

NAVAL SEA SYSTEMS COMMAND

# EXPANDING THE ADVANTAGE 2019





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Commander  
Naval Sea Systems Command



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Naval Sea Systems Command

## Message from Leadership

2019 marked the third execution year of the *NAVSEA Campaign Plan to Expand the Advantage* and as we take stock of what NAVSEA accomplished in 2019, we continue to be amazed at the breadth, depth and dedication of the NAVSEA team. This Year-in-Review provides an impressive array of accomplishments and outcomes of just a sampling of your incredible efforts to Expand the Advantage.

We began 2019 with publication of the *NAVSEA Campaign Plan to Expand the Advantage V2.0*. Campaign Plan 2.0 is highlighted by the addition of a new mission priority “Improve Warfighting Capability of Ships and Systems” to reflect the *National Defense Strategy* focus to expand the competitive space, and a shift of “Culture of Affordability” from a mission priority to a foundational line of effort to reflect the enduring challenge to think and act differently to enhance productivity across the Enterprise.

In 2019, we formally established the NAVSEA Corporate Board where we set bold goals for FY19 with data-driven metrics for the Enterprise and for each Business Unit. We leveraged the monthly Corporate Board to provide an executive level review of our progress, paying most attention to tasks coming due and metrics off-track from plan with discussion for how we get back on track. 2019 also saw the formal chartering of the Inclusion and Engagement Council as a standing body to reaffirm our commitment to build and maintain a workforce that draws from society and encourages connection and collaboration so that our work is informed by varied viewpoints and employees are empowered to participate and contribute to their fullest potential.

While we’ve made great progress, our work is far from done. In this era of great power competition, we must build and maintain a sense of urgency in everything we do. As the Force Behind the Fleet, your efforts and the mission of NAVSEA have never been more important.

As you review the many FY19 accomplishments presented in this document, take pride in your contributions to our mission, vision, and support to the warfighter and the greatest Navy in the world.

As always, thank you for what you do each and every day in support of this great Navy and great Nation. Keep Charging, Share What You Know, and Win Them All!

## NAVSEA Mission

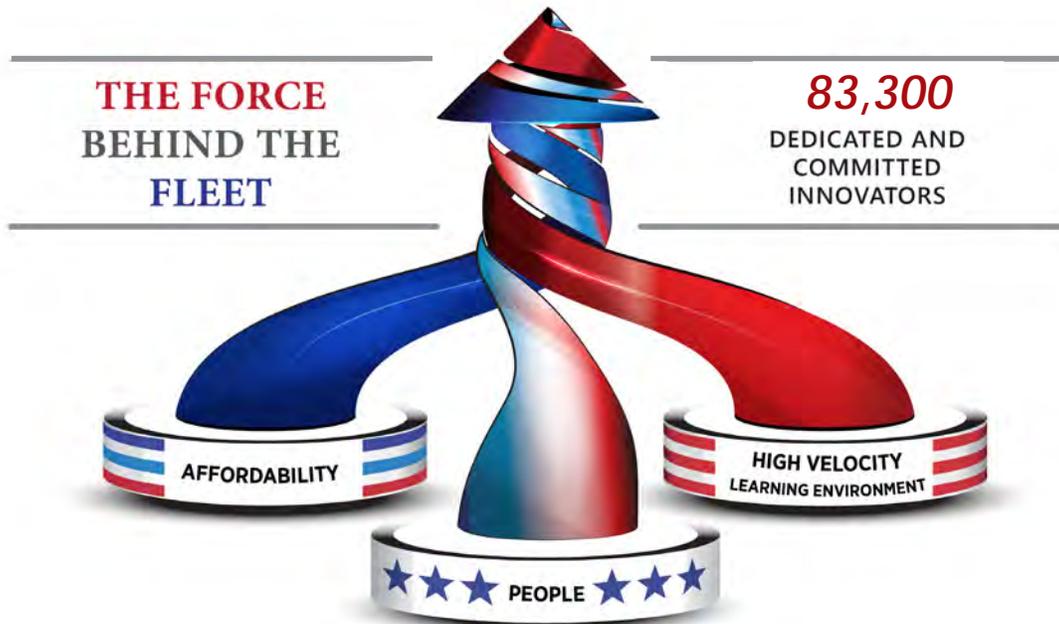
We design, build, deliver, and maintain ships and systems on-time and on-cost for the United States Navy.

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★ **ACHIEVING OUTCOMES WITH URGENCY—**  
*thinking, acting and operating differently*



- ★ Challenge all assumptions
- ★ Think differently about how to solve problems
- ★ Take on measured and targeted risk
- ★ Know your priorities and stop doing things that add no value

# NAVSEA

- 1 = "Campaign Plan to Expand the Advantage" revision published
- 4 = Fellows graduated through the Commander's Executive Fellows Program (CEFP)
- 5 = New Construction Battle Force Ships delivered
- 5 = Mobile Cleaning, Recovery and Recycling System (MCRRS) units delivered
- 9 = Christenings
- 9 = Post Shakedown Availabilities (PSAs) completed
- 9 = Saturation Dives completed
- 10 = Commissionings
- 11 = Keel Layings
- 14 = Vessels delivered in support of foreign allied partners
- 24 = Graduates from the Journey Level Leader (JLL) Program
- 31 = Navy Training System Plans (NTSPs) developed in support of modernization
- 40 = Ship Organic Repair Capability Assist Team (SORCAT) assessments
- 44 = Graduates from the Next Generation (NextGen) Program
- 58 = CNO Availabilities completed
- 79 = Dry-dockings avoided as a result of UWSH operations by Navy Divers
- 79 = INSURV Readiness Assistance Team (IRAT) ship visits
- 87 = Radiation Safety Program Inspections completed
- 102 = Underwater Ship Husbandry (UWSH) operations worldwide
- 106 = Non-Provisional Patents Filed
- 110 = Boats, Combatant Craft and Service Craft delivered
- 122 = Manpower, Personnel, and Training (MP&T) Plans developed
- 143 = Invention Disclosures Received
- 162 = Total Ship Readiness Assessments (TSRAs)
- 211 = Educational Partnership Agreements (EPAs)
- 246 = Emergent Availabilities
- 227 = Technical Warrant Holders
- 338 = Cooperative Research and Development Agreements (CRADAs)
- 468 = Hull Cleaning Operations performed by SUPSALV Divers
- 474 = Continuous Maintenance Availabilities (CMAVs) completed (private yards)
- 831 = Naval Shipyard Apprentice Graduates across 26 trades
- 832 = Navy Afloat Maintenance Training Strategy Program Graduates
- 840 = Active Foreign Military Sales Cases
- 889 = Hours of "Bottom Time" by NEDU Divers (excludes Saturation Dives)
- 1,051 = Manned Dives by the Navy Experimental Diving Unit (NEDU)
- 3,030 = Departures from Specification
- 20,478 = Members of the NAVSEA Acquisition Workforce
- 26,137 = Small Business Contract Actions
- 28,903 = Fleet Technical Assists
- 36,537 = Technical Approvals
- 38,298 = iNFUSION Accounts in NAVSEA
- 51,455 = Total Contract Actions
- 83,386 = Members of the NAVSEA Enterprise, "The Force Behind the Fleet"
- >109,000 = On-Site Logistics Representative (OSLR) records validated
- 190,794 = Technical Decisions
- \$18,50,000 = Executed in Defense Acquisition Workforce Development Fund (DAWDF)
- \$3,382,243,228 = Value of Small Business Contract Awards
- \$30,400,000,000 = Value of all Active Foreign Military Sales Cases
- \$37,373,661,538 = Value of all Contract Actions
- 40,000,000,000 = Precision Measurements in the 3-D scan of the USS Cheyenne (SSN 773)
- \$55,300,000,000 = \$\$ Flowing through the NAVSEA Enterprise (rank #58 on Fortune 500)

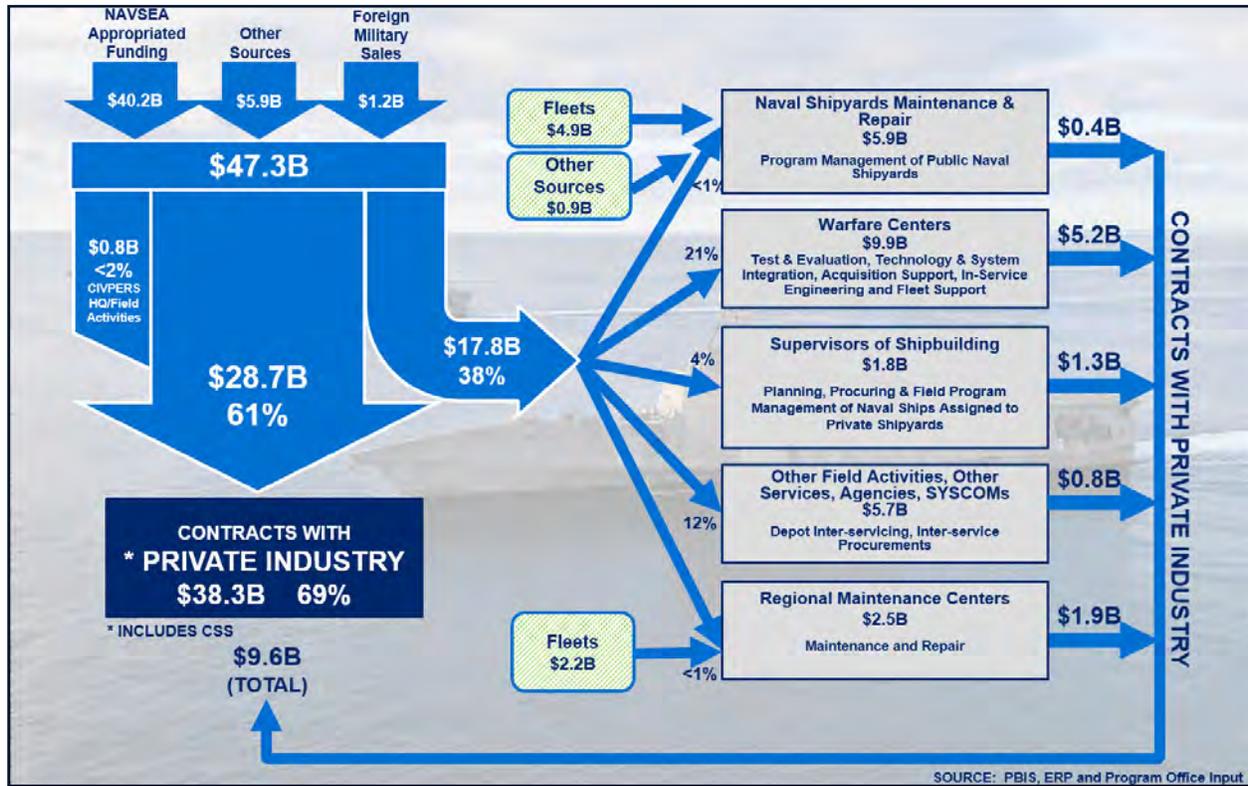
# By The Numbers



# Financial Execution

**\$55.3 B**

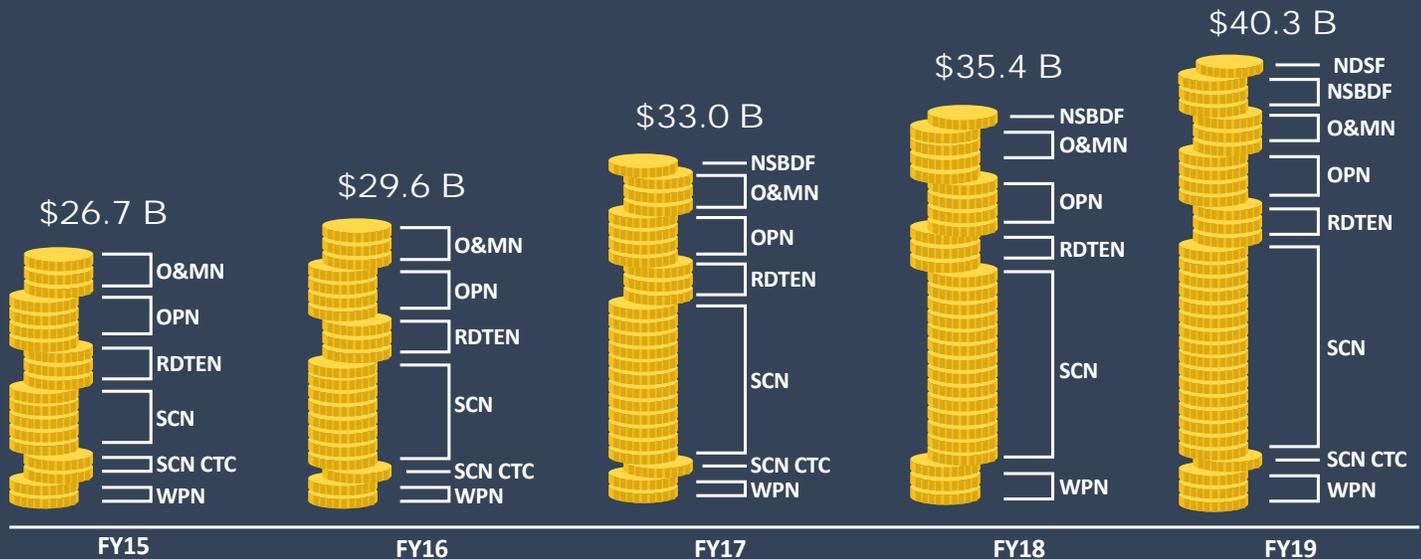
## NAVSEA Enterprise: FY19 Funds Flow (\$B)



