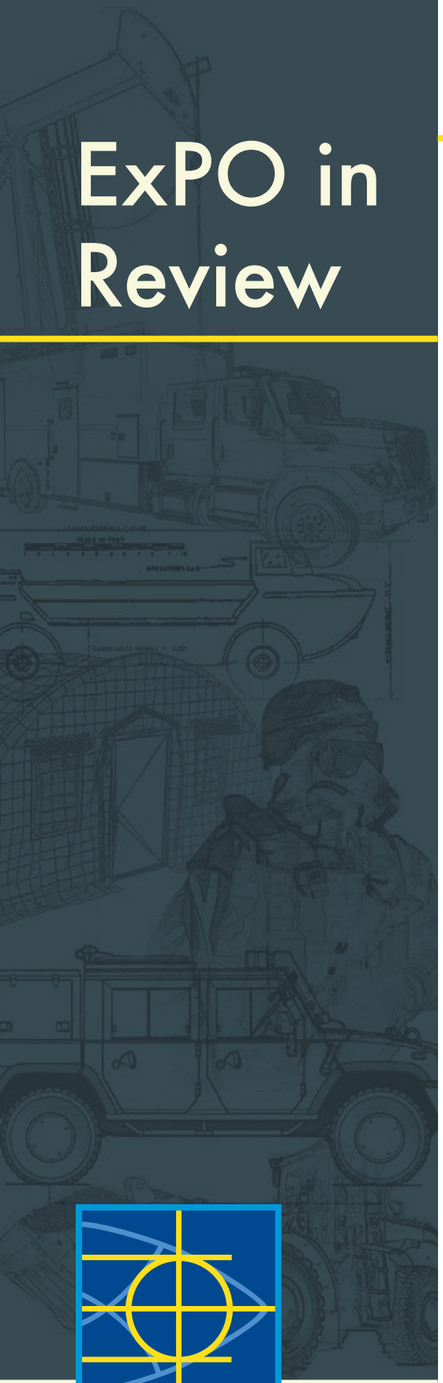
In addition to the efforts showcased in this edition of the EXWC EDGE, I'd like to share my thanks to ExPO for your dedication, adaptability, and persistence during these incredibly challenging times. You all deserve a round of applause for the incredible efforts you've made this past year. In addition to COVID-19 pandemic adjustments, we've implemented improved business and financial systems, and transitioned to a working capital fund resourcing model. Change is never easy or simple, but these changes will improve our agility and responsiveness to the warfighter and improve product and service delivery. It took every single person—ExPO, supporting staff, and command leadership— to make this happen. Thank you again.

On behalf of ExPO, and our workforce in California, Mississippi, Florida, Virginia, and Washington DC, I hope you enjoy this snapshot of our department.

Very Respectively,

**Capt. Jay Cavnar**

# ExPO in Review



## What is ExPO? A Quick Synopsis

It has been over a year and a half since NAVFAC EXWC's Expeditionary Division formally merged with the NAVFAC Expeditionary Programs Office to create the new NAVFAC Expeditionary Programs Office–known as ExPO.

ExPO is responsible for supporting the fleet in documenting capability requirements; keeping abreast of enabling technologies; developing sustainable materiel solutions as needed to address capability gaps; continuously assessing table of allowance health, and developing acquisition plans to close gaps and fielding materiel solutions with total life cycle systems management.

Simply put, ExPO's expertise includes all activities associated with the development, production, fielding, sustainment and disposal of Department of Defense weapon systems across the life cycle of its supported equipment.

The Department of the Navy is not the only branch of the armed forces that benefits from ExPO's portfolio; ExPO also provides expertise to the United States Marine Corps and other supported commands.

A little over 500 employees who specialize in engineering, logistics management, program management and analysis, business and financial management, and equipment maintenance work within ExPO's ranks. The variability of personnel and its immense portfolio capability can be summed up into two words: vast and vital.

Before the merger, NAVFAC leadership requested input from expeditionary employees about the looming stand up of ExPO. A survey was taken across all expeditionary programs, where personnel expressed their hopes, fears, expectations, and general sensitivity to the pending changes; but amidst the uncertainty, the consistent messaging from the new ExPO team was that the focus remains solely on the safety and benefit of the warfighter.

After 18 months of growing pains and great successes, the expectations of ExPO remain simple yet focused: transparency, accountability, better overall communication, increased teamwork and efficiently, and defined roles and responsibilities. The ExPO formula of expectations has derived a highly sophisticated and a highly efficient expeditionary program.

In this issue of EXWC EDGE, let us take a look at ExPO's programs and how they have supported the warfighter since the stand-up, spotlights on two teams whose recent successes were–and are–vital to supporting ExPO's main mission, and a look into ExPO's fruitful future.



# ExPO is Big, but How Big?

ExPO's programs are expansive and meticulous, and fall under the purview of ExPO's Program Management Division (PMD). The PMD is responsible for the life cycle management and sustainment of all expeditionary products and services that fall under the purview of NAVFAC SYSCOM. Within the PMD, there are seven programs separated by, and specializing in, key capabilities led by individual program managers. Each program is independently staffed to provide full lifecycle support for their respective area of responsibility, including acquisition, fielding, product support, sustainment, and disposition. So what are these programs, exactly? Let us dive into more detail about each program, and how they have recently supported the warfighter.

## Expeditionary Basing Program (EX21)

### What is EX21?

EX21 addresses various warfighter requirements related capabilities for user installed remote expeditionary bases as determined by the Office of the Chief of Naval Operations and user schoolhouses. These various requirements include the following capability and supporting equipment: personnel tents, commander operations center, maintenance shelters, battalion aid stations, communications facilities, expedient weapons storage containers, field kitchens, laundry, showers and other integration equipment including those that provide power, fuel transfer and storage, heating and cooling and water purification and storage.

### How EX21 Recently Supported the Warfighter

EX21 currently has a continuing project to develop hardware configurations, operator's instructions and training to support the capabilities provided in NAVFAC EXWC's generators to manage a local power grid. This allows the optimization of grid loading and reduces overall power consumption. It also provides the baseline making the grid accessible for future improvements already being developed related to large energy storage solution to level load the microgrid further optimizing fuel consumption and that will facilitate the incorporation of alternative energy solution to further reduce fuel consumption.

## Tactical Vehicles Program (EX22)

### What is EX22?

EX22 manages armored and unarmored vehicles such as the high mobility multi-purpose wheeled vehicles, joint light tactical vehicles, medium tactical vehicle replacements, mine resistant ambush protection and other expeditionary vehicles.

### How EX22 Supports the Warfighter

EX22 provides full lifecycle support for a portfolio with a value of approximately $1.5B in support of Navy Expeditionary Combat Command, Naval Special Warfare–the beach groups, Navy Expeditionary Medical Support Command and the Helicopter Mine Countermeasures Squadron. The EX22 program covers the light, medium, and heavy tactical missions with the acquisition of new vehicle platforms, and the sustainment of existing platforms through fielding, product support, sustainment, and disposition. In addition, EX22 expeditionary platforms are closely aligned to the Marine Corps in order to maintain interoperability and leverage the development of program and logistics support.

# ExPO in Review

Program areas continued...

## Mobile Mission Support Program (EX23)

**What is EX23?**
EX23 manages commercial-type vehicles with military modifications and other equipment, including expeditionary Navy trailers, general purpose trucks—such as expeditionary truck tractors, stake trucks, dump trucks—and specialty vehicles including multi-mission emergency ordinance disposal response trucks (MERTs), electromagnetic pulse hardened vehicles and aircraft refuelers.

**How EX23 Supports the Warfighter**
Team in EX23 are working to develop a new MERT variant for a smaller MERT to use OCONUS. The result will be a capable vehicle class that meets all logistical customer requirements—resulting in providing the warfighter an expeditionary vehicle to meet their operational mission in their respective area.


## Construction Equipment Program (EX24)

**What is EX24?**
EX24 oversees earth moving equipment, such as dozers, graders and front-end loaders, and construction equipment, such as compressors, pumps, building machines, and specialty tools and tool kits.

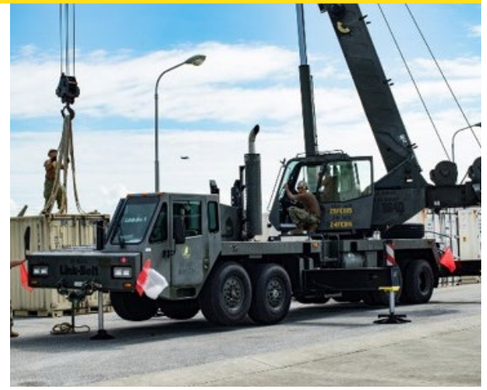
**How EX24 Recently Supported the Warfighter**
In 2020, the EX24 team developed and implemented a Service Life Extension Program (SLEP) that extends the useful service of material assets. During fiscal year 2021, SLEP has seen the return of 11 assets in a "like new" condition, and two assets being inducted into the new program.



## Industrial Production and Handling Program (EX25)

**What is EX25?**
EX25 manages all expeditionary materiel handling equipment, including weight-handling equipment, and mineral products, such as expeditionary cranes, forklifts, crushers, and water well production equipment.