## Total Funds Obligated in FY15-FY19: All Active Year (\$B)

FY15-FY19 Execution, as of 30 September 2019

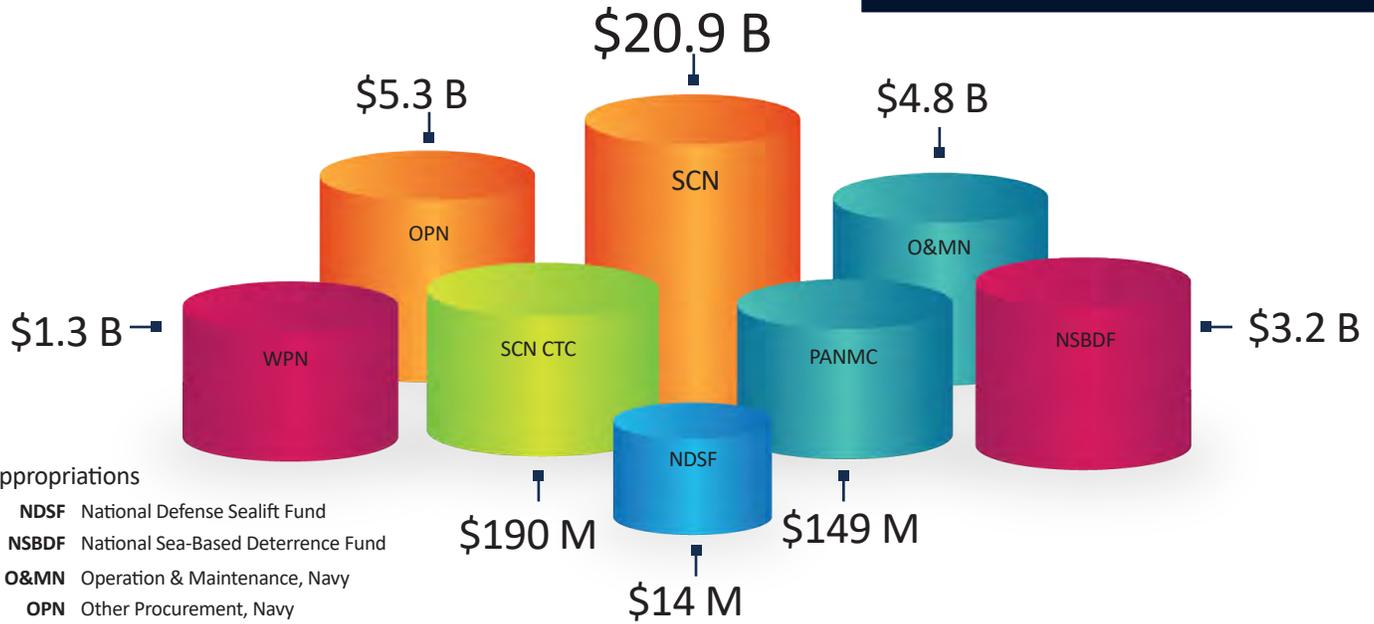
Source Data: NBIS and STARS



# Financial Execution

Total Funds Obligated in FY19

## Funding Obligated BY APPROPRIATION

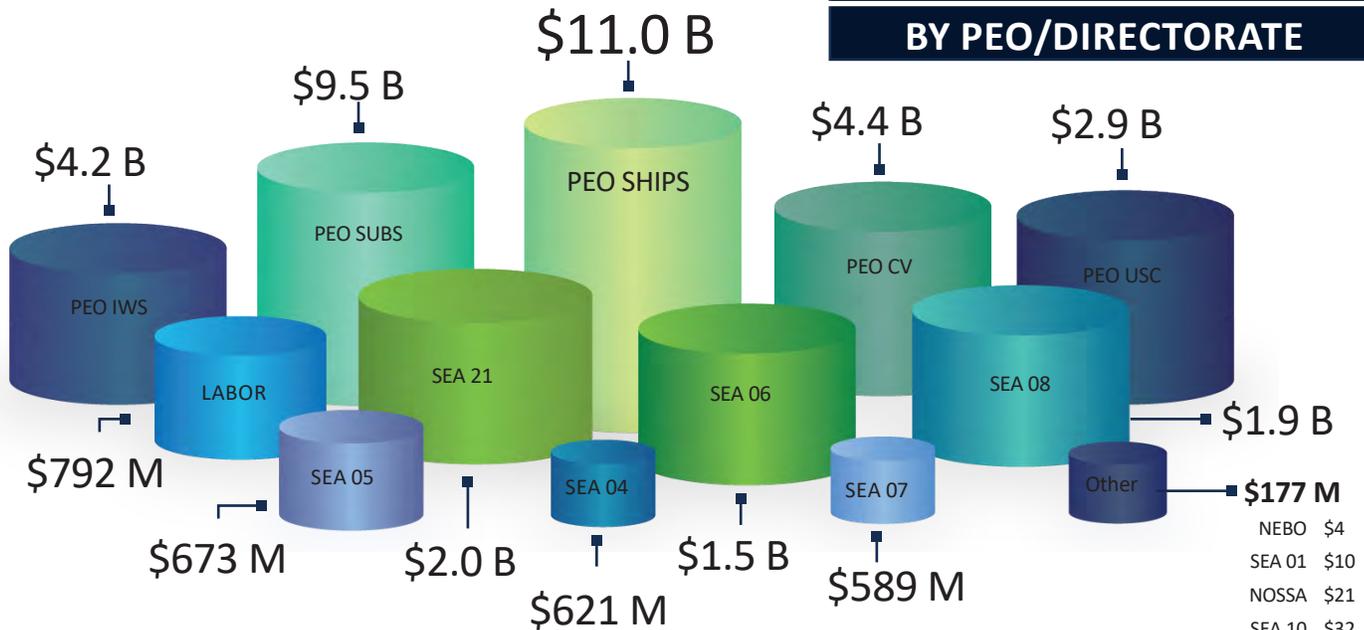


Appropriations

- NDSF** National Defense Sealift Fund
- NSBDF** National Sea-Based Deterrence Fund
- O&MN** Operation & Maintenance, Navy
- OPN** Other Procurement, Navy
- PANMC** Procurement of Ammunition, Navy/Marine Corps
- RD TEN** Research, Development, Test and Evaluation, Navy
- SCN** Shipbuilding & Conversion, Navy
- SCN CTC** Shipbuilding & Conversion, Navy - Cost to Complete
- WPN** Weapons Procurement, Navy

SCN FY09 and FY11 Obligations not included due to STARS to ERP Conversion issues.

## Funding Obligated BY PEO/DIRECTORATE



- NEBO \$4
- SEA 01 \$10
- NOSSA \$21
- SEA 10 \$32
- SEA 00C \$44
- SEA 00I \$66

FY19 Total Funds Obligated

# \$40.3 B

Source Data: NBIS and STARS

# FY19 Contracting Competency

**TOTALS** 2,067 People | 51,455 Actions | \$37.374 Billion



## Highlights

- Led innovative methods in contract strategies applying and initiating priced-based approaches in acquisition and modifying ship repair contract structures to streamline execution by reducing work stoppages and improving management of growth during execution
- Completed a significant re-write of the underlying software operating the SeaPort-Next Generation (NxG) portal in support of new NxG Multiple Award Contracts (MACs)
- Deployed the NAVSEA Acquisition Policy Page on iFUSION to include the NAVSEA Contracts Handbook, now with real time updates
- Deployed the Contract Management Process Guide (CMPG) on iFUSION, an Enterprise-wide tool supporting a collaborative environment for contracting and program personnel
- Led the Navy in implementing more stringent requirements for protection of controlled unclassified information and critical program data
- Empowered the contracting workforce and streamlined processes by pushing Delegation of Authorities to the lowest level:
  - Increased Business Clearance threshold
  - Delegated Acquisition Strategy & Acquisition Plan signatory authority
  - Lowered 20 additional contracting delegations in letter dated April 2, 2019

## Small Business Highlights

26,137 Small Business Contract Actions valued at \$3.38 B (compared to previous high of \$3.28 B), exceeding FY19 goals in all small business categories:

- Disadvantaged Business: 6,749 actions at \$729 M
- 8(a) Procedure: 533 actions at \$101 M
- Veteran Owned Small Business: 5,929 actions at \$582 M
- Service Disabled Veteran Owned Small Business: 3,535 actions at \$313 M
- Women Owned Small Business: 4,891 actions at \$439 M
- Certified HUBZone Small Business: 1,091 actions at \$73 M

		People	Actions	\$ Value
<b>General Fund</b>				
SUPSHIP GROTON	Groton, CT	77	741	\$412,166,777
NAVSEA HQ	Washington, DC	293	4,651	\$28,286,793,497
SUPSHIP BATH	Bath, ME	70	774	\$365,020,903
SUPSHIP GULF COAST	Pascagoula, MS	92	872	\$319,691,166
SUPSHIP NEWPORT NEWS	Newport News, VA	86	1,166	\$239,947,089
Total		618	8,204	\$29.624 Billion
<b>Working Capital Fund</b>				
NSWC CORONA	Corona, CA	47	1,015	\$254,693,636
NSWC PORT HUENEME	Port Hueneme, CA	76	1,083	\$349,004,782
NSWC CARDEROCK	W. Bethesda, MD	74	1,251	\$317,717,865
NSWC INDIAN HEAD / EOD TD	Indian Head, MD	82	2,012	\$528,399,963
NUWC NEWPORT	Newport, RI	94	2,740	\$674,853,834
NSWC PHILADELPHIA	Philadelphia, PA	140	3,858	\$746,590,553
NSWC DAHLGREN	Dahlgren, VA	105	11,552	\$862,689,061
NSWC CRANE	Crane, IN	170	5,668	\$1,392,557,716
NSWC PANAMA CITY	Panama City, FL	54	2064	\$244,133,792
NUWC KEYPORT / LOGCEN	Keyport, WA Mechanicsburg, WA	57	1,153	\$168,116,486
Total		922	31,950	\$5.601 Billion
<b>Fleet Funds</b>				
SWRMC	San Diego, CA	117	3,623	\$534,282,110
SERMC	Mayport, FL	40	664	\$140,484,723
PEARL HARBOR NSY & IMF	Pearl Harbor, HI	54	519	\$173,606,840
PORTSMOUTH NSY	Kittery, ME	34	1,114	\$71,194,085
MARMC	Norfolk, VA	134	2,629	\$795,810,110
NORFOLK NSY	Norfolk, VA	89	1,663	\$195,090,701
NWRMC/PSNSY & IMF	Bremerton, WA	59	1,089	\$238,364,509
Total		527	11,301	\$2.149 Billion

*Winner of the Office of Small Business Programs "Oreta B. Stinson Small Business Advocate Award", awarded to Ms. Dana Pennell (Acquisition & Contracts Manager, PMS 312, PEO Carriers)*