**How EX25 Supports the Warfighter**
EX25 continues to focus on developing new capability requirement documents to support future materiel solutions, including baselining and improving the logistic and product supports to ExPO's fielded equipment. In addition, EX25's engineering and planning yard team tackles upgrades and modification to its equipment.



## Sealift Support Program (EX26)

**What is EX26?**
EX26 manages logistics-over-the-shore, and maritime prepositioning force combatant crafts, expeditionary piers and causeways, ship-to-shore bulk fuel and water systems, and surf zone amphibian and expeditionary systems.

**How EX26 Supports the Warfighter**
Check out how EX26 supports the warfighter in the program spotlight section on page 9!

## Personal Gear Infantry Program (EX27)

**What is EX27?**
EX27 manages the personal combatant equipment and organizational clothing for all naval expeditionary forces.

**How EX27 Recently Supported the Warfighter**
In a coordinated effort with Marine Corps Systems Command, EX27 developed a communications-compatible ballistic helmet, which is currently being fielded to meet the Fleet's requirement for a ballistic helmet that integrates with multiple communication headset devices.


*NAVFAC EXWC Commanding Officer Captain Michael Saum (pictured far left) congratulates the crane crew of the NAVFAC EXWC Expeditionary Programs Office, Expeditionary Maintenance Center in Port Hueneme, California. Pictured from left to right next to Capt. Saum are John Herrera, Enrique Magana, Sal Holguin, Mike Holguine and Max Martinez. On short notice, the crew repaired and passed the certification of a Linkbelt 50-ton crawler crane enabling warfighters of Naval Mobile Construction Battalion FIVE to continue critical repair operations of a damaged pier at Marine Corps Base Camp Pendleton.*

ExPO in Review

# ExPO Spotlight #1: EMC1 Responds to Immediate Need for Repair to NCG-1 Crawler Crane

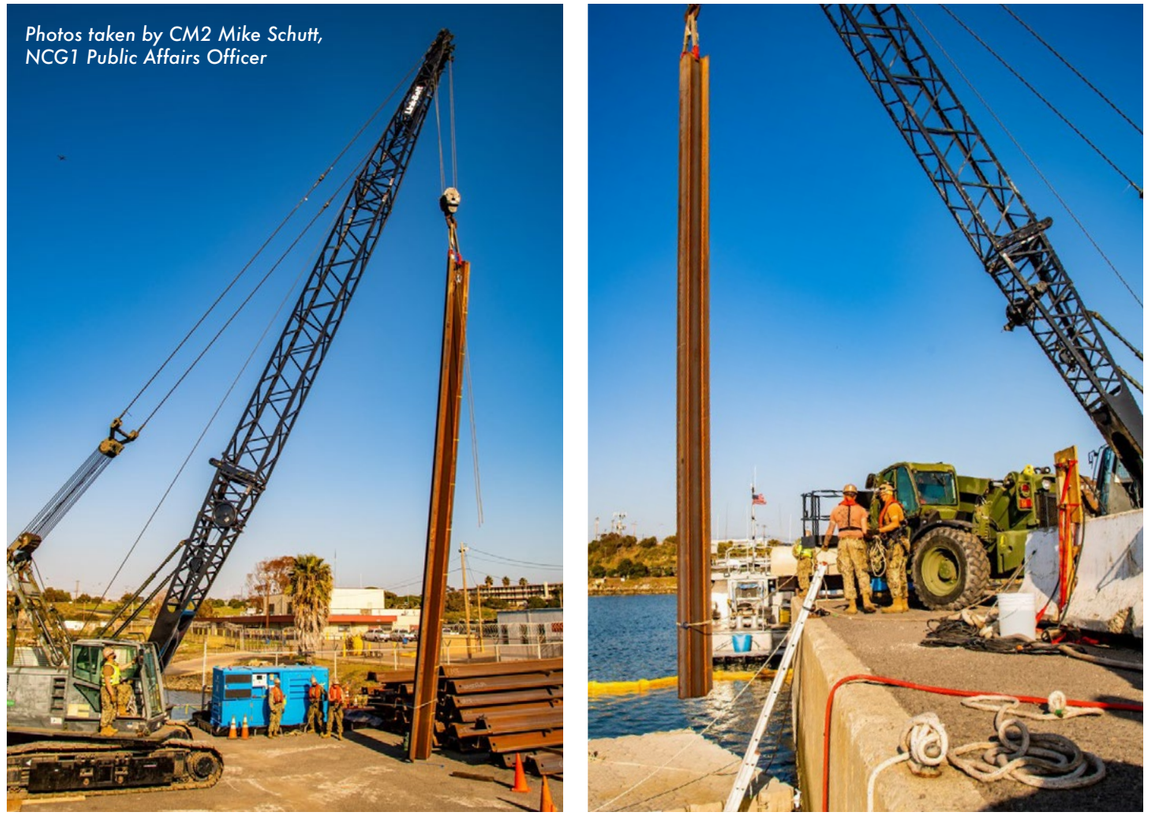
In February 2021, Naval Construction Group ONE (NCG-1) informed NAVFAC EXWC of significant damage to their Linkbelt 50-ton crawler crane at Camp Pendleton in San Diego, California. The crawler crane, utilized by Naval Mobile Construction Battalion FIVE (NMCB 5) at the time, was needed to quickly fix pier damage at the Marine Corps base.

For background, a crawler crane is a crane mounted on an undercarriage with a set of tracks, or "crawlers", that provide stability and mobility. These cranes have the lifting capacity of several hundred tons, and make short work of the toughest jobs.

NCG-1 contacted NAVFAC EXWC ExPO, Expeditionary Maintenance Center One (EMC1), who was at the ready. Prior to receiving a call from NCG-1, EMC1 was already slated to repair and recertify the crane, but without immediacy constraints. After receiving word from NMCB 5 of the immense pier damage, NCG-1 informed NAVFAC EXWC they required the crawler crane to be fixed as soon as possible.



*Photos taken by CM2 Mike Schutt, NCG1 Public Affairs Officer*



*Naval Mobile Construction Battalion FIVE crane operations and pier damage repair crews operate a Linkbelt 50-ton crawler crane during damaged pier repair operations at Marine Corps Base Camp Pendleton, California. The crane crew of NAVFAC EXWC Expeditionary Maintenance Center One repaired the 50-ton crane on short notice, enabling the warfighters to continue their critical mission.*

Originally, EMC1 team was tracking to complete the crane crawler repair within the next 14 days. This included completing necessary repairs, recertifying, and turning over the crawler crane back to NCG-1 in Port Hueneme, California. Instead, the EMC1 crane crew answered the immediacy call—working overtime and over a long holiday weekend shipping a replacement 50-ton crane to Camp Pendleton to complete the repair of the Del Mar Pier.

## How much time was saved by quickly replacing the damaged crawler crane?

The EMC1 crane crew team saved NCG-1 six crucial working days by safely shipping a replacement crane to Camp Pendleton, volunteer to travel to San Diego County, and completed the installation and certification of the new crane at the pier repair site.

## What was the scope of work for the crawler crane repair?

Assembly of a replacement 50-ton Linkbelt crane, removal of counterweight system for transport, preparation of the tools and equipment needed to conduct on-site reassembly, and preparations for safe transport of the crane to Camp Pendleton.

## What happened after the crawler crane was repaired?

The NMCB 5 Seabees crane crew operating the replacement crane resumed pile-driving operations. The time saved by EMC1's immediacy provided a backdrop for NAVFAC leadership to witness the innovative, rapid and agile work of EXWC professionals. Additionally, after the mission was complete, the EMC1 team remained onsite and provided subject matter expertise for teams using the crawler crane.

# ExPO Spotlight #2: Resilient Expeditionary Agile Littoral Logistics Team's Success Multiplies

Last July—and most recently in November of 2020—NAVFAC EXWC, the U.S. Army Engineer, Research and Development Center (ERDC), U.S. Central Command (CENTCOM), and the U.S. Transportation Command (TRANSCOM) successfully demonstrated a joint capability vertical take-off and landing (VTOL) technology.

In simple terms, the Resilient Expeditionary Agile Littoral Logistics (REALL) Joint Capability Technology Demonstration (JCTD) demonstrated how a VTOL technology could refuel from a forward deployed barge.

The Office of the Under Secretary of Defense Research and Engineering funds the JCTD Program. Its main mission is to address combatant command and joint warfighting gaps through prototyping and demonstrating innovative, game-changing technology.



## What happened during each demonstration?

An MH-60M Blackhawk Helicopter conducted a VTOL operation on an Improved Navy Lighterage System Roll-on/Roll-off Discharge Facility (INLS RRDF)—a platform used to transfer wheeled and tracked combat equipment from large ships to smaller combat crafts, or to offload on unimproved beaches. During the demonstration, scientists and engineers collected data points from high-speed cameras and other aerial means to capture metrics used for analysis after the JCTD. The JCTD Program scrutinizes the data points, and uses the information to inform the REALL JCTD team if using the INLS RRDF is logistically suitable.

## How does REALL JCTD play into the bigger Department of Defense picture?

The REALL JCTD provides capabilities addressed by specific requirements identified in the National Defense Strategy and Integrated Priority Lists of several Combatant Commands.