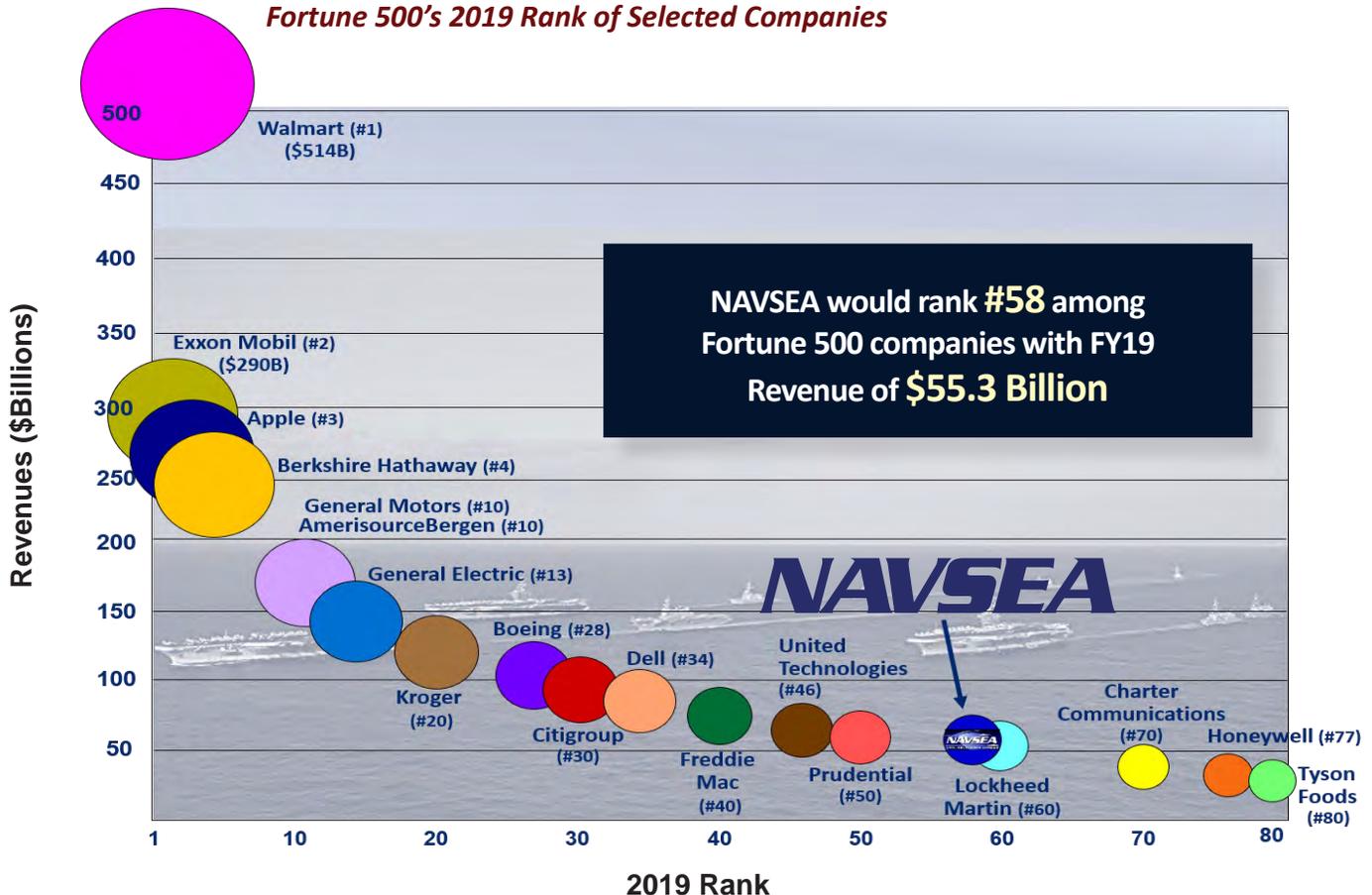
# Contracting Competency - \$37.4 B

## Major Contract Awards

- CVN 80 and CVN 81 Detail Design and Construction (DD&C)
  - DON 2019 Acquisition Excellence Award winner: received the "Dr. Al Somoroff Acquisition Award"
- CVN Early Service Life Period
- CVN 65, 68 and 78 Class Maintenance in Puget Sound
- USCG Polar Security Cutter three Ships (competition)
- ESB 6-8
- LPD 30 FLT II
- DDG 51 FY19 'Option' (competition - negotiated)
- EPF 13-14
- Expeditionary Mine Counter Measures (ExMCM) RIB (small business set-aside)
- Virginia Class BLK V LLTM
- Virginia Class Lead Yard Services
- BLQ-10 Electronic Warfare TI 20/22/24 (competition)
- MK48 Heavy Weight Torpedo Mod 7 APB6 / TI-1 (competition)
- Tactical Control System (TCS) software production (competition)
- Payload Control System (PCS) software production (small business, competition)
- Combat System Integration (CSI) Systems Engineering and Integration (SE&I)
- Acoustic Intercept and Ranging System (AI&R), Archival Media Center (AMC) Production – SBIR Phase III (small business)
- System Engineering and Technical Services in Support of AN/BYG-1
- Columbia Class Material (Missile Tubes, Supplier development)
- Ship Self Defense System (SSDS) (competition)
- CEC Design Agent/Engineering Services (competition)
- SQQ-89 FY19 Hull Sonar Transmitter (competition)
- Frigate SI&T (competition)
- ESSM BLK 2 LRIP
- CIWS FY19-20 Production
- SM-2 BLK IIIC EMD
- AMDR Integration and Production Support
- AEGIS O&M Sites
- AEGIS CSEA New Development
- Korea KDX III (Batch 2) Baseline Development
- OSCAR AUSTIN Transmitter Repair & OSCAR AUSTIN and FITZGERALD Restoration
- FY19 LCS Construction (three Ships) (competition)
- LCS Planning Yard (competition)
- XLUVV Phase 2 Production down-select (competition)
- Knifefish LRIP (competition)
- LCS Mission Module - Communications & Software
- DDG Planning Yard (competition)
- Three Ship Maintenance/Modernization (GUNSTON HALL, BULKELEY, ARLEIGH BURKE) (competition)
- Two Ship Maintenance/Modernization (STETHEM, DECATUR) (competition)
- SeaPort-NxG MAC awards (Navy Enterprise)
- University of Hawaii University Affiliated Research Center (UARC)
- Shallow Water Combat Submersible (SWCS)
- Emergency Ship Salvage Material Supplies and Ancillary Services

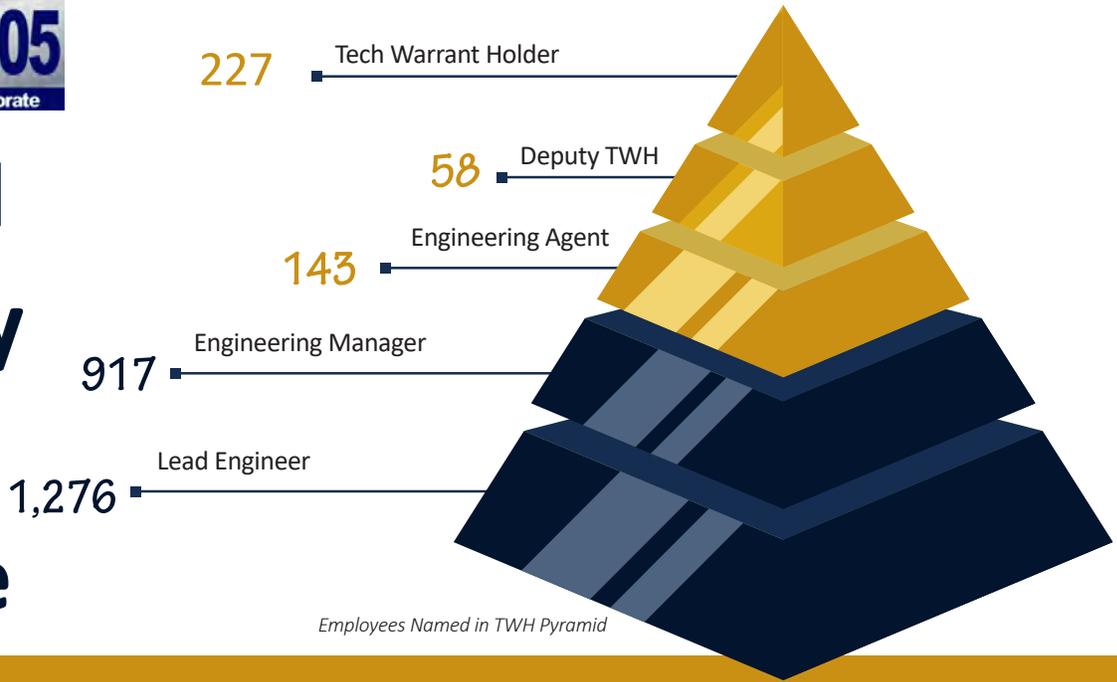
## Business Comparison Fortune 500

Fortune 500's 2019 Rank of Selected Companies





# Technical Authority Pyramid Structure



$$585 \text{ Mission Funded Positions} + 2,036 \text{ Working Cap Fund (NWCF) Positions} = 2,621 \text{ Total (77.7\% NWCF)}$$

## Specifications, Standards, Chief Engineer Instructions

### Safe to Test & Operate With Acceptable Technical Risk



#### New Construction

- Business Case Analysis
- Analysis of Alternatives (AoA)
- Earned Value Management (EVM) Analysis
- Design Review & Approval
- Critical Design Review (CDR)
- Preliminary Design Review (PDR)
- Contract Deliverables
- Program Reviews
- System Engineering Plan (SEP)
- Test & Evaluation Plan
- Cyber Security



#### Fleet Support

- Departure From Specification (DFS)
- Class Maintenance Plans
- Deferrals
- Maintenance Excursions Procedures
- Interface Control Approval
- Hazard Analysis Certification
- Approval to Operate
- Accreditations
- Cyber Security
- Depot & Intermediate Ship Maintenance Support



#### Emergent Response

- Fire ▪ Collision/Allision ▪ Grounding ▪ Major Casualty Report ▪ Fatality/Serious Injury ▪ Storm Damage ▪ Aircraft Crash
- Ordnance Incident ▪ Explosion ▪ Sinking ▪ Flooding ▪ Cyber Security ▪ Engineering Safety Assessment ▪ Initial & Long Term Corrective Action(s) ▪ Critique ▪ Failure Review Board (FRB) ▪ Judge Advocate General Manual ▪ Safety Investigation ▪ Departure from Spec – Safe Operating Instructions ▪ Class Advisory Message ▪ 8010/6010



# International Security Assistance Office

(Foreign Military Sales)

\*Data pulled from DSAMS and Info Warehouse, Oct. 1, 2019

## \$30.4B TCV

Total Case Value (Active FMS Cases)



### Inside the Numbers

2019 Highlights

**– Active Cases –**  
840 Cases, 120 Countries

**– FY19 New Cases –**  
134 Cases, \$4.3B TCV

**Submitted to DFAS for Closure**  
129 Cases

**FY19 Defense Security Assistance Management System (DSAMS) Taskings**  
513 Letters of Offer & Acceptance (LOAs), including Amendments & Modifications,  
78 Price & Availability (P&As)

### Top 10 International Customers

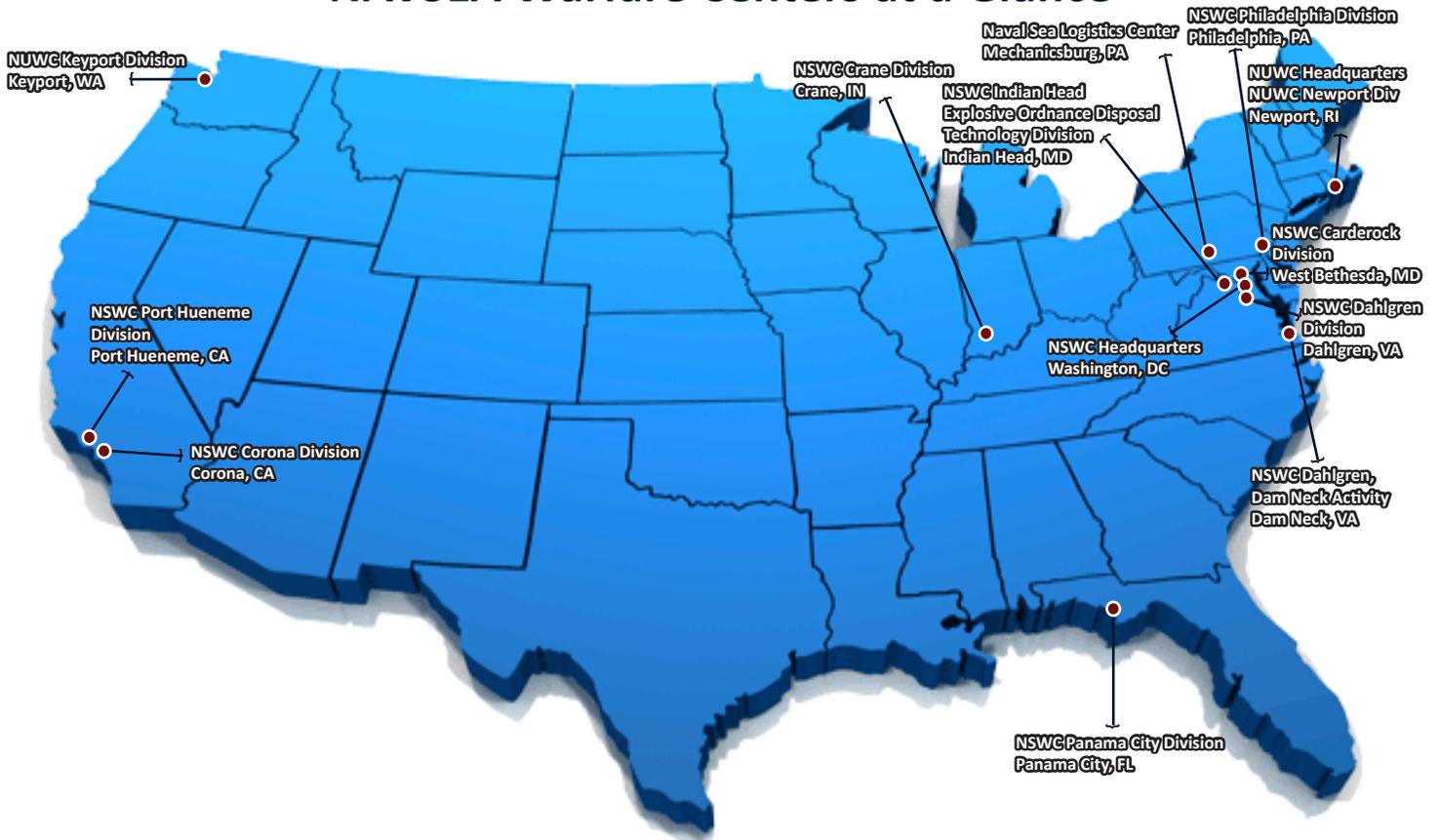
	<b>Japan</b> Active Case Value \$6.6 B # of Cases 152		<b>Taiwan</b> Active Case Value \$2.1 B # of Cases 21
	<b>Saudi Arabia</b> Active Case Value \$6.4 B # of Cases 17		<b>Egypt</b> Active Case Value \$2.0 B # of Cases 45
	<b>Australia</b> Active Case Value \$2.7 B # of Cases 50		<b>Canada</b> Active Case Value \$814 M # of Cases 30
	<b>South Korea</b> Active Case Value \$2.3 B # of Cases 28		<b>Turkey</b> Active Case Value \$687 M # of Cases 19
	<b>Spain</b> Active Case Value \$2.2 B # of Cases 22		<b>Netherlands</b> Active Case Value \$476 M # of Cases 21

# One Team Warfare Center

*Expanding the Advantage through Collaboration*



## NAVSEA Warfare Centers at a Glance



## Responsibilities Span Entire Life Cycle for Surface and Undersea Platforms and Systems

**Warfare Centers**  
by the  
**Numbers**  
Major FY19  
Accomplishments

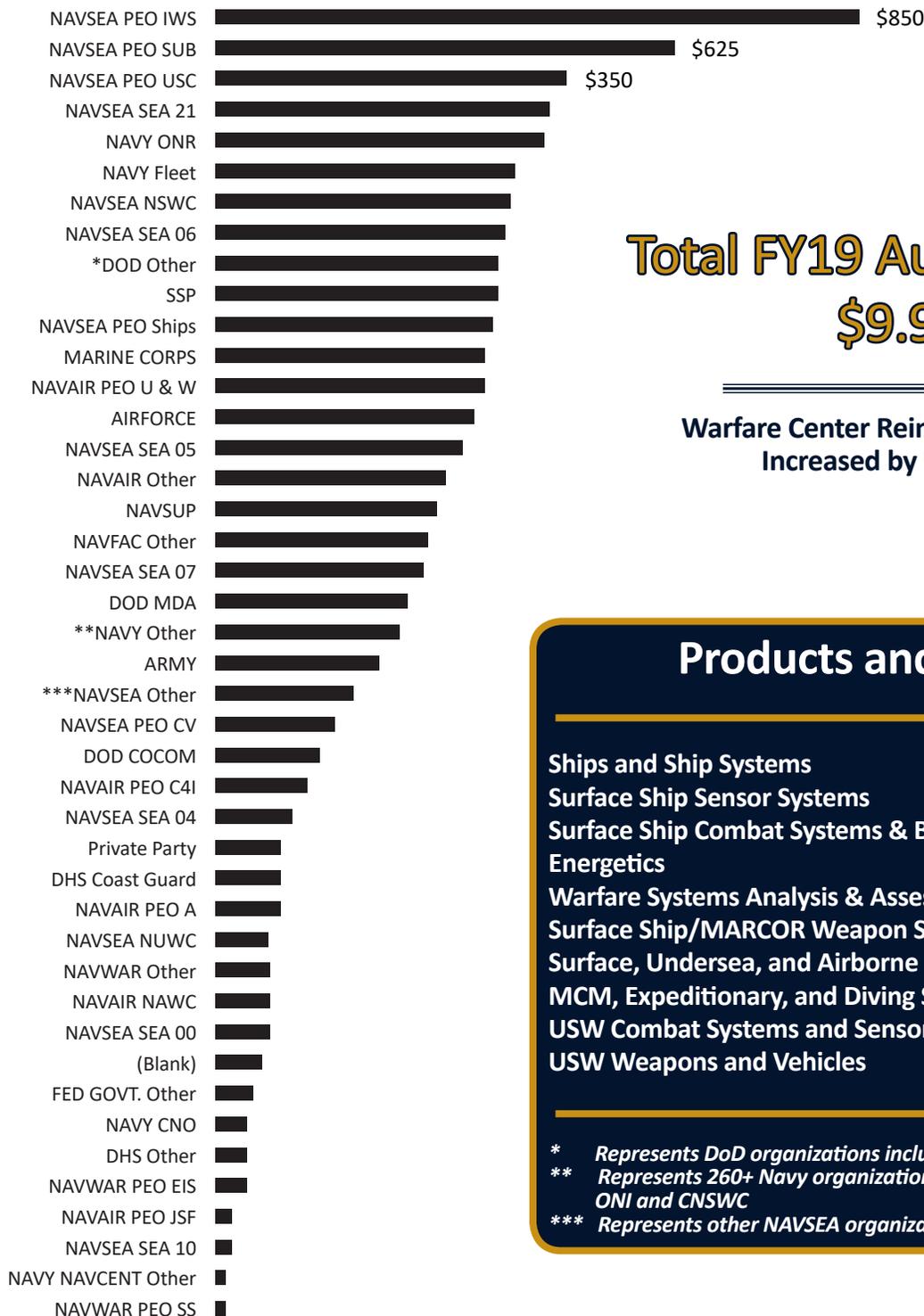
- 132 = Patents Filed
- 201 = Educational Partnership Agreements (EPAs) in place
- 239 = Cooperative Research and Development Agreements (CRADAs) in place
- 668 = Ship/Submarine Developmental and Operational Tests Conducted
- 829 = PhD Degrees
- 1,648 = Ship/Submarine Modernizations/Tech Insertions
- 6,125 = Masters Degrees
- 10,084 = Depot Refurbs/Intermediate Maintenance Activity repairs completed
- 19,214 = Fleet Fly-Away Teams Dispatched for Technical Assists
- 27,323 = Personnel (civilian and military)
- 73,935 = Hot line Calls to Provide Technical or Logistic Support



# Customers, Products and Services

*Expanding the Advantage through Collaboration*

## REIMBURSABLE FUNDING BY CUSTOMER (FY19 - \$M)



**Total FY19 Authorization  
\$9.9 B**

**Warfare Center Reimbursable Orders  
Increased by 5% in FY19**

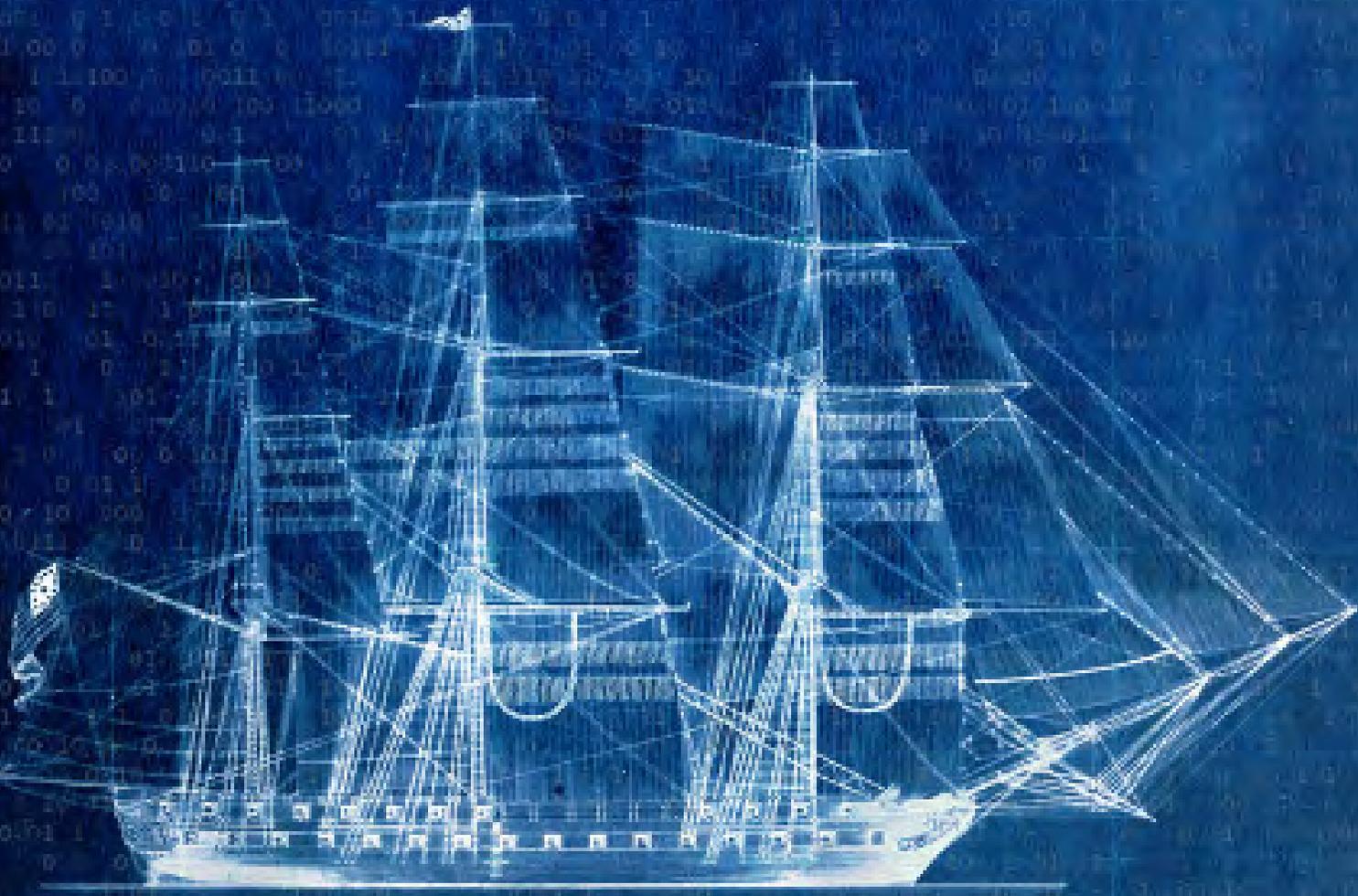
### Products and Services

- Ships and Ship Systems
- Surface Ship Sensor Systems
- Surface Ship Combat Systems & Battle Force Integration
- Energetics
- Warfare Systems Analysis & Assessment
- Surface Ship/MARCOR Weapon Systems Integration
- Surface, Undersea, and Airborne Early Warning Systems
- MCM, Expeditionary, and Diving Support Systems
- USW Combat Systems and Sensors
- USW Weapons and Vehicles

\* Represents DoD organizations including JIEDDO, BMD, and DARPA  
 \*\* Represents 260+ Navy organizations including NAVICP, CNI, NELO, ONI and CNSWC  
 \*\*\* Represents other NAVSEA organizations including SEA 08

\$100 \$200 \$300 \$400 \$500 \$600 \$700 \$800 \$900

# Year In Review



U.S.S. CONSTITUTION.

1817

FROM SEA TO SEA



**(Oct. 1) YOKOSUKA, Japan**—Transitioned the operator role for the U.S. Ship Repair Facility and Japan Regional Maintenance Center (SRF-JRMC) from Commander, U.S. Pacific Fleet to NAVSEA (effective Oct. 1, 2018).



**(Oct. 6) PASCAGOULA, MS**—PCU Frank E. Petersen Jr. (DDG 121) christening.



**(Oct. 15) PASCAGOULA, MS**—PCU Bougainville (LHA 8) start fabrication.



**(Oct. 16) BREMERTON, WA**—Puget Sound Naval Shipyard & Intermediate Maintenance Facility -- A propeller is installed on the USS Nimitz (CVN 68) during her 15-month Docking Planned Incremental Availability (DPIA).

# October



**(Oct. 18) WASHINGTON, DC**—Inaugural meeting of the newly chartered NAVSEA Inclusion and Engagement Council; comprised of employees from around the Enterprise, serving two-year terms, its mission is to advise and assist NAVSEA to recruit, retain, and recognize achievement, and professionally develop a diverse, high-performing workforce that enables and promotes excellence, as well as diversity and inclusion throughout the organization.



**(Oct. 19) DAHLGREN, VA**—NSWC Dahlgren Centennial Grand Finale: Time capsule consisting of 10 105mm shells surrounding a 16-inch shell is unveiled. Dahlgren personnel placed notes inside the capsule until the end of 2018 when it was sealed. The capsule will be opened Oct. 16, 2068 at the command's 150<sup>th</sup> anniversary.



**(Oct. 20) NEWPORT NEWS, VA**—PCU Delaware (SSN 791) christening.



**(Oct. 20) GROTON, CT**—PCU Vermont (SSN 792) christening.

**(Nov. 1) DAHLGREN, VA**—Navy leaders and scientists are joined by local officials at the ribbon cutting ceremony for the new Missile Support Facility at NSWC Dahlgren.