## How does REALL JCTD affect the warfighter?

The REALL JCTD capabilities ultimately will reduce the dependence on traditional and expensive naval assets for logistical purposes, and will enhance the warfighter's ability to provide sustained distribution of logistics in a variety of operational environments.

# 18 Months of 18 Noteworthy Successes in 18 Bullets

1. The NAVFAC EXWC **EABO/DMO** Program team was established
2. **EX2**—or ExPO's Program Management Division Staff—participated in the final planning conference for the NICE ANTX
3. **EX2's** expeditionary runway criteria project test section construction was completed
4. The Joint Construction Management System (**JCMS**) team expanded their work capabilities to include contingency engineering in forward expeditionary facilities
5. The **JCMS** team also added a dedicated professional engineer as their head project manager, now guaranteeing risk management is thoroughly considered
6. **EX22** established a tactical vehicles planning yard working group and a robust configuration control board process
7. The **EX22** tactical vehicle team also successfully fielded the first joint light tactical vehicle to Naval Special Warfare
8. **EX22** completed equipment transfers for 75 MTVRs, 56 MRAPs and 16 MK970 trailers from excess Marine Corps stock
9. **EX22** also conducted process improvements for legacy platforms that update APLS and configuration management base on customer priorities
10. **EX23** received and fielded 6 multi-mission EOD response trucks in 2020 and was awarded a contract through the General Services Administration for 2 additional trucks worth $1.6M
11. **EX23** also successfully initiated a trailer working group to improve trailer requirements, specifications, acquisition tools and methods, and the quality of procured trailers to better meet customer needs
12. Despite COVID, **EX24** was able to deliver the first Cold Form Steel Mobile Factory, and conduct a new equipment training session with Naval Construction Group ONE personnel
13. **EX25** procured and delivered 4 volumetric mixers to multiple Naval Construction Groups
14. Sealift support's Improved Navy Lighterage System Tech Refresh 2 completed 10 of 22 warping tugs and 15 of 38 causeway ferries
15. **EX25** also developed and approved 6 backlogged system alterations for mineral operation and weight handling platforms
16. **EX26** Resilient Expeditionary Agile Littoral Logistics team successfully performed a joint capability technology demonstration in Washington State and Virginia
17. **EX27** worked with multiple commands to develop a materiel solution to support the communication compatibility and integration for a ballistic helmet
18. **EX27** also developed a user material feedback survey that allows the warfighter to easily provide usable feedback to EXWC, with the end goal of correcting technical issues and design flaws for the next generation of equipment prior to full Fleet use



*Pre-COVID photo of Team ExPO taken 18-months ago during the stand-up of the new department*

# What is Next for ExPO? A Look into a Fruitful Future

The future for ExPO looks as exciting and busy as in their recent past. Since the transition to Navy Enterprise Resource Planning (ERP), the ExPO team is pursuing lessons learned by developing desktop guides to instruct and inform, while conducting training sessions to help ExPO teammates have a deeper understanding of the system, and everyone's roles and responsibilities within the system. The ERP transition has been a challenging experience for everyone—emphasizing the need to pursue better documentation of processes and procedures for the future.

ExPO teams are looking forward to implementing Communities of Practice (CoP) across career fields in business and financial management, logistics, program management, engineering, and expeditionary maintenance. Why is this important? A CoP represents a group of people who share a concern or passion for something they do, and learn how to do it better through regular interaction. Through the process of sharing information and experiences, teammates are able to learn from each other—both personally and professionally. CoPs also are independent of rank and organization status, and thus foster a culture for continuous improvement, while promoting a strong foundation for each individual's capacity to grow and contribute to the common mission. ExPO teams are very excited to establish active and vibrant CoPs in each career field!

Over the past year, and due to NAVFAC EXWC's recent designation as a Science, Technology and Reinvention Laboratory, ExPO employees have enjoyed several promotions and lateral transfers as the workforce has taken advantage of many new career opportunities. Despite welcoming dozens of new employees, ExPO is still hiring for several career positions. In an effort to grow and diversify the ExPO workforce, teammates are continuing to rapidly fill current vacancies and train new employees in several engineering and science disciplines, including career program managers, analysts, and logisticians. If you or an associate are interested in a career with NAVFAC EXWC, cover letters and resumes may be forwarded to the resume inbox email address: *navfac.exwc.fct@navy.mil*.

ExPO will continue to seek improvements in how they support their customer base to provide them with fully supportable equipment in an expeditionary environment. The EX2 Program Management Division and EX5 Systems Engineering Management Division are working towards advancing methods and capability solutions to combat adversaries.

Additionally, the EX9 Equipment Maintenance Division is working on providing critical maintenance support to the warfighter units both offshore and on land where maintenance support has previously not existed. These strategic initiatives—combined with logistics management support from EX4 and EX6, and business and financial management support from EX3—make NAVFAC EXWC ExPO the expeditionary program office of choice for today's expeditionary Navy.

# EXWC in the NEWS

Have you spotted EXWC in the NEWS lately? Check out these latest headlines!

*Completing the Installation of Mooring 15*

# COMNAVMAR Fleet Mooring Repairs

## NAVFAC EXWC Partners with UCT, Travels to COMNAVMAR for Outstanding Fleet Mooring Repairs

*Story by Jonathan Koons, NAVFAC EXWC Moorings Engineer*

GUAM (Dec. 31, 2020) – Naval Facilities Engineering and Expeditionary Warfare Center (NAVFAC EXWC) Ocean Facilities Department completed the reinstallation of four fleet moorings in Outer Apra Harbor at Commander, U.S. Naval Forces Marianas (COMNAVMAR) in late December of 2020.

For background, fleet moorings increase the effective berthing space at naval facilities, are ideal for prepositioned vessels and training exercises, and can be the preferred berths for a variety of vessel types in heavy weather.

NAVFAC EXWC manages the U.S. Navy Fleet Moorings Program that supports naval facilities by providing alternative methods to secure vessels from piers and wharfs by utilizing anchored buoys.

In 2010, the four reinstalled fleet moorings in Outer Apra Harbor were placed in wet storage at water depths of 100 feet. NAVFAC EXWC called upon U.S. Navy Underwater Construction Team (UCT) 2 divers to cut the chain and rigged components to surface buoys for future recovery using crane barges.

Beginning in 2018 through 2019, NAVFAC EXWC recovered and reinstalled three of the four fleet moorings at COMNAVMAR. Unfortunately, professionals were unable to successfully recover the fourth mooring due to the mooring's sinker (a concrete weight that helps maintain positioning) deep embedment in the ocean floor mud. The operation was temporarily aborted in September 2019 until stronger rigging components could be installed.



*USNS 2nd LT John P. Bobo on Mooring 702 Outer Apra Harbor (photo 2019)*

*New bouy installed on Mooring 702 (photo December 2020)*

In December of 2020, UCT divers installed a high-strength, lightweight AmSteel® pennant to the riser chain connected to the buried sinker of the fourth mooring, and reinstalled a new rigging assembly on an anchor leg, both connected to small buoys on the surface.

In conjunction with NAVAC EXWC, Oceanetics℠—an engineering, fabrication and field support specialist company—served as the prime Federal Government contractor for the fleet mooring installation, which mobilized a crane barge for repair operations after UCT completed the rigging. While onsite—with a new plan and increased capacity equipment—the troublesome mooring sinker broke free from the mud. It took 16 hours to safely manipulate all the components on the deck. Worn materials were replaced, anchor legs were reconnected, and a new buoy was added all while the new mooring was successfully reinstalled. During the project, NAVFAC EXWC and Oceanetics professionals also replaced the buoy on another mooring that USNS 2nd Lt. John P. Bobo uses—the lead ship of a line of maritime prepositioning force vessels.

The successful execution of the four fleet mooring repairs in Outer Apra Harbor have enabled the continued use of the fleet moorings for the lead Military Sealift Command preposition ships, and other various uses by port operations. Port operations are now mission ready, and meet the warfighter requirements for permanent and transient fleet forces in theater.

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For more information on NAVFAC EXWC's Fleet Moorings Program, contact Jonathan Koons, P.E. via email: jonathan.koons@navy.mil

# EXWC in the NEWS

# New High Performance Computing Lab

## New Science, Technology and Reinvention Laboratory Establishes Advanced High Performance Computing Lab

*Story by Sarah G. MacMillan, NAVFAC EXWC Deputy Public Affairs Officer and Chase Close, NAVFAC EXWC Public Affairs & Visual Information Specialist*

PORT HUENEME, Calif. (Feb. 5, 2021) – Naval Facilities Engineering Systems and Expeditionary Warfare Center (NAVFAC EXWC) Command Information Office (CIO) establishes a High Performance Computing Lab (HPCL) to upgrade outdated research, development, testing and evaluation (RDT&E) assets.

As a new Science and Technology Reinvention Laboratory (STRL), NAVFAC EXWC maintains a vast science and technology portfolio that seeks to address a broad array of computer and science research. The HPCL, spearheaded by NAVFAC EXWC Office of the Technical Director, is part of an STRL initiative to offer greater innovative technologies for NAVFAC EXWC researchers supporting the nation's sea and shore defense strategies.