**(Nov. 8) WASHINGTON, DC**—NAVSEA takes time to recognize and celebrate the United States Marine Corps birthday and host the kick off for the Marines' Toys-for-Tots annual collection. More than 1,500 toys were donated to the USMC Reserve Toys-for-Tots campaign.



**(Nov. 10) MOBILE, AL**—USNS Puerto Rico (T-EPF 11) christening.



**(Nov. 11) PACIFIC OCEAN**—PCU Michael Monsoor (DDG 1001), British aircraft carrier HMS Queen Elizabeth (R08), and Tide-class replenishment tanker Royal Fleet Auxiliary (RFA) Tidespring (A136) conduct a photo exercise while transitioning to San Diego to begin a Post-Delivery Availability and undergo further Testing and Evaluation.

# November



**(Nov. 15) MOBILE, AL**—USNS Burlington (T-EPF 10) delivery and commissioning.



**(Nov. 17) ANNAPOLIS, MD**—USS Sioux City (LCS 11) commissioning.



**(Nov. 21) MAYPORT, FL**—The littoral combat ship USS Sioux City (LCS 11) arrives at its homeport in Mayport, FL. Commissioned Nov. 17, 2018, Sioux City is the 13<sup>th</sup> littoral combat ship to enter the fleet and the sixth of the Freedom variant. It is the first ship named for Sioux City, the fourth-largest city in Iowa.



**(Nov. 27) YOKOSUKA, Japan**—USS John S. McCain (DDG 56) prepares to undock as a dry dock is flooded in order to test the ship's integrity at the Ship Repair Facility.



(Dec. 1) BOSTON, MA—USS Thomas Hudner (DDG 116) commissioning.



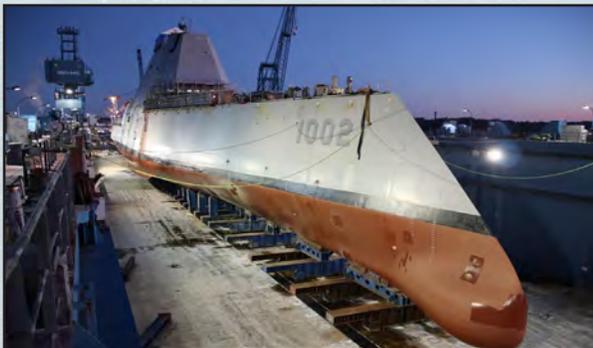
(Dec. 5) BREMERTON, WA—USS Nimitz (CVN 68) departs Dry Dock 6 at PSNS & IMF marking the conclusion of the 9-month dry dock portion of Nimitz's Docking Planned Incremental Availability (DPIA) maintenance period.



(Dec. 6-7) WASHINGTON, DC—NAVSEA Command Leadership Forum was held at the Washington Navy Yard.

# December

(Dec. 9) BATH, ME—Following a multi-day process that includes moving the ship from the land level facility to the dry dock, the future USS Lyndon B. Johnson (DDG 1002) is made ready before flooding of the dry dock at General Dynamic-Bath Iron Works Shipyard, and subsequent launching of the third Zumwalt-class destroyer.



(Dec. 14) MOBILE, AL—PCU Mobile (LCS 26) keel laying.



(Dec. 15) MARINETTE, WI—PCU St. Louis (LCS 19) christening.

(Jan. 12)  
MAYPORT,  
FL—USS  
Wichita (LCS 13)  
commissioning.



(Jan. 1) NEWPORT NEWS, VA—Chief Machinist's Mate Franklin Pollydore goes over safety procedures for the Upper Stage 1 Advanced Weapons Elevator with Sailors from USS Gerald R. Ford's (CVN 78) weapons department. The elevator is the first to be delivered to the ship and marks a major milestone for Ford and the entire Ford-class of aircraft carriers.



(Jan. 23) ARLINGTON, VA—NAVSEA recognizes and honors its Sailors of the Year.

# January



(Jan. 26) SAN DIEGO, CA—The USS Michael Monsoor (DDG 1001) commissioning.



(Jan. 31) WASHINGTON, DC—CVN 80 and CVN 81 contracts awarded as a two-ship buy to Huntington Ingalls Industries – Newport News Shipbuilding (HII-NNS). Pictured from left to right are Ryan Daniels, NAVSEA Contracting Officer; RADM Brian Antonio, Program Executive Officer Carriers; Jennifer Boykin, Executive Vice President, HII-NNS; Christie Thomas, HII-NNS; and CAPT Philip Malone, Program Manager, PMS 379.



(Jan. 29) MOBILE, AL—USNS Newport (T-EPF 12) keel laying.



(February) GULF OF MEXICO—USS Cincinnati earned a 93 on her INSURV Trials, the highest score to date for an LCS Independence variant.



(Feb. 1) MARINETTE, WI—USS Billings (LCS 15) delivery.



(Feb. 1) BATH, ME—PCU Carl M. Levin (DDG 120) keel laying.



(Feb. 2) GROTON, CT—USS South Dakota (SSN 790) commissioning.

# February

(Feb. 16) SAN FRANCISCO, CA—USS Tulsa (LCS 16) commissioning.



(Feb. 21) WASHINGTON, DC—Established and chartered the NAVSEA Corporate Board.



(Feb. 22) PASCAGOULA, MS—USS Paul Ignatius (DDG 117) delivery.



(March 2) CHARLESTON, SC—USS Charleston (LCS 18) commissioning.



(March 14) PASCAGOULA, MS—PCU Bougainville (LHA 8) keel laying.



(March 17) NEWPORT NEWS, VA—During her Post Shakedown Availability, the USS Gerald R. Ford (CVN 78) is maneuvered in the James River during a turn ship evolution.



(March 25) NEWPORT NEWS, VA—PCU New Jersey (SSN 796) keel laying.

# March



(March 21) SYDNEY, Australia—VADM Thomas Moore and entourage visited their Australian Navy counterparts.



(March 25) MAYPORT, FL—At Naval Station Mayport the USS Milwaukee (LCS 5) and USS Sioux City (LCS 11) in port during a Nesting Evolution.

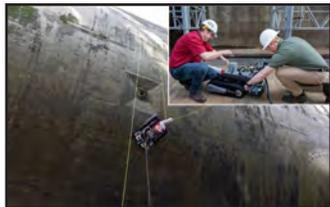


(March 27) MARINETTE, WI—PCU Marinette (LCS 25) keel laying.



(March 29) WASHINGTON, D.C. — Program Executive Office Columbia established.

**(April 1) BREMERTON, WA**—Developed in partnership between PSNSY & IMF and NUWC Keyport, the designers of the Prototype



Hull-Climber Robot prepare for its first practical test on a submarine, the USS Jimmy Carter (SSN 23), in dry dock at PSNSY & IMF (EDSRA). The goal was to design a system able to provide a faster, safer and more cost-effective method of completing required hull inspections on U.S. Navy submarines.



**(April 12) PASCAGOULA, MS**—PCU Richard M. McCool Jr. (LPD 29) keel laying.

**(April 5) WASHINGTON, DC**—RDML Eric Ver Hage (**center**) relieves RDML Tom Anderson (**right**) as Commander Naval Surface Warfare Centers and also assumes command of Naval Undersea Warfare Centers; also pictured is VADM Tom Moore (**left**).



**(April 2) PEARL HARBOR, HI**—A Sailor and his family look on as the USS Zumwalt (DDG 1000) sails into port.



**(April 16) PASCAGOULA, MS**—USS Fitzgerald (DDG 62) Undocking at Huntington Ingalls Shipbuilding.



**(April 17) NORFOLK, VA**—(Inset) VADM Thomas Moore and Mr. James Smerchansky meet with the Inclusion and Engagement Council hosted at Norfolk Naval Shipyard.

# April



**(April 24) COLORADO SPRINGS, CO**—Members from the Boy Scouts of America join VADM Thomas Moore in honoring Donald G. Stratton in a dedication ceremony. Gunners Mate 2nd Class Don Stratton is 96 years old and one of only five USS Arizona survivors still living.



**(April 25) WASHINGTON, DC**—NAVSEA staff members' children enjoy activities during Bring Your Children to Work Day.



**(April 26) DAHLGREN, VA**—CDR Casey Plew (**right**) relieves CAPT Gus Weekes (**center**) as Commanding Officer, NSWC Dahlgren; also pictured is RDML Eric Ver Hage (**left**).



**(April 27) BATH, ME**—PCU Lyndon B. Johnson (DDG 1002) christening.

(May 2) PHILADELPHIA, PA—CAPT Dana Simon (left) relieves CAPT Francis Spencer (right) as Commanding Officer, NSWC Philadelphia; also pictured is VADM Tom Moore (center).



(May 3) WEST BETHESDA, MD—CAPT Cedric McNeal (left) relieves CAPT Mark VanDroff (right) as Commanding Officer, NSWC Carderock; also pictured is CAPT Andy Arnold (center).



(May 3) WASHINGTON, DC—RDML Casey Moton (right) relieves RADM John Neagley as Program Executive Officer (PEO) for Unmanned and Surface Combatants.



(May 6-8) NATIONAL HARBOR, MD—At the Sea-Air-Space Exposition CAPT John Rucker, Program Manager, Columbia Class Fleet Ballistic Missile Submarine, Team Subs, gives an update on the PEO Columbia Program.



(May 13) SAN DIEGO, CA—USNS John Lewis (T-AO 205) keel laying.

# May

(May 14-15) LEESBURG, VA—The NAVSEA Command Leadership Forum was held in Leesburg, VA.



(May 16) WASHINGTON, DC—During a ceremony at the Washington Navy Yard the V.B. (Kisan) Pandit Awards for Metrology and Calibration Innovation were presented to the NAVAIR NAWC China Lake Test and Measurement & Diagnostic Equipment Team (TMDE).

(May 24) YOKOSUKA, Japan—CAPT Neil Sexton (seated center) relieves CAPT Garrett Farman (seated left) as Command Officer, U. S. Ship Repair Facility-Japan Regional Maintenance Center; also shown is VADM Thomas Moore who provided remarks.



(May 27) BREMERTON, WA -- USS Nimitz (CVN 68) completed a 456-day Docking Planned Incremental Availability (DPIA) four days early at Puget Sound Naval Shipyard and Intermediate Maintenance Facility.



(May 29) NEWPORT NEWS, VA—The Island is landed on the future USS John F. Kennedy (CVN 79) on the 102<sup>nd</sup> birthday of the ship's namesake.



(May 31) WASHINGTON, DC—RDML Tom Anderson (left) relieves RDML Jim Downey (right) as SEA 21 and Commander, Navy Regional Maintenance Center; also pictured is VADM Tom Moore (center).



**(June 4-5) LEESBURG, VA**—NAVSEA hosted its 2<sup>nd</sup> Annual High Velocity Learning Summit where more than 240 civilian and sailors attended the two-day summit.



**(June 14) NORFOLK, VA**—Ribbon cutting ceremony for Norfolk Naval Shipyard's new Submarine Maintenance Facility which will consolidate submarine maintenance, production, and support facilities into a single facility adjacent to submarine dry docks and piers; this effort is part of the Shipyard Infrastructure Optimization Program (SIOP).



**(June 6) BANGOR, WA**—CAPT Bob Figgs (*left*) relieved CAPT Eric Woelper (*right*) as Commanding Officer, Trident Refit Facility-Bangor; also pictured is CAPT Howard Markle (*center*).



**(June 11) POINT MUGU, CA**—First live fire test of the Surface-to-Surface Mission Modules on an LCS Independence variant.



**(June 12) BREMERTON, WA**—CAPT Dianna Wolfson (*center*) relieves CAPT Howard Markle (*left*) as the Commanding Officer, Puget Sound NSY & IMF; also pictured is VADM Tom Moore.



**(June 15) MARINETTE, WI**—PCU Minneapolis-Saint Paul (LCS 21) christening.



**(June 20) PANAMA CITY, FL**—CDR Kiah Rahming (*left*) relieves CAPT Jay Young (*right*) as Commanding Officer, Navy Experimental Diving Unit (NEDU); also pictured is Mike Dean (*center*).

# June



**(June 21) MOBILE, AL**—USS Cincinnati (LCS 20) delivery.



**(June 21) BATH, ME**—PCU Daniel Inouye (DDG 118) christening.



**(June 21) WASHINGTON, DC**—RADM James P. Downey (*right*) relieves RADM Brian K. Antonio (*left*) as Program Executive Officer (PEO) Aircraft Carriers.

**(June 24-28) WEST BETHESDA, MD**—NSWC Carderock hosted the 15<sup>th</sup> Biennial International Submarine Races in the 3,200 foot David Taylor Model Basin; this Science, Technology, Engineering, and Math (STEM) event provides an avenue for high school and college teams to tackle the difficult challenges of submarine design, construction and operation.



**(June 29) MOBILE, AL**—PCU Oakland (LCS 24) christening.



**(June 27) DAM NECK, VA**—CDR Joe Oravec (*left*) relieves CDR Andrew Hoffman (*right*) as Commanding Officer, NSWC Dahlgren Dam Neck Activity.