"This new capability reestablishes NAVFAC EXWC's commitment to the Navy and Marine Corps team," said Mr. Kail Macias, NAVFAC EXWC Technical Director. The HPCL enhances agility; EXWC engineers, scientists, and technicians can now collaborate real-time with customers and stakeholders. Our mission is essential–EXWC is a premier warfare center, providing RDT&E and in-service engineering to deliver solutions to the fleet. The HPCL is a direct result of our new STRL authorities enabling us to anticipate needs, provide innovative solutions, and accelerate the transfer of technology rapidly to the warfighter."

Prior to HPCL installation, NAVFAC EXWC had extremely limited access to the Defense Research and Engineering Network (DREN). Now–with the expanded DREN capability–NAVFAC EXWC researchers can investigate innovative ideas by exploiting the new features,  and high-performing systems. The new DREN-connected RDT&E HPCL also improves NAVFAC EXWC's cybersecurity posture, by partnering with Naval Information Warfare




*(Pictured left to right) Captain Michael Saum, NAVFAC EXWC Commanding Officer, Mr. Jeff Hussey, (acting) NAVFAC EXWC Command Information Officer, Mr. Christian Bowers, NAVFAC EXWC HPCL Manager, and Mr. Kail Macias, NAVFAC EXWC Technical Director, pose for a photo inside the newly commissioned computer laboratory.*

Center Pacific to provide a properly accredited environment that is easier to maintain in lifecycle as compared to the legacy standalone systems. Access to the DREN offers NAVFAC EXWC researchers access to collaborate online with other warfare centers through the High Performance Computing Modernization Program–a program that provides access to supercomputers, a national research network, and computational science experts that offer defense laboratories and test centers a safe, collaborative space to conduct RDT&E.

"The creation of the HPCL provides NAVFAC EXWC with the necessary computing needs to expand our modeling and simulation capability," said Jeffrey Hussey, NAVFAC EXWC Acting Command Information Officer. "These capabilities will allow the command to provide the warfighter with vital information to ensure that mission needs are met."

NAVFAC EXWC's Capital Improvements Geographic Information System (CI GIS) team began utilizing the HPCL to collect point cloud and photogrammetry data to create virtual models of naval installations. Meshing data procured from the HPCL into a virtual model on the original computers took upwards of 72 hours. The new HPCL allows the CI GIS team–and other NAVFAC EXWC researchers–the ability to collect and mesh data within the same day to determine if additional data is required for a complete virtual model.

"Returning HPCL compiled data can be a critical tool in a time of emergency," said Christian Bowers, NAVFAC EXWC HPCL Manager. "For example, in the event of a natural disaster, this technology will enable us to identify and assess damage to utilities and infrastructure, and dispatch repair teams in a timely manner."

To ensure the HPCL operates at optimal capability, the lab manager will collaborate with CIO and the HPCL stakeholders to evaluate upgrade requirements for the HPCL in real-time to meet evolving mission requirements. This includes updates to the advanced modeling software suite, exploration of machine learning and artificial intelligence tools, and acquisition of additional computational capability. As technology evolves, refreshing the HPCL will happen more frequently and may eventually involve a leasing model to reduce lifecycle costs.

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For more information on NAVFAC EXWC's High Performance Computing Lab, contact Christian Bowers via email: christian.f.bowers@navy.mil

# Supervisor of the Year

## Adam Ward, NAVFAC EXWC Expeditionary Maintenance Center One Deputy Director

Adam Ward, NAVFAC EXWC Expeditionary Maintenance Center One (EMC1) Deputy Director, was selected as NAVFAC EXWC's 2021 Supervisory Civilian of the Year.

Ward honorably served in the Navy from 1993 to 2017. It was not long after retirement that Ward returned to his passions—serving the Navy as contractor, and then hired by NAVFAC EXWC in 2019 as a civilian.

Ward has over 28 combined years of active duty and civil service, and is no stranger to construction and construction equipment—the fundamental components of work done at EMC 1. Serving as deputy director, Ward oversees 66 civilian and 13 military personnel who provide engineering support, charge proposals, and safety upgrades from start to finish for land-to-shore expeditionary maintenance for the Navy, and remaining Armed Forces when contracted.

"Mr. Ward truly represents the nature of professional employees a NAVFAC EXWC strives to recruit, train, and retain," said Mr. Kail Macias, NAVFAC EXWC Technical Director. "His focus on quality work, professionalism and commitment to customer service, makes him a perfect selection for the Supervisor of the Year recognition. He exemplifies integrity, accountability, initiative, and toughness, and expects the same of his direct reports. Without a doubt he earned this award, and he humbly gives all credit to his team of hard working industrial mechanics for their efforts supporting the American warfighters."

Ward's leadership and strategic efforts that have resulted in direct and lasting improvements to the staffing, culture and capabilities of not only EMC1, but also NAVFAC EXWC at-large made him the ideal selection as supervisory civilian of the year. His consistency and attentiveness has paved the road for other expeditionary programs within NAVFAC EXWC to meet customer needs and minimize equipment downtime—an essential and timely requirement for EMC staff. Ward also took the initiative to analyzing department feedback from the government-sponsored DEOMI Organizational Climate Survey, conducted focus groups for feedback, developed recommendations, and made adjustments within EMC1 and the larger NAVFAC EXWC Expeditionary Programs Office.

***"My selection as supervisor of the year is a direct result of all the hard work performed by my team," said Ward. "I've also been fortunate to receive mentorship and support from every level of management."***

Ward added that although he has received several certifications in his field as a both a military person and civilian, there is no replacement for real world experience and understanding the struggles of the warfighter.

Ward said, "I have been a warfighter myself, so it is an honor to work to ensure the warfighter has everything they need to be safe and successful. The roles are now reversed where I can pay the favor forward and protect those who protect us—that truly is a reward in itself."

"Adam has been an exceptional leader since his first day at EMC1," said Joseph Paris, NAVFAC EXWC EMC1 Director. "There has never been a project Adam hasn't conquered or a problem Adam hasn't tactfully solved. He continuously boosts morale around the office, and our EMC1 team truly appreciates his honesty, professionalism, and warfighter-first charisma—as do I."



# Civilian of the Year

## Carina Reeves, NAVFAC EXWC Science, Technology, Engineering and Math Program Manager

Reeves became the first STEM outreach coordinator for NAVFAC EXWC in 2019. Since her onboarding, Reeves' efforts have dramatically enriched the entire NAVFAC community. She has secured over $590k from the Office of Naval Research in support of NAVFAC's STEM program, with nearly 70% of funds specifically allocated to NAVFAC EXWC. Reeves notably added NAVFAC EXWC to the Department of Defense SMART Scholarship-for-Service—only the 3rd facility added in the past 10 years.

***"The value of STEM education cannot be understated—the skills gained from STEM extend well beyond preparing a student for a STEM career. In fact, STEM-based education focuses on real-world applications of science, math and critical thinking. In this ever-changing world, it is more vital than ever for students to develop versatile STEM skills as early as possible," said Carina Reeves, NAVFAC EXWC STEM Program Manager.***

Reeves also received special recognition outside the NAVFAC organization by the Ventura County STEM Network as a STEM champion—a recognition saved for individuals and organizations that have greatly contributed to STEM excellence in Ventura County.

***Reeves said, "Developing the NAVFAC EXWC STEM Program has been incredibly rewarding—in fact, it is a labor of love. Today's students are tomorrow's future DOD workforce. It is my goal to offer every student I can the opportunity to invest themselves in STEM-related curriculum, with hopes that this investment makes the STEM education process exciting, pertinent, and everlasting."***

"Carina's passion for STEM-related work is evident in everything she does for NAVFAC SYSCOM," said Katelyn Rydberg, Reeves' former supervisor. "It took a very short amount of time for Carina to take the NAVFAC EXWC STEM Program to the next level—she engaged with our local kindergarten through college students and STEM educators to provide hands-on exercises and events inspiring students to pursue naval-relevant STEM fields. She also took on an enormous initiative to secure a dedicated STEM budget from the Office of Naval Research—the first of its kind in recent years."

Rydberg added that Reeves' dedication to her trade has vastly widened the opportunities for local STEM students looking to work for the DOD after graduating. Reeves has built the NAVFAC EXWC STEM Program to a capacity that offers students as early as kindergarten to be introduced to STEM, and continues to offer students at every education level through college an opportunity to partake in DOD STEM initiatives.

"We have a tremendous team of professionals at NAVFAC EXWC, making a single selection for this award tough," said Captain Michael Saum, NAVFAC EXWC Commanding Officer. "Carina's work during the past year accelerating the STEM program to new heights by engaging leaders, working closely with engineers and scientists, and collaborating with academia on the importance of STEM programs in community classrooms and remote education programs is certainly worthy of this recognition. The future of engineering and scientific discoveries rest with the next generations of students. Carina's passion and expertise promotes the vital importance of STEM. The Department of Defense is lucky to have her on our team."