**(July 1) NORFOLK, VA**—Groundbreaking ceremony for Norfolk Naval Shipyard's new Production Training Facility which will consolidate training currently spread across 26 different locations and eight departments into a single 157,000 square foot facility; this effort is part of the Shipyard Infrastructure Optimization Program (SIOP).



**(July 9-14) BAHRAIN**—Forward Deployed Regional Maintenance Center Docking Team safely executed three rapid-cycle dockings in five days.



**(July 8) PORT HUENEME, CA**—Naval Surface Warfare Center Port Hueneme celebrates its 56<sup>th</sup> birthday.



**(July 16) WASHINGTON, DC**—Chief of Naval Operations ADM John Richardson speaks to NAVSEA employees at an All Hands call.



**(July 16-19) PASCAGOULA, MS**—USS Tripoli (LHA 7) Builder's Trials.

# July



**(July 17) PORT EVERGLADES, FL**—USS Paul Ignatius (DDG 117) commissioning.



**(July 26) MARINETTE, WI**—USS Indianapolis (LCS 17) delivery.



**(July 29) NEWPORT, RI**—Naval Undersea Warfare Center Newport celebrated its 150<sup>th</sup> Commemoration with

a new monument dedicated to the men and women who researched, developed, tested, evaluated and manufactured the weapons and underwater systems vital to the nation's undersea warfare superiority.



**(July 31) PORT HUENEME, CA**—NSWC Port Hueneme hosted the 2019 Advanced Naval Technology Exercises (ANTX) with the theme "Coastal Trident"; this event supports U. S. Navy science and technology initiatives.





**(Aug. 3) KEY WEST, FL—***USS Billings (LCS 15) commissioning.*



**(Aug. 12) PASCAGOULA, MS—***CAPT Nate Schneider (right) relieves CAPT Brian Lawrence (left) as commanding officer, Supervisors of Shipbuilding Gulf Coast.*



**(Aug. 6) BREMERTON, WA—***USS Pittsburgh (SSN 720) arrives at Naval Base Kitsap-Bremerton to commence the inactivation and decommissioning process.*



**(Aug. 9) KITTERY, ME—***CAPT Dan Ettlich (right) relieves CAPT Dave Hunt (left) as Commanding Officer, Portsmouth Naval Shipyard.*



**(AUG. 9) WALLOPS ISLAND, VA --***CDR Tony Holmes (right) relieves CAPT Jeff Lock (left) as Commanding Officer, Surface Combat Systems Center, Wallops Island; also pictured is RDML Doug Small (center).*



**(Aug. 13) WASHINGTON, DC—***Mr. Jimmy Smith, Director of the Navy Office of Small Business, addresses the audience at the NAVSEA Small Business Industry Day.*



**(Aug. 16) NORFOLK, VA—***CAPT Timothy Barney (left) relieves CAPT Dan Lannamann (right) as the Commanding Officer, Mid-Atlantic Regional Maintenance Center.*

# August

**(Aug. 20) GROTON, CT—***PCU Iowa (SSN 797) keel laying.*



**(Aug. 22) GULF OF MEXICO—***USNS Puerto Rico (T-EPF-11), completes the first-ever Integrated Sea Trials for the EPF-class.*



**(Aug. 22) NORFOLK, VA—***Ribbon cutting ceremony for Norfolk Naval Shipyard's newly renovated Building M-32, originally built in 1905, and now housing approximately 200 employees from multiple divisions in the Nuclear Engineering and Planning Department and the Production Facility and Equipment Management Division; this effort is part of the Shipyard Infrastructure Optimization Program (SIOP).*



**(Aug. 28-29) NEWPORT, RI—***NUWC Newport hosted the 2019 Advanced Naval Technology Exercises (ANTX) with the theme "Prepare for Battle: Undersea Security"; this event supports U. S. Navy science and technology initiatives.*



(Sept. 2-6) ST. LOUIS, MO—  
(Top) VADM Tom Moore represented the U.S. Navy at Navy Fleet Week, highlighted by an opportunity to meet with sailors assigned to Navy Operational Support Center St. Louis, speaking at Navy Fleet Week Proclamation event, and throwing out the ceremonial First Pitch at the St. Louis Cardinals vs. San Francisco Giants baseball game.



(Sept. 2-6) CORONA, CA—CAPT Khary Hembree-Bey (right) relieves CAPT Rick Braunbeck (center) as Commanding Officer, NSWC Corona; also pictured is RDML Eric Ver Hage.



(Sept. 6-8) BROOKLYN, NY—NAVSEA hosted the HACKtheMACHINE event where people from all walks of life, from software engineers to graphic designers, from students to start-up CEOs, help the Navy solve its foremost digital challenges.

(Sept. 13) ATLANTIC OCEAN—The Arleigh Burke-class guided-missile destroyer USS Porter (DDG 78) recovers Towed Airborne Lift of Naval Systems (TALONS) during Exercise Recognized Environmental Picture by Maritime Unmanned Systems REP (MUS) 2019 in the Atlantic Ocean.



# September



(Sept. 20) MOBILE, AL—PCU Savannah (LCS 28) keel laying.

(Sept. 26) ARLINGTON, VA—USS Thresher Memorial Dedication ceremony was held, honoring the 129 Sailors lost aboard the USS Thresher, April 10, 1963.



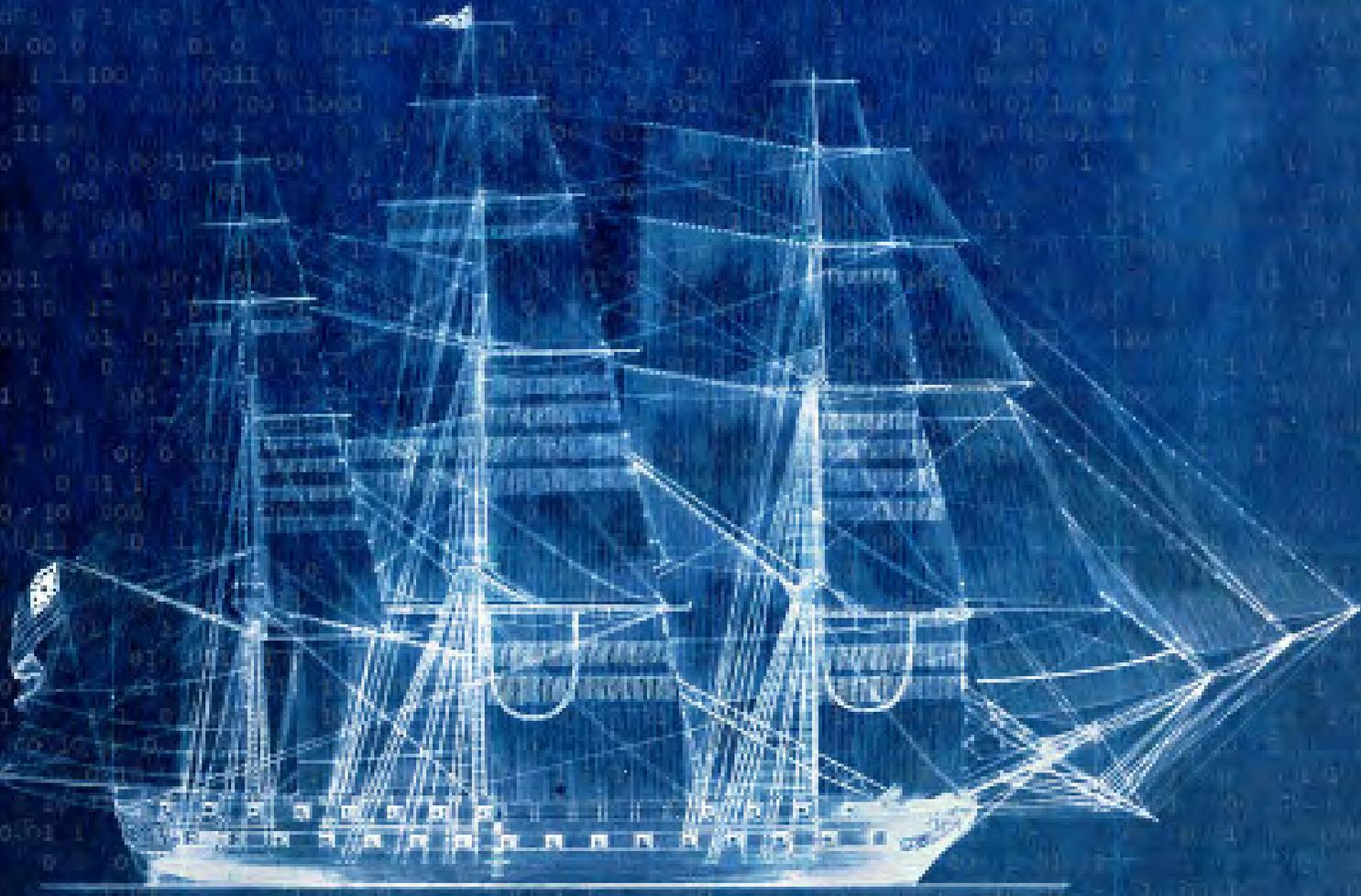
(Sept. 30) WATERS NEAR GUAM—The littoral combat ship USS Gabrielle Giffords (LCS 10) leads a formation followed by the Republic of Singapore Navy (RSN) frigate RSS Formidable (FFS 68), the dry cargo ship USNS Amelia Earhart (T-AKE 6), the guided-missile destroyer USS Momsen (DDG 92) and the RSN frigate RSS Intrepid (FFS 69) during a photo exercise (PHOTOEX) in support of exercise Pacific Griffin 2019.



(Sept. 30) U.S. NAVY—Sailors world-wide said goodbye to their Navy Working Uniform (NWU) Type I "Blueberries" as the NWU Type III became the standard working uniform.



# Campaign Plan HIGHLIGHTS



U.S.S. CONSTITUTION .  
1812  
FROM THE WORLD.

# Mission Priority 1: On-Time D

## Keel Layings



USNS John Lewis  
(T-AO 205)



PCU Mobile (LCS 26)



PCU Savannah (LCS 28)



USNS Newport (T-EPF 12)



PCU Bougainville (LHA 8)



PCU Carl M. Levin  
(DDG 120)



PCU New Jersey  
(SSN 796)



PCU Iowa (SSN 797)



PCU Marinette (LCS 25)

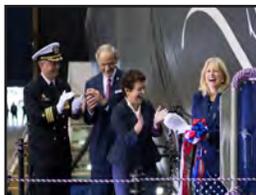


PCU Richard M.  
McCool Jr. (LPD 29)



PCU Vermont (SSN 792)

## Ship Christenings



PCU Delaware  
(SSN 791)



PCU Frank E. Petersen  
Jr. (DDG 121)



PCU Vermont  
(SSN 792)



PCU St. Louis  
(LCS 19)

## New Construct

- Delivered 110 Boats, Combatant Craft and Service Craft to the U.S. Navy
- Delivered 14 vessels in support of foreign allied partners
- CVN 79 (PCU John F. Kennedy) is 66% complete with construction tracking to 17% fewer man hours as compared to CVN 78 actuals; Island Landing in May
- Officially established PEO Columbia and made the first cut of steel, marking a major construction milestone
- The largest induction furnace (85-tons) in the U.S. was tested and formally accepted by the government at the Naval Foundry and Propeller Center (NFPC) in Philadelphia, PA; this furnace along with other new machines will support construction efforts for both COLUMBIA and VIRGINIA Class submarines



## New Construct



USNS Burlington (T-EPF 10)



USS Paul Ignatius



USS Indianapolis (LCS 17)

# Delivery of Ships & Submarines

## Commissioning Highlights

- Delivered SPY-6 below deck cooling equipment to DDG 125 (1st FLT III DDG)
- USS Cincinnati (LCS 20) earned a score of 93 on INSURV Trials, the highest score to date for



an Independence Class LCS

- USNS Puerto Rico (T-EPF 11) successfully completed the first integrated sea trials for an Expeditionary Fast Transport ship; the Integrated trials combined builder's and acceptance trials, allowing shipbuilders to demonstrate the operational capability and mission readiness of

the ship's systems during a single underway and reduce the time and effort to deliver the ship to the Navy

- FY19 ended with 68 battle force ships under construction or under contract

## Ship Christenings



PCU Oakland (LCS 24)



PCU Lyndon B. Johnson (DDG 1002)



PCU Minnesota-Saint Paul (LCS 21)



PCU Daniel Inouye (DDG 118)



USNS Puerto Rico (T-EPF 11)

## Ship Commissionings



USNS Burlington (T-EPF 10)



USS Michael Monsoor (DDG 1001)



USS Thomas Hudner (DDG 116)



USS Charleston (LCS 18)



USS Sioux City (LCS 11)



USS Paul Ignatius (DDG 117)



USS Wichita (LCS 13)



USS Billings (LCS 15)



USS Dakota (SSN 790)



USS Tulsa (LCS 16)

## Commission Deliveries



Paul Ignatius (DDG 117)



USS Billings (LCS 15)