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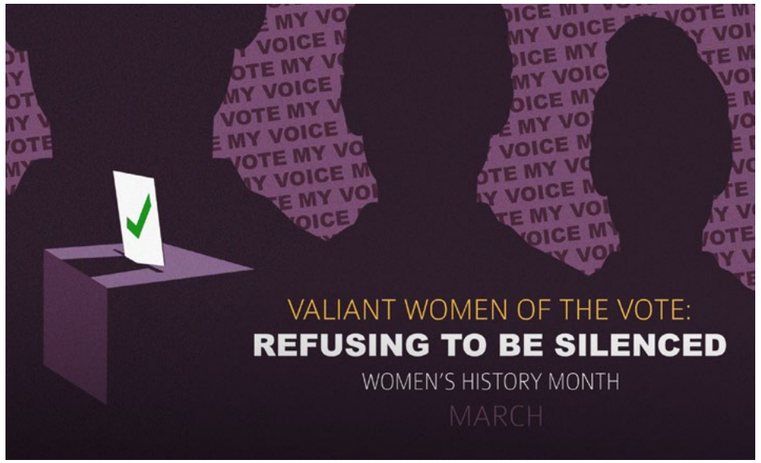
# Women's History Month

Valiant Women of the Vote: Refusing to be Silenced




*Department of Defense Women's History Month Poster*

## About Women's History Month

### Women's History Month Origins

Women's History Month had its origins as a national celebration in 1981 when Congress passed a public law authorizing President Jimmy Carter to proclaim the beginning of March as "Women's History Week." It took five more years, and a petition by the National Women's History Project for Congress to pass a new public law designating the entire month of March as Women's History Month.

### Mobilizing a Movement

Before Women's History Week was established, co-founder of the National Women's History Alliance—Molly Murphy MacGregor—held an event at The Women's History Institute at Sarah Lawrence College in New York. Gerda Lerner, a well-known historian of the time, chaired the event. Several national leaders who ran organizations for women and girls also attended, where they learned about the great contributions of women throughout U.S. history. The event was extremely successful, prompting those who attended to initiate women's history movements in their respective communities. Attendees also strongly supported an effort to secure what was formerly "National Women's History Week", now Women's History Month.

***"Women's history is [a] women's right. It is an essential and indispensable heritage from which we can draw pride, comfort, courage, and long-range vision." – Dr. Gerda Lerner***

### Why Do We Celebrate Women's History Month?

Women's History Month is a month dedicated to reflecting and honoring the many overlooked contributions and achievements of women in U.S. history. American women have struggled throughout history to gain rights for themselves, their predecessors, and other disenfranchised groups in America.



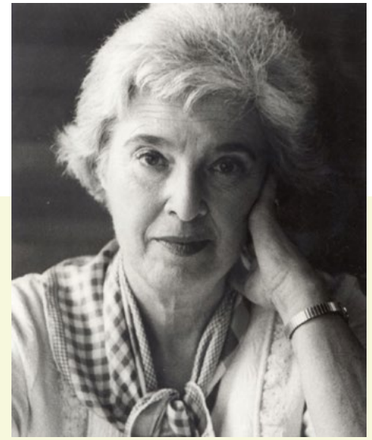
### Pioneer, Historian and Feminist: Dr. Gerda Lerner

Just as important as the women who have made history is those who have advocated the importance of embedding women's stories in history. Dr.Gerda Lerner was a pioneer, historian and feminist who eloquently and courageously advocated the importance of women's history in the pursuit of social justice. Lerner devoted her entire career to cast doubt on preconceived notions that women did not make history. Rather, Lerner knew women had an unspoken history, would create history, and would alter societal mindfulness with activism.

Lerner died in 2013 after spending the last 60 years of her life studying women and African American history. In 1972, Lerner published Black Women in White America—one of the first books published that focused on the history of Black women, proving to naysayers of the early 1970's that the history of African American women could (and would) be written.

One of Lerner's most popular books, The Creation of a Patriarchy, traces the images, metaphors, and myths that lead to patriarchal concepts in Western societies. Lerner argued that a patriarchal society is established historically, and can also end through historical due process—such as conferring about women's history.

Lerner advocated that observances like Women's History Month—or Black History Month or Asian American and Pacific Islander Heritage Month—would shed exposure on the areas in American history where marginalized groups continue to be marginalized from history books. It is because of historians like Lerner, that women today of all shades can be part of the narrative—both spoken and written.



*Gerda Lerner, c. 1981.*
*photo credited to UW-Madison*

### Excerpt from Dr. Lerner's book The Creation of a Patriarchy:

*"Women have been kept from contributing to history-making, that is, the order and interpretation of the past of humankind. Since this process of meaning-giving is essential to the creation and perpetuation of civilization, we can see at once that women's marginality in this endeavor places us in a unique and segregate position. Women are the majority, yet we are structured into social institutions as though we were a minority"*

*"What women must do, what feminists are now doing, [which] is to point to that stage, its sets, its props, its director, and its scriptwriter as did the child in the fairy tale...and say [that] basic inequality between [men and women] lies within this framework. And then they must tear it down"*

*"It is remarkable that in societies which had subordinated women economically, educationally, and legally, the spiritual and metaphysical power of goddesses remain[s] active and strong."*

***"We now know that man is not the measure of that which is human, but men and women are." – Dr. Gerda Lerner***

In honor of Women's History Month, NAVFAC EXWC is honored to spotlight Fleet Master Chief (Retired) April Beldo-Lilley.

# Women's History Month

Spotlight:
FLTCM(Ret.)
April Beldo-Lilley

*Courtesy U.S. Navy Photo*

Beldo-Lilley is known in the Navy community as one of the most accomplished master chiefs, responsible for the execution and success of several personnel initiatives. She was also the first African American female command master chief (CMDCM) of an aircraft carrier, and the first African American female CMDCM of a Recruit Training Command. In 2017, she retired after 34 years of exemplary service.

Before her retirement, Beldo-Lilley sat down with Naval History and Heritage Command in 2016. She said, "...the opportunities that I have been afforded based on my ability to perform have just...I just can't even talk about it... there are sailors that don't even know what their potential is because they allow other people to tell them what their destiny is. So this is what I am hoping for as young women and young men [read] this interview... it is not the person. It's about the positions we are afforded to serve in."

***During her retirement ceremony, Beldo-Lilley said, "I am a United States Sailor, forever."***

Beldo-Lilley has done her fair share of interviews, and if you pay attention, you will notice a pattern: she graciously thanks her shipmates for their comradery and guidance. Without them, her Navy journey would not have been as successful, sustainable or enjoyable.

Throughout her Navy career, Beldo-Lilley received four Meritorious Service Medal awards; three Navy and Marine Corps Commendation Medals; three Navy and Marine Corps Achievement Medals; and numerous unit awards.

NAVFAC EXWC Public Affairs Office virtually spoke with Beldo-Lilley, discussing her time in service, what it meant to be a women—and a women of color—in the Navy during a time when the ratio of men and women serving was dramatically indifferent, and how the power of mentorship shaped her Navy career, and her life today.



**MacMillan:** Thank you for taking the time to speak with NAVFAC EXWC! Let's get started. Can you recall your first exposure to the U.S. Navy? How did that experience impact you?
**Beldo-Lilley:** My first exposure to the Navy was my brother. He joined the Navy in the mid-70s, and I went to his graduation in San Diego, CA RTC—I was young then and really did not understand what I was witnessing. He did 4-years on the USS Saratoga. Then when I went to join the Air Force in 1983 there were no female quotas. As I was leaving the recruiting station in Lancaster, Calif. the PN1 recruiter called me into his office and the Navy had quotas.

**MacMillan:** What made you decide to join the Navy? And once you joined, what was the toughest part of boot camp? Or what was the toughest part of acclimating to what likely was a Navy that had a higher ratio of men to women?
**Beldo-Lilley:** I was a year out of high school and was not focused on college. Growing up in a military environment, my Dad was a retired MSGT USAF, I decided what is the worst thing that can happen? 4-years of structure and discipline; that could not hurt. I hated boot camp; I could not believe I had made this decision... I shook my head every night I looked in the mirror, in a compartment with 80+ other females, what had I done? I never really thought about the male/female ratio... I was just trying to get out of boot camp, finish my apprenticeship training (I came in as non-designated AN; I just wanted to get to my first duty station... Which happened to be CUBI PT, PI...1983, we were a family at VC-5, an overseas command; I was welcomed into the family away from our stateside home.

**MacMillan:** I've read your bio—it is impressive. After 20 years in the Navy, you were selected into the Command Master Chief Program. How did that selection change the trajectory of your career? Who helped you get there?
**Beldo-Lilley:** I was selected into the CMDCM Program at 18 years 2002, and one of my mentors (AZCM>CMDCM) wanted me to think about the program as soon as I was selected for MCPO, but I wanted to be a rated master chief, AZCM, operationally. It worked out perfectly; I was pulled from my current command, CNAL, to go to sea duty, USS George Washington. I worked in AIMD and the carrier was scheduled for a deployment immediately after I reported aboard. I did get the opportunity to be operational and a Department Leading Chief Petty Officer (DLCPO). I wanted to walk the deck plates as a DLCPO prior to being a CMDCM. Understand all roles prior to transitioning to a CMDCM. Best decision I ever made. I also thought about manning distribution, once I decided to go the CMDCM career path, I opened up a quota for an AZ Senior Chief Petty Officer to have an opportunity to be selected to AZCM. I had to look at the BIGGER PICTURE!