USS Cincinnati (LCS 20)

# In-Service Repair, Maintenance & Modernization



58

CNO availabilities completed (4 CVNs, 7 SSNs, 2 SSGNs, 1 SSBN, 15 DDGs, 9 CGs, 2 LHDs, 2 LPDs, 4 LSDs, 1 LHA, 1 LCC, 1 LCS, 4 MCMs, 4 PCs, and AEGIS Ashore Romania)



28.9K

Fleet Technical Assists (FTAs) conducted

474

Continuous Maintenance Availabilities

246

Emergent Availabilities

162

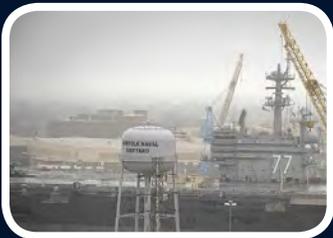
Total Ship Readiness Assessments (TSRAs)

9

Post Shakedown Availabilities

1

Ship Inactivation (SSN 720)



- Naval Shipyard Learning Centers have reduced the time required for a shipyard worker to be trained to do productive work by more than 50%; graduated 831 shipyard workers from the Naval Shipyard Apprentice program across 26 production trades
- Puget Sound NSY & IMF and the Trident Refit Facility team completed *USS Kentucky's* (SSBN 737) 176-day docking refit in Bangor; especially notable as this was the first time we included modernization of the fire control and ships control system outside of a CNO availability
- Radiation Detection: approved for fielding the Navy's next generation (i) gamma area monitor designed for local and remote display of gamma radiation exposure rates and (ii) battlefield dosimeter designed for use to monitor personnel exposure during radiological events and assist with medical triage
- Conducted 11 environmental compliance audits and reviews of NAVSEA commands with no significant findings of non compliance
- Emergent Repair Highlights:
  - Puget Sound NSY & IMF sent a fly away team to *USS Abraham Lincoln* (CVN 72) overseas to accomplish emergent electrical generator maintenance, accomplished in time to support the ship's mission
  - Pearl Harbor NSY & IMF completed an emergent propeller replacement on

- USS Santa Fe* (SSN 763) in just two days, five days ahead of the notional seven-day schedule, supporting *USS Santa Fe's* change of homeport from Pearl Harbor to the east coast and preventing any lost operational days to the Fleet
- Portsmouth NSY performed emergent repairs to the Stern Plane Ram on *USS Asheville* (SSN 758) and the TDU on *USS Annapolis* (SSN 760) returning both ships to unrestricted operations
- Pearl Harbor NSY & IMF performed a main engine throttle casualty repair on *USS Mississippi* (SSN 782) returning the ship to an operational status within five days of the casualty
- Norfolk NSY accomplished emergent repairs and fabrication of three condensers for *USS Champion* (MCM 4) and *USS Gladitor* (MCM 11)
- Pearl Harbor NSY & IMF performed an emergent Shaft Seal replacement on *USS Olympia* (SSN 717) returning the ship back to sea in a mission-ready status, saving more than 25-days in lost operational days
- Puget Sound NSY & IMF accomplished a complete overhaul and replacement of an angle drive mechanism associated with a turbine generator on *USS Nimitz* (CVN 68) in a timeframe never before accomplished
- Norfolk NSY accomplished the replacement of one nuclear pump on a fly away to a foreign port during a CMAV, completing this repair within 48 hours of the team arriving

## Shipyard Infrastructure Optimization Program



- Completed Modeling and Simulation (M&S) efforts at Pearl Harbor NSY with M&S efforts at Puget Sound NSY initiated in October
- Completed initial facility and infrastructure planning data collection and gap analysis at all four naval shipyards with FY20 efforts focused on closing the facility and infrastructure gaps

- Awarded the Dry Dock Analysis contract for all four shipyards
- Broke ground on the new Production Training Facility at Norfolk NSY on July 1, consolidating training currently spread across 26 different locations and eight departments into a single 157,000 square foot, \$64.7 Million facility



- Held ribbon-cutting for Norfolk NSY's newly renovated Building M-32 on August 22; the building, built in 1905, underwent a \$30 Million makeover; the building houses over 200 employees from multiple divisions in the Nuclear Engineering and Planning Department and the Production Facility and Equipment Management Division

- Norfolk NSY dedicated its new Submarine Maintenance Facility on June 14 which consolidates submarine maintenance, production and support shops into a single area adjacent to the submarine dry docks and piers



# Ship Depot On-Time Delivery



CVN 76 - Puget Sound NSY & IMF and SRF - Japan RMC



CVN 71 - Puget Sound NSY & IMF



CVN 68 - Puget Sound NSY & IMF

## Puget Sound NSY & IMF notches 5<sup>th</sup>, 6<sup>th</sup> & 7<sup>th</sup> straight On-Time Carrier Overhauls



CG 52 - Southwest RMC



SSN 777 - Pearl Harbor NSY & IMF



CG 62 - SRF - Japan RMC



DDG 64 - Forward Deployed RMC Det Rota



DDG 89 - SRF - Japan RMC



DDG 102 - Northwest RMC



CG 67 - SRF - Japan RMC



MCM 14 - SRF - Japan RMC Det Sasebo



LSD 52 - Southwest RMC

# Vice Admiral Moore extols Puget Sound NSY & IMF successes in address to the workforce

Vice Adm. Thomas Moore recognized the accomplishments of individuals, shops and codes throughout Puget Sound NSY & IMF highlighting depot availabilities and inactivations completed on-time as well as process improvements that saved time and money.

On-time delivery included *USS Theodore Roosevelt (CVN 71)*, *USS Ronald Reagan (CVN 76)*, and *USS Nimitz (CVN 68)* which also undocked early and ensuring Dry Dock 6 was ready for the arrival of *USS Carl Vinson (CVN 70)*.

Other highlights included:

- *USS Maine (SSBN 741)* successful completion of a 32-month Engineered Refueling Overhaul with more than 700,000 man-days of work which extends the lifespan of the submarine to 42 years. The team improved methods for removing the superstructure, completing refueling hull cuts, installing shielding and employed a new training method. The Maine project was able to achieve a 10% reduction in the “corporate best” refueling portion of the availability.
- Ex-Buffalo (SSN 715) undocked nearly seven weeks early with the project team’s innovative thinking potentially saving the Navy millions of dollars by harvesting the sonar transducers during the inactivation, rather than later.
- *USS Jacksonville (SSN 699)* and *USS Bremerton (SSN 698)* completed their Ship’s Layup Availabilities (SLA) while successfully executing a new SLA concept by merging crews and watchstanding responsibilities, reducing manning requirements for assets awaiting inactivation and enabling the return of Sailors to active naval warships.



## Surging to the top

### Surge Maintenance Sailors fill critical gaps

SurgeMain, short for Surge Maintenance, was established by the United States Navy in March of 2005 and is part of the Naval Sea Systems Command Reserve Program. The program has 75 reserve units with over 1,700 enlisted sailors and over 200 reserve officers, mostly from the engineering duty officer community.

They work, filling critical demands, at four naval shipyards in the trades associated with their full-time civilian jobs or their Navy ratings and require minimal training. They seamlessly integrate into the various shops and codes and represent a diverse range of job fields including electricians, electronic technicians, pipe fitters, sheet metal workers, plumbers, hydraulic technicians, mechanics, machinists, riggers, carpenters, welders, heating ventilation air-condition technicians and structural repair workers.

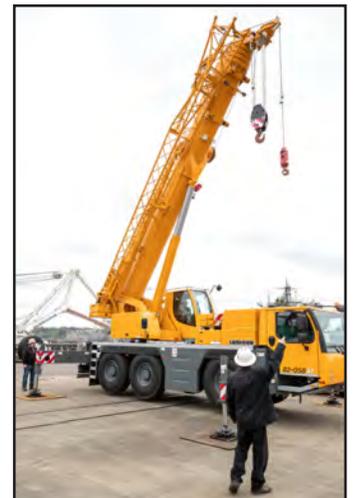


Electronics Technician First Class (ET1) Robert Schmitz, a SurgeMain sailor.



## Puget Sound NSY & IMF rolls out first of four new mobile cranes

Lifting and Handling Department teammates watch as CAPT Howard Markle, Puget Sound Naval Shipyard & Intermediate Maintenance Facility commander, cuts the ribbon to ceremoniously bring into service the first of four mobile cranes purchased through Naval Sea Systems Command’s Capital Investment Program.



# Southwest RMC Collaborates with Industry to Double Dock Destroyers

Southwest Regional Maintenance Center (SWRMC) supported the double docking of *USS Stethem (DDG 63)* and *USS Decatur (DDG 73)* in BAE Systems – Ship Repair’s dry dock, the *Pride of California*.

The double-docking represents the first time since 2012, when *USS Mason (DDG 87)* and *USS Bulkeley (DDG 84)* were docked in Norfolk, that the Navy has collaborated with Industry to simultaneously dry-dock two surface ships. The last time a west-coast shipyard executed a double-docking was in 2011 with the docking of *USS Curtis (FFG 38)* and *USS Vandegrift (FFG 48)*.

“This is an example of how the Navy and our private shipyards are working with a sense of urgency to get ships in and out of maintenance availabilities on time,” said Commander, Naval Sea

Systems Command Vice Adm. Tom Moore. “By doubling up in *Pride of California*, we’re maximizing our available resources.”

Leading up to the tandem docking, SWRMC worked to prepare both ships for the event, readying them to meet stability requirements for successful coordination of the two-ship dry dock process.

“The effort to align maintenance and modernization on both *Stethem* and *Decatur* in a single dry dock is a cost effective and innovative solution by Industry and the Navy,” said CAPT David Hart, SWRMC’s commanding officer. “The simultaneous completion of availabilities allows us to support the on-time delivery of ships to the Fleet.”

SWRMC is meeting its mission to provide superior

ship maintenance, modernization, technical support, and training for the Pacific Fleet.



Southwest Regional Maintenance Center supported the double docking of *USS Decatur (DDG 73)* and *USS Stethem (DDG 63)* and in BAE Systems – Ship Repair’s dry dock, the *Pride of California*.

## Norfolk Naval Shipyard completes moored training ship conversion of *USS La Jolla*

*La Jolla* is the first of two next-generation training ships converted at NNSY to become land-based platforms for training nuclear Sailors at the Nuclear Power Training Unit (NPTU) in Charleston, South Carolina. The second, *USS San Francisco (SSN 711)*, has been at NNSY since January 2017.

As the first MTS conversion ever performed at NNSY, and the Navy’s first one in nearly 30 years, the effort proved similar in many ways to constructing the first ship in a new class. During its conversion, *La Jolla* underwent two complete hull cuts, separating the boat into three pieces, recycling the center section, and adding three new hull sections, adding 76 feet to the overall ship length. The new hull sections arrived from Electric Boat via barge and were craned into the dock. In the midst of that massive undertaking, the conversion also included work typical of engineered overhauls NNSY conducts on other Los Angeles-class submarines.

The conversion’s unprecedented work for the shipyard presented unique challenges in all phases of the project. NNSY naval architects, docking officers and *La Jolla* project team members collaborated extensively to safely and successfully dock the boat on strongbacks, which are more than twice the height of blocks usually used at NNSY. The docking challenge hinged on having the boat sitting as high in the water as possible without creating an unstable buoyancy condition. This challenge was effectively met by pulling 40,000 pounds of material off the boat before docking, and “superflooding” the dock three feet

above the river level during the breasting over of the ship on top of strongbacks.

The Navy has used moored training ships for 30 years, with the current two at NPTU—ex-Sam Rayburn (MTS 635) and ex-Daniel Webster (MTS 626)—having been converted at Charleston Naval Shipyard. Following that shipyard’s closure in 1996, NNSY assumed maintenance responsibilities of both Rayburn and Webster, to include their upcoming inactivations.



Norfolk Naval Shipyard (NNSY) successfully completed the conversion of *USS La Jolla (SSN 701)* into a Moored Training Ship. *La Jolla* is the first of two next-generation training ships converted at NNSY to become land-based platforms for training nuclear Sailors at the Nuclear Power Training Unit (NPTU) in Charleston, South Carolina.