**MacMillan:** As a woman—and as a woman of color—can you share with us an experience or situation that you encountered during your tenure in the Navy that you found difficult, and fought through the adversity in order to complete the mission at hand?
**Beldo-Lilley:** My first CMDCM tour was on a destroyer (remember, I am an airdale). The new commanding officer wanted to turn off my orders as his CMDCM, however, not an option. I knew this, but never let him know about it. I reported aboard and explained to him... I know sailors, I know how to motivate sailors, and I know how to lead a CPO MESS, if you just give me your vision for this ship, I WILL make sure we meet your expectations... With reservation, he did; we did; and our sailors thrived and we went on a maiden deployment with our bumps and bruises... Nevertheless, we brought everyone home safely, met our mission requirements safely. That is a success story! To this day, I still communicate with that CO we formed a lasting friendship... You know there is always someone sitting in the "bleachers'' trying to be a disturbance or distraction... However, that is exactly what they are distractions... I did not allow them to cause me to lose focus on the Navy's mission, the command's mission. Either they got onboard or they would be ejected! Ha! They knew I was serious about the mission at hand. I did not play about operational integrity.

**MacMillan:** One word: mentorship. Did you receive mentorship while enlisted?
**Beldo-Lilley:** Absolutely. Early in my career (I do not know if we knew it as mentorship) but from the time I was at my first duty station I was always receiving guidance on what I needed to do to be a successful sailor! From those who looked like me/same gender and those who did not, in my personal affairs and professional development. My supervisors, leaders, peers always took the time to share their insight... It was my responsibility to figure out whether I was going to take heed, or discard it... When I made chief in 1995, onboard USS Abraham Lincoln, many CPOs shared their personal philosophy... It was my responsibility to figure out what worked for me and my destination...

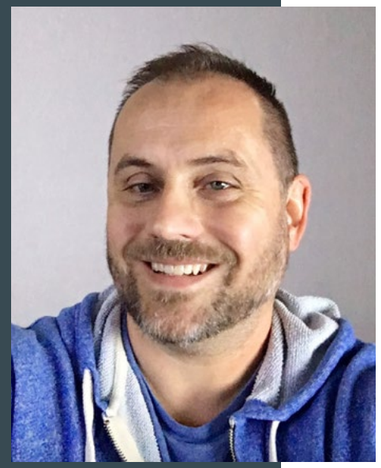
# NAVFAC Character Trait:

## DECISIVENESS

During February's All-Hands/Town Hall, individuals across NAVFAC EXWC were recognized by their supervisors and commanding office leadership for a particular quality they possess—decisiveness. Decisiveness is having the power or quality of deciding, possessing determination, and being outright unmistakable. This is not only an excellent quality to possess as one navigates their professional career, but also an important skill for everyday life. It cannot be overstated that the following NAVFAC EXWC professionals are appreciated and valued for their combined efforts in support of NAVFAC EXWC's mission.

### CE1 Amberleigh Cantrell, MUSE:

CE1 Cantrell is assigned to the Mobile Utilities Support Equipment (MUSE) Engineering Branch, serving as a contracting officer representative on a $65M MUSE power system contract. Her decisiveness was paramount during the recent award of task order (-4213)—the refurbishment of a 2500kVA mobile substation. As the technical lead for the MUSE Engineering team during negotiations, she provided rebuttal correspondence on the performance work statement to clarify ambiguous requirements identified by the Contractor. CE1 Cantrell's efforts aided in NAVFAC EXWC Acquisition Team's determination of a fair and reasonable price for the overhaul of the power equipment.



### Bradley Holt, CI:

An important part of being decisive is understanding what decisions you have the authority to make and identifying or elevating decisions that need to be made by others. Brad excels at framing an issue and providing all of the data needed for the appropriate individual to make a fully informed decision. He is continually decisive on the implementation and actions of the Operations (OPS) department with respect to Capital Improvement's execution to meet all incoming data calls and urgent work that comes through OPS from around the globe. Brad works extremely well with others and is not afraid to step up and take the lead on any initiative. He is not afraid to make a decision, but is always communicating it to ensure his decisions align with leadership.



### Monica Hernandez, EX231:

Monica Hernandez—largely on her own initiative and driven by recent sub-optimal outcomes—decisively volunteered to lead a team and work with the General Services Administration (GSA) and Defense Logistics Agency (DLA) contracting to pivot away from the lowest priced, technically acceptable trailer procurements, and find a way to leverage best value selection for future procurements (without doing an "in-house" contract). Her efforts resulted in changing acquisition strategies from DLA to GSA for trailers. Monica is a prime, excellent example of a proactive employee who acts with total decisiveness.

### Katelyn Rydberg, EX5:

Since joining the Expeditionary Programs Office (ExPO) staff in late 2020, Katelyn has exhibited decisiveness on multiple occasions. When the NAVFAC-wide professional engineer review course was revealed to be restricted to the DAWIA-FE career field only, Katelyn immediately took action to evaluate the engineering training overhead budget and determine if ExPO could sponsor its own professional engineer review course for its mostly non-FE career field workforce. Within a month, she had evaluated the budget, identified a course, convinced leadership of the value, procured the course, advertised the opportunity to the workforce, and initiated the distribution of course "seats" to ExPO personnel. Katelyn's action bias towards action led to the rapid turnaround and release of this critical training opportunity for engineering career development.

### Bret Gean, CI:

Bret has demonstrated decisiveness in his interactions within the Capital Improvements Towers Program on a regular basis. After identifying some quality issues with the tower repair and coating projects that were occurring just beyond warranty periods, Bret—on his own initiative—discussed with the necessary stakeholders, selected a course of action, and enacted a process improvement. His decisive action will result in a reduction of costly tower rework before their next scheduled repair periods.

# NAVFAC Character Trait: DECISIVENESS continued...

## Sarah G. MacMillan, 09PAO:

Sarah has an open and engaging personality that facilitates communication with people from diverse backgrounds. Her strengths in having the ability to do the job and tasks at hand, especially during the pandemic and working remotely via telework, are derived from her positive attitude and underlying sharpness of intellect. Her impeccable decision-making skills make her a valuable asset in organizing, planning, and prioritizing the work process, and developing specific goals and plans to prioritize, organize, and achieve NAVFAC EXWC's mission in support of the warfighter. She also processes the ability to work well individually with zero to minimal supervision, as well as within a team.

## Travis Lewis, EV3:

On numerous occasions, Travis has demonstrated that he is a decisive leader. Whether it is related to developing new business with a customer in NAVFAC or BRAC, or soliciting partners from academia or industry for a research, development, testing and evaluation proposal, or responding to customer requests, Travis consistently makes quick decisions that are beneficial to NAVFAC EXWC. Travis has used good judgment in undertaking the risk associated with his decisions. Occasionally, if a decision goes against our desired outcome, Travis has been willing to course correct and has not stressed out about it. This has led to a strong business position for NAVFAC EXWC in important environmental areas like petroleum impacted sites, vapor intrusion in buildings, and site cleanup cost estimation.

## Travis Steeves, CIOFP6:

Early COVID discussions for the NSA Bahrain AIMS design, revolved around potentially omitting the survey work in Bahrain due to travel restrictions related to COVID, and pushing forward with the design work prior to installation. Travis Steeves, the NAVFAC EXWC lead for this $3M project, convinced the customer that the risks of the location justified the cost, and efforts to do the pre-design site survey. As a result, the critical determination was made that the intended location of the array will not work. NAVFAC EXWC is now working with the customer and the Region, to make the necessary site-specific changes to ensure long-term success of the project. Travis continues to exemplify decisiveness for this project, and all other projects he continues to work on.



## Carmila Amaya, TD1:

Carmila has exemplified decisiveness and personal initiative when called upon to assist in situations that lacked clear instructions on how to proceed. Recently, the Technical Director 1 Department required help in addressing a complex financial issue related to patents and licensing. Carmila immediately tackled the challenge, successfully working with individuals from a variety of departments in the command to resolve the issue. In addition, Carmila supported the STEM program by ensuring all purchase requests were accounted for and adequately reflected in ERP to meet the expiration date. Carmila's self-starter motivation and decisive willingness to engage on any challenge make her a strong asset to NAVFAC EXWC.

## Lt. Reece Comer, CIOFP5:

Upon checking in at NAVFAC EXWC, Lt. Comer was given commander's intent to re-focus the NAVFAC EXWC Dive Locker from primarily routine dive support for projects, to fleet engagement and support through research, development, testing and evaluation (RDT&E), and exercise support. Beyond the commanders' intent, Lt. Comer and his team were provided little-to-no direction in terms of what efforts to pursue or whom to contact to get the efforts started. Lt. Comer's decisiveness to immediately engage and develop contacts at Naval Sea Systems Command, Naval Construction Groups, and Underwater Construction Teams has resulted in the complete re-making of the NAVFAC EXWC Dive Locker, which now has matured and funded RDT&E efforts throughout the years.

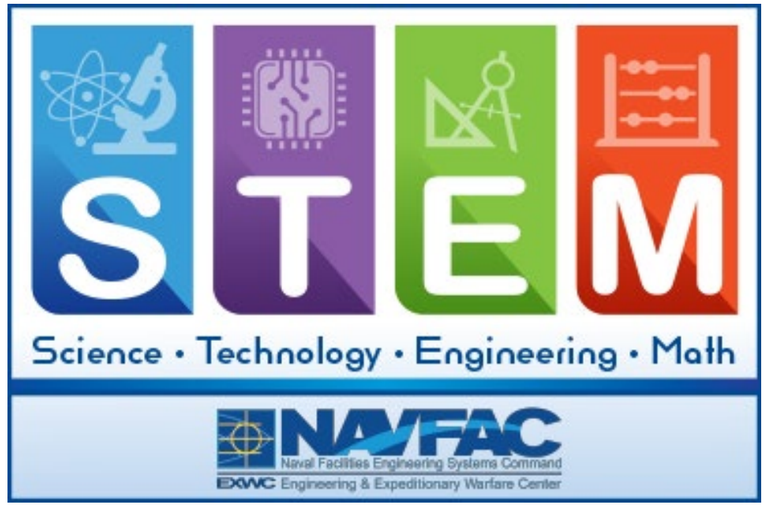
## Leticia Moreno, BD52:

Leticia oversees the command's Government Travel Charge Card Program for not only NAVFAC EXWC, but also for all NAVFAC Information Technology Center (NITC) and Naval Facilities Institute (NFI). Due to her outstanding accomplishments with the program, the command submitted her for the prestigious Defense Travel Management – Excellence in Practice Award. Although Leticia did was not selected for the award, her accomplishments are noteworthy and most deserving of our recognition. Leticia's high level of standards and a steadfast commitment to NAVFAC EXWC, NITC, and NFI Government Travel Charge Card Programs resulted in increased operational effectiveness, audit readiness, and outstanding customer service. Leticia is valued for her continued efforts in support of NAVFAC EXWC's mission.

# The World of STEM

STEM Puns & Riddles: What do you call a number that can't stay in one place?

A Roamin' numeral.




# Inspiring Wonder:

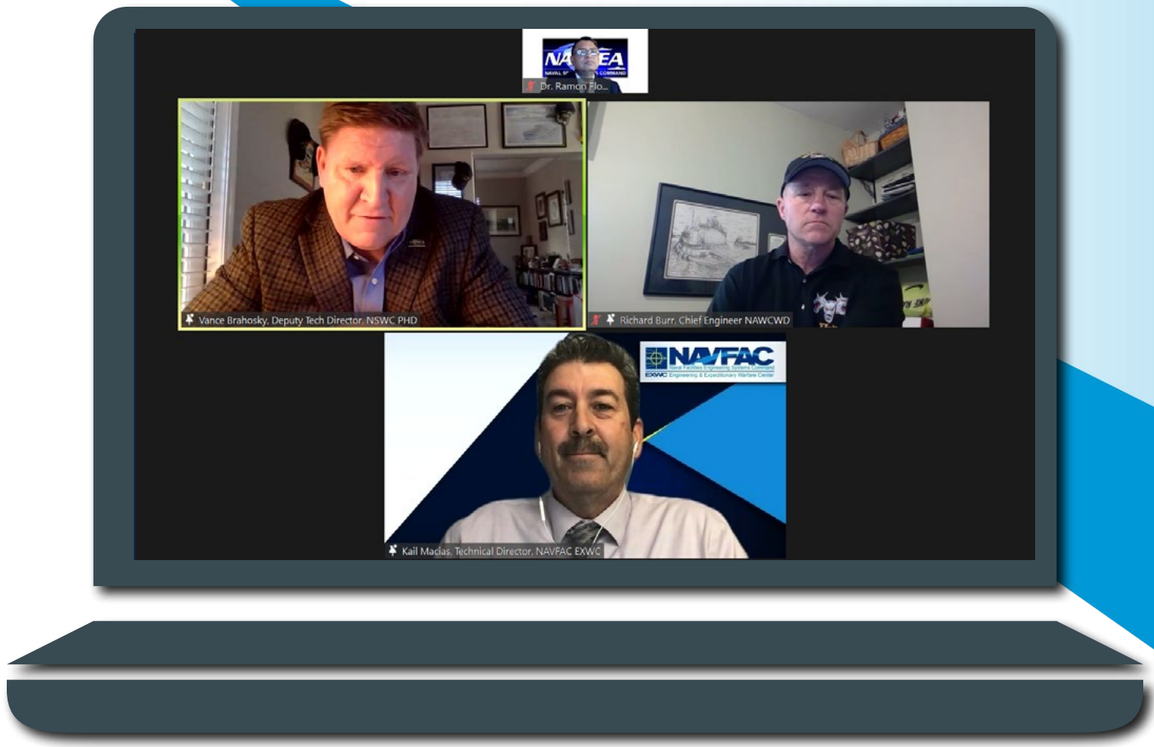
## Conversations with STEM Leadership Virtual Event Recap

National Engineers Week—founded in 1951 by the National Society of Professional Engineers—is dedicated to increasing the public dialogue around the engineering workforce, sharing how engineers make a difference globally, and uniting children, parents and educators with engineering activities and mentorship.

This year, to honor of National Engineers Week, NAVFAC EXWC, Naval Surface Warfare Center Port Hueneme Division (NSWC PHD), Naval Air Warfare Center Weapons Division (NAWC WD) in partnership with the Ventura County Science, Technology, Engineering and Math (STEM) Network co-hosted a virtual conversation, Inspiring Wonder: Conversations with STEM Leadership.

"I will admit I am a bit star struck with the folks we have here today," said Debby West of the Ventura County STEM Network. "I am really looking forward to hearing their stories. So before we get started [lets remind ourselves that] educational STEM outcomes in Ventura County, and raising the next generation of innovators ensures we have engineers for tomorrow. In the simplest of terms, engineers create human design solutions for everyday problems, even generational problems."

Using a webinar format, the hour-long event featured senior-level leadership from Ventura County's tri-warfare center community, who play an intangibly vital role in stewarding the U.S. to a safe tomorrow.




"We are going to bring you a conversation, rather than a presentation," said Dr. Ramon Flores, NSWC PHD STEM Program Manager. "We want a dialogue here."

Panelists included Mr. Richard Burr, NAWC WD Chief Engineer, Mr. Vance Brahosky, NSWC PHD Technical Director, and Mr. Kail Macias, NAVFAC EXWC Technical Director.

The dialogue proceeded with a series of questions asked by each panelist. Topics included how the work each warfare center performs ties into Department of Defense (DOD) strategies, the importance of the work scientists and engineers do to accomplish the mission, each panelists personal engineering journey, and the integral relationship between each warfare center and the Ventura County industry and academic community.

"These are great questions this evening," said Brahosky. "[They] are so relevant to the work we are doing today... Countries around the world do not see the freedoms we enjoy [in the U.S.] as something we should have [and these] countries have some significant capabilities. [NSWC PHD, NAWC WD and NAVFAC EXWC] are most successful when we partner with each other, because no one warfare center can do what we do [by] ourselves."

Ventura County's tri-warfare center community is unique in that there is no other Navy base where three separate warfare center's work in synergy within the same zip code. "When we collaborate with the local community to solve really important problems, the better the solutions become," said Macias. "The more diverse the people we bring into the conversation, the more innovative the solutions will be. This is why having the other warfare centers so close to NAVFAC EXWC is vital to our work—we learn so much from each other."

"From the moment your alarm goes off in the morning to that moment your return to your bed and your head hits the pillow, everything that happened to you throughout your day involves STEM. Between electronics, computer programs, chemical engineering, robotics, automation, artificial intelligence—everything we do every day involves STEM," said Brohosky.

# The World of STEM

Inspiring Wonder: Conversations with STEM Leadership Virtual Event Recap continued...

## Imagine! Explore! Build!

As dialogue continues, each panelist addresses how the current generation of scientists and engineers continue to work through the phases of their careers, and why recognizing the transition between the current workforce and the future workforce is fundamental for U.S. national security and the global power competition.

"We realize that local folks coming into the [Navy] programs tend to be the ones that stay," said Burr. "We recruit STEM academics from around the country and world, however, we lose quite a few of them because they want to go home, so we aim to focus much of our efforts on folks who live here by partnering with industry and academics to recruit top local talent."

Each warfare center plays an active role in STEM education for Ventura County public and private schools, and colleges. Many of the local programs and partnerships, such as FATHOMWERX—an industry partner who fuses academia, civilian companies and other non-traditional DOD partners who work on the DOD's most challenging problems—has gained sizable interest by the Chief of Naval Operations.

The attention from the Navy community in Washington D.C. has helped each warfare center fund their respective STEM programs, like NAVFAC EXWC's recent $250k funding for fiscal year 2021 STEM initiatives.



### The event concluded with a simple, yet important question: what do you like about STEM?

"I always wanted to do something exciting and interesting [for my career]. I like STEM because there is always a challenge, always something to figure out, and something to find a solution for. It is never boring," said Burr. "I've always been intrigued with science and tech," said Macias. "It is such an incredible time to see what technology has done across all sectors—both private and public."

As the dialogue wraps up, each panelist shares a recurring theme about why they like STEM—and chose STEM as a profession. The answer is clear: it is because they are contributing to something bigger than a paycheck, and that being a Navy STEM leader surpasses a vocational experience, and rather, is metaphorically within the DNA of Ventura County's top Navy civilian leaders.

Each panelist adds it is an honor to impart wisdom on the next generation of the STEM workforce, and it is their hope that the future STEM workforce finds contributing to the success of the warfighter as rewarding as they do.

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**NAVFAC EXWC is proud to announce**
William W. Anderson, Jr., NAVFAC EXWC Director, Utilities Engineering and Management was awarded the Doctor of Philosophy in Systems Engineering this past December from the Naval Postgraduate School!

# Meaningful Conversations

## with William W. Anderson, Jr., PhD

Anderson began his mechanical engineering studies as an undergraduate at Virginia Military Institute. After receiving his bachelor of science degree, Anderson received his master's degrees in civil engineering from the University of California, Berkeley; green technologies from the University of Southern California's Viterbi School of Engineering; and master's in business administration from Claremont Graduate University's Drucker School. Anderson went on to earn his PhD for his work developing a novel model to assess resilience and costs of renewable energy microgrids on OCONUS naval bases. His research focused on islanded naval installations, and has been presented and published in several international IEEE conference proceedings. Anderson's dissertation work continues to contribute to the Navy and Department of Defense's knowledge of the resilience of microgrid architecture design alternatives. Base commanders can use Anderson's model to generate the trade space for resilience and costs.

Anderson began his early career working as a Surface Warfare Officer onboard the USS Tuscaloosa (LST-1187) before retiring from active duty as a Civil Engineer Corps Officer serving as the Officer-in-Charge/Combat Engineer for Naval Special Warfare Group TWO. Anderson then worked as a management consultant for McKinsey & Company developing a $1.8B smart grid strategy for a major utilities provider. For the past 14 years, Anderson has worked as the AMI Program Manager, Director of Public Works Program Office, and now Director of Utilities Engineering and Management for NAVFAC EXWC. Anderson is a licensed Professional Engineer, Certified Energy Manager, and LEED Accredited Professional BD+C. Today, Anderson is in charge of energy security and critical power solutions, designed to increase resilience primarily through microgrids. Additionally, Anderson founded the NAVFAC EXWC Microgrid Academy and commissioned the NAVFAC EXWC Microgrid Test Bed.



NAVFAC EXWC's Public Affairs Office virtually sat-down with Anderson to discuss his newly minted accomplishment, his road map to success, and how the new generation of scientists and engineers are bound to shape the future of the Navy.

**MacMillan:** First of all, congratulations Bill on receiving your PhD! What three words would you use to describe your feelings after learning you completed all the requirements for your PhD?
**Anderson:** Elated, pleased, and relieved.

**MacMillan:** So how long did it take to earn your degree from start to finish?
**Anderson:** 6 years, 3 months.

**MacMillan:** Out of all the courses you took to earn your PhD, was there one that stood out in particular, and why?
**Anderson:** Complex Systems. I was intrigued by emergent behavior (swarming), cellular automata (Conway's Game of Life), adaptive agents (ants), chaos (butterfly effect), fractals, and synchronicity (fireflies), all of which have direct applications in systems engineering. I had never learned about these topics before, and was fascinated by their otherwise most unusual and bizarre behaviors, and their implications.

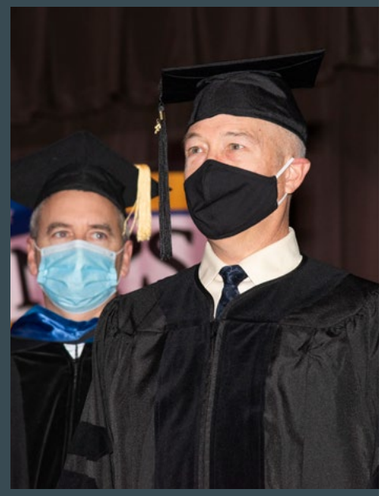
**MacMillan:** Your dissertation focused on understanding the resiliency of microgrid architecture alternatives. Can you explain more about your studies, and how they pertain to the work PW does at NAVFAC EXWC?
**Anderson:** Quite simply, I researched how we can put a price on resilience. Not only has resilience been ill defined, but how to assess it as well as know the price to increase resilience by a certain amount is mostly nonexistent particularly for off-grid (islanded) situations. I defined resilience, created measures (metrics) to calculate resilience and costs, and built a methodology to assess resilience and costs. I used models I created in Excel that incorporate exponential and normal probability distributions that could either be optimized or iterated thousands of times using Monte Carlo simulations to create the trade space between resilience and costs for different microgrid architectures, and visualized with 4D graphs using MATLAB. This research directly pertains to our work in PW both in conducting resilience assessments at Rota, San Nicolas Island, and Hawaii but also in our NAVFAC EXWC Microgrid Academy.

**MacMillan:** NAVFAC EXWC Public Works recently co-hosted the first-ever Microgrid Academy with the Naval Postgraduate School where you lectured on your dissertation. How did that go? What types of questions did the students ask?
**Anderson:** Despite not being onsite as we had intended, the first offering of the NAVFAC EXWC Microgrid Academy was rather successful. 46 Department of Defense students asked relevant questions to better understand both how resilience is different from reliability, as well as how they could access these models. We already have funding committed from the Army to train 20 students. The expressed demand is much greater than our capacity.

**MacMillan:** This is a loaded question, but let's talk about the future of microgrids. What does that look like—not just for the Navy but for the private sector as well?
**Anderson:** The future will see much greater implementation of microgrids, both in numbers, capacity, and industries served. Climate change, COVID, and decreasing costs of storage all create a compelling case for renewable energy microgrids. Not only are we seeing greater and more powerful (100% renewable energy) examples of microgrids in isolated communities, but we are seeing airports, academic and corporate campuses, and small communities opting to rely on renewable energy microgrids for their primary power.

**MacMillan:** What are you and your team working on in PW that really excites you right now? Why?
**Anderson:** McMurdo! We are most honored to have been funded by the National Science Foundation to assess resilience of their microgrid in Antarctica. We have a compelling opportunity to help McMurdo increase its resilience by no longer being 100% dependent upon diesel fuel for power. What we accomplish in McMurdo should be of great benefit not only to other arctic applications, but any remote and isolated community subject to extreme environments and disruptions.

**MacMillan:** Did you have or do you have mentors you have worked with in the past? If so, how did they shape where you are in your career today?
**Anderson:** Yes. Dr. Phil Vitale. Dr. Vitale has helped me create the opportunity to work with the Naval Academy's Green Energies Laboratory, judge their capstone day projects, and in the near future teach a renewable energy microgrid class using a curriculum based upon my dissertation.



# Meaningful Conversations

## with William W. Anderson, Jr., PhD continued...

**MacMillan:** For engineering students looking to complete their masters or doctorate, what advice can you give? What do you wish someone had shared with you before you started on your PhD journey?
**Anderson:** Pursue a research topic that both interests you, and is relevant. Do your studies where you can do both, take classes with those professors that you find most engaging (much more rewarding than simply taking a class to fulfill a requirement), and ensure you make time to routinely be on campus. You MUST be passionate about your research topic as well as have the time to commit; otherwise, you will have a very protracted, difficult and unfulfilling journey that most likely will culminate and end with your dissertation, at best. I believe a PhD is not the end, rather the beginning of more research and teaching, based upon your research's contributions. For those exploring a PhD, I would encourage anyone to dig-deep within to ensure you are pursuing it for the right reasons. A PhD (research degree) in engineering is not the same as an EngD (professional degree); it is important to understand the distinction between these two engineering doctoral degrees, before choosing which is best for you. Finally, the journey towards a PhD is nondeterministic, and the academic clock operates in its own, somewhat uncanny, time zone.

I wish someone had told me how much work and time was involved. My first PhD advisor once told me: "80% of your work will go nowhere." It is really, really a LOT (mentally and time expended) of work, and requires getting your brain rewired in a way that although useful and essential in advanced research and academia, may have little to no applicability elsewhere. And that time needs to be without disruptions; it is extremely difficult and unproductive to be coding and running your models in short and disrupted sessions. I could not have accomplished this when my kids were younger, prior to being an empty nester.

Finally, writing cannot be emphasized enough. The need to effectively articulate one's dissertation is paramount. My very astute and supportive advisor, and Systems Engineering Department Chair, Professor Ron Giachetti, once shared with me an apropos quote from Admiral Hyman G. Rickover: "Nothing so sharpens the thought process as writing down one's arguments. Weaknesses overlooked in oral discussion become painfully obvious on the written page."

**MacMillan:** Last but not least, who or what supported you while you completed your PhD? Let's give them a shout-out.
**Anderson:** Without any doubt, my division: PW6. I was inspired, motivated and humbled by both the interest and support that my team gave me. This support included technical input to help me better understand diesel gensets, basic power systems concepts (no,.... solar photovoltaic will/can NOT burn a hole in the earth if the sun is shining despite not having any demand/load to serve), as well as their interest and excitement in being able to see how what I was learning and creating directly applies to our work in microgrids, resilience, and power systems. I am honored to have their acceptance of me not just as their supervisor, but as a colleague as well.



## Kudos to Our Contributors

A special thank you to EXWC EDGE's contributors this month:

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## Would you like to contribute to the *EXWC EDGE*?

The ***EXWC EDGE*** is always looking for fresh, applicable and compelling new content for our monthly publication. Issue #0006 will launch in May 2021. Please send your contributions before April 14, 2021 for inclusion.

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In advance, thank you for contributing!

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# EXWC EDGE eMagazine

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