# Private Sector Ship Repair & Regional Maintenance Centers



## Organizational Wins

- Implemented Availability Duration Scorecard (ADS) 3.0 to apply more rigor and develop executable maintenance plans for FY20 and FY21 availabilities
- Executed horizontal and vertical bundling strategy to improve private sector predictability (seven DDG 51 availabilities in FY19)
- Implemented Directive Maintenance Strategies (DMS) to drive down Growth Work and New Work on all availabilities
- Completed installation of Hybrid Electric Drive system on USS Truxtun (DDG 103) and executed over 80 hours of successful at-sea testing
- Expanded I-level maintenance capability at the RMCs with increased capacity for pump overhauls, motor and diesels repairs at Mid-Atlantic RMC (MARMC) and fluidized bed powder coatings and motor repairs at Southwest RMC; led Corrosion Control Program Management certification courses at all CONUS RMCs, provided Composite Patch Certification and Repair training courses at Hawaii RMC and MARMC, and conducted Laser Ablation Training at MARMC
- Mid-Atlantic RMC eclipsed industry timelines and cost estimates by conducting a complete turbine rotor replacement on USS Bataan (LHD 5) in five weeks at a cost of \$400K allowing USS Bataan to return to the fight fully mission ready and well ahead of industry projected timelines
- Southeast RMC's Engineering, Contract, and Maintenance Teams aggressively executed Undefined Contract Actions, coordinated with In-Service Engineering Agents and Original Equipment Manufacturers to repair the Port High Speed Clutch and replace and test the Starboard Combining Gear and Tactical Air Navigation System in preparation for USS Detroit's (LCS 7) maiden deployment to U.S. Southern Command to target illicit trafficking routes in coastal waters along Central America
- Forward Deployed RMC (FDRMC) Bahrain efficiently and safely executed three rapid-cycle PC dockings in 5 days exemplifying focus of on-time delivery and getting these forward-deployed assets back to the fleet
- Inactive Ships scrapped three ships to completion: ex Independence (CV 62), ex-Saratoga (CV 60), and ex-Doyle (FFG 39); in addition, ex-Ford (FFG 54) was environmentally prepared and towed for successful SINKEX in support of exercise Pacific Griffin

## Navy Afloat Maintenance Training Strategy

- NAMTS - purpose: Charged with conducting hands-on production related Job Qualification Requirements
- Expanded NAMTS afloat training sites from 16 to 21 with 2 new training programs for Corrosion Control and PHALANX/CIWS Repairs, a Pump Repair Training program was implemented at MARMC, and an Inside Electrical Repair Training was developed in coordination with Norfolk Naval Shipyard
- 832 sailors completed NAMTS training (21% increase from FY18)
- 890 NECs were earned (30% increase from FY18)
- 1,300 NAMTS NEC Sailors assigned to sea duty (5% decrease from FY18)
- 3,931 NAMTS NEC Sailors in inventory (14% increase from FY18)
- 442 Afloat Sailors enrolled (6% increase from FY18)
- 43 Afloat Sailors earned NAMTS NECs (126% increase from FY18)



## Ship Organic Repair Capability Assist Team

- SORCAT - purpose: Assist ship's force in regaining onboard repair capability and building technical acumen
- 40 assessments were accomplished across six ship classes (CVN, LHD, CG, DDG, LPD, LSD) with 629 follow-up assists conducted across 52 ships
- 3,055 ship repair capability shortfalls were identified with 849 corrected
- 938 pieces of Mechanical/Electrical Precision Measurement Instruments were identified as missing or out of calibration and 711 pieces of Industrial Plant Equipment were identified as degraded, inoperative, or missing with a total replacement cost of \$6.3M



# Diving & Salvage



## Underwater Ship Husbandry

- Conducted 458 hull cleaning operations resulting in \$147M in fuel savings
- Conducted 102 Underwater Ship Husbandry (UWSH) operations worldwide thereby avoiding 79 dry-dockings (42 submarines and 37 surface ships), returning 392 operational days to the Fleet, and saving \$61M
- Ex-USS Paul Foster: SUPSALV personnel, equipment and contract divers removed and replaced all six waterborne main shaft bearings pier side in Port Hueneme, CA, thereby permitting the ship to meet all testing commitments for NSWC and their PEO customers (See picture below)



- SSGN Forward and Aft Outboard Transducer Array Assembly (OTAA) Replacement: SUPSALV supported TRF Kings Bay with the waterborne troubleshooting, removal, and replacement of both the forward and aft WSQ-9 OTAA pier side in Souda Bay, Crete (See pictures top left and bottom left)

## Salvage Operation

- Safely executed 16 salvage operations worldwide (eight deep ocean search and recovery, seven ship salvage, and one tow)
- Western Pacific Search & Recovery Operations: In a single deployment, SUPSALV conducted Search and Recovery operations locating a lost Japanese Self-Defense Force F-35 aircraft north of Misawa, Japan followed by a transit to the Philippine Sea where they recovered an entire Navy C-2A aircraft from a record 18,785 feet of salt water (FSW), and surveyed and recovered selected items from a Marine Corps KC 130 aircraft; all three recovery operations were executed in support of aircraft accident investigation boards (See picture top right)
- Salvaged capsized NSWC Carderock Experimental Support Platform in Lake Pend Oreille, ID; SUPSALV conducted emergent stabilization and hydrocarbon removal followed by the first USN parbuckle (uprighting) operation since 1966 allowing for barge refurbishment and return to service (See picture center right)
- Responding to COMUSNAVEUR Naples tasking, SUPSALV provided salvage assets to remove a sunken dredge barge from Alexandroupoli, Greece. The dredge barge, which blocked access to a strategic pier, cleared the way for future NATO operations (See picture bottom right)
- Civil Support - SUPSALV supported the U.S. Army Corps of Engineers with the removal of three sunken vessels which posed hazards to navigation in the vicinities of Miami, FL; Jacksonville, FL; and Portland, OR; and the USCG with salvage plan, stability, and salvage response review of an overturned car carrier off Jekyll Island, GA



# AM Additive Manufacturing

NAVSEA is recognizing the game-changing potential of additive manufacturing to revolutionize the obsolescent or long lead time components and to enable innovation at the deckplate enterprise made impressive headway in 2019.



## Ship Applications

### Afloat Integration



Over 40 Sailors and Regional Maintenance Center personnel were trained on 3D Design and additive manufacturing. Sailors from LHD 8 receive AM equipment training at Southwest Regional Maintenance Center.



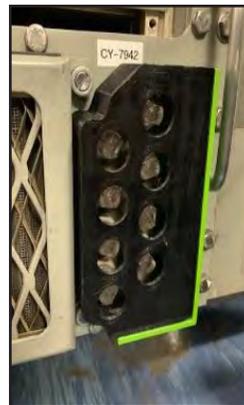
Eight ships had additive and advanced manufacturing equipment installed, which included 3D printers, laser cutters, 3D scanners and CNC machines. Pictured is a rack of multiple 3D printers onboard *USS John C. Stennis*.



A one year deployment on the *USS John C. Stennis (CVN 74)* produced 905 parts, which included 300 part installations. Machinery Repairman 2<sup>nd</sup> Class Blaine Matthews, from Canby, Oregon, removes a 3D print piece from a printer aboard the aircraft carrier in the Atlantic Ocean.



Blown Optic Fiber Cable Clamp (PSNS) Legacy saddles are often lost during maintenance, resulting in damaged cables with costly repairs. PSNS designed and produced an AM solution that reduced this issue; 65 clamps have been installed shipboard to date.



Blower Assembly Fuse Cover (SWRMC) Existing fuse protection on the blower assembly leaves the fuses exposed and vulnerable to

toe-kicks. The SWRMC design better protects the fuses from accidental

kicks, prolongs the life of the fuses, and minimizes repair to the unit as a result of irreparable fuse damage. AM fuse covers have been installed on CG 70, LHD 8 and CG 56.

**SAILORS CAN USE THEIR COMMON ACCESS CARD TO ACCESS THE FILES NECESSARY TO PRINT THESE AND MANY OTHER**



Battle Lantern Nut



Floodlight Dimmer Switch



Rotary Switch Knob



Oxygen Valve Wrench



Fire Extinguisher Cone Clip

olutionize design, eliminate issues with  
 . The NAVSEA additive manufacturing



## Parts Production

NAVSEA approved over 150 additively manufactured components submitted from the fleet, industry and maintenance activities. Over 100 component files are available to anyone with a CAC on a secure file sharing website. Large Metal 3D printers can print components tens of feet in length, width and height. NAVSEA Progressed an effort exploring utilization of one of these machines to print a scaled submarine propulsor. Huntington Ingalls' Newport News shipyard delivered a Level 1, metal part to the U.S. Navy for installation on an aircraft carrier in February, 2019. Over 100 component files are available to anyone with a CAC on a secure file sharing website.

## Sprints & Exercises

The second navy-wide Print Sprint was held at Naval Base San Diego in March, which brought stakeholders together from 15 different organizations to accelerate shipyard adoption of AM technology. Three separate Part Identification Exercises held on the waterfront identified over 500 3D-printable parts which increase fleet readiness.



Don Hamadyk, Newport News Shipbuilding's director of research and development, presented the first 3D printed metal part to RADM Lorin Selby, Naval Sea Systems Command's chief engineer and deputy commander for ship design during a ceremony on USS Harry S. Truman.



Training drones, knobs, switches, nuts and wrenches are just a few of the approved components available for Sailors to download, print and utilize shipboard.



Left: Fire Hose Spanning Wrenches, often needed by the fleet during deployments, were printed by each organization that attended the Print Sprint to refine the additive manufacturing technical data package under development.



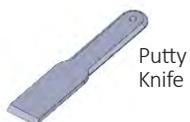
Right: Print Sprint participants discuss which additive manufacturing capabilities provide the most impact for shipyards.



Left: A large 3D printer deposits metal material as it builds a model propeller. Right: The printer pictured, located at Pennsylvania State University Applied Research Laboratory, has a build volume of 840 cubic feet.



### COMPONENTS WHICH REDUCE LEAD TIME, SAVE COST, OR ARE OFTEN NEEDED BY A SHIP WHILE ON DEPLOYMENT.



Putty Knife



Training Drone



IVCS Dimmer Switch



440V Switch, Circular Hole



440V Outlet Cover



Funnel

# Mission Priority 2: Improve Warfighting Capability of Ships and Systems

- USS John Finn (DDG 113) and NSWC Port Hueneme successfully intercepted aerial target drones using the SM-6 Dual II missile at the Pacific Missile Range Facility during a live-fire exercise
- Awarded Phase 2 fabrication contracts for five Orca Extra Large UUVs (XLUUVs) with the first vehicle scheduled to deliver in December 2020
- Successfully intercepted an intermediate-range ballistic missile target in space with a Standard Missile (SM) 3 Block IIA launched from the Aegis Ashore Missile Defense Test Complex at the Pacific Missile Range Facility in Kauai, Hawaii; this was the 3<sup>rd</sup> successful intercept out of five intercept tests for the SM-3 Blk IIA missile (See picture above)



**KAUAI, Hawaii** — A Standard Missile (SM) 3 Block IIA is launched from the Aegis Ashore Missile Defense Test Complex at the Pacific Missile Range Facility at Kauai, Hawaii, to successfully intercept an intermediate-range ballistic missile target in space. This is the third successful intercept out of five intercept tests for the SM-3 Block IIA missile. Aegis Ashore stations in Poland and Romania, as well as a future site in Japan, will be equipped with the SM-3 Block IIA missiles to strengthen Americas short- and intermediate-range missile defense strategy.

Deployed the Surface Warfare Mission Package (SUWMP) with the Surface-to-Surface Missile Module (SSMM) on LCS 7 two years ahead of schedule

- Surface-to-Surface Missile Module (SSMM) achieved initial operational capability (IOC) on the Freedom-variant LCS with the first production unit awarded in FY19; Independence-variant (LCS 6) developmental testing at the Point Mugu Sea Range conducted 35 TRACKEXs and a FIREX with nine successful engagements
- Completed installation of the Anti-Submarine Warfare Mission Package (ASWMP) onboard the Freedom variant (LCS 3) and initiated formal developmental testing, including the first-ever at-sea demonstration of the Dual-mode Array Transmitter (DART) system from an LCS platform
- NSWC Philadelphia developed the Advanced Carbon Dioxide Removal Unit (ACRU) Submarine Life Support System, the first new submarine atmosphere CO<sub>2</sub> removal technology since



1<sup>st</sup> Test Fire on Independence-variant LCS (Surface-to-Surface Mission Modules)

the 1950s; ACRU replaces liquid sorbent with a non-hazardous, solid, nanoporous sorbent and will eliminate tankage, significantly reduce piping, and the longer projected solid sorbent life expectancy (10 times) significantly reduces maintenance; ACRU is incorporated in the Columbia class technical baseline

- Accepted delivery and installed the first submarine imaging system Low Profile Photonics Mast (LPPM) satisfying a critical Fleet operational requirement
- Held the ribbon-cutting for NSWC Dahlgren's new Missile Support Facility which



The Advanced Carbon-Dioxide Removal Unit (ACRU) Submarine Life Support System is the first new submarine atmosphere CO<sub>2</sub> removal technology since the 1950s. The system replaces liquid sorbent with a non-hazardous, solid nanoporous sorbent.

maintain the Submarine Launched Ballistic Missile fire control and mission planning software

- Completed and approved the FFG(X) Systems Specification in half the time normally needed for a combatant of this complexity; the systems specification is technically rigorous to ensure delivery of the capability defined in the CDD and incorporated cost reduction initiatives identified and assessed in collaboration with five industry design teams
- The Knifefish system received Milestone C approval and a low-rate initial production (LRIP) contract was awarded for five systems following completion of developmental testing and operational assessment; conducted



The Unmanned Aerial System (UAS) capability launched from submarines, developed by NUWC Newport Division, is an additional sensor/payload that enhances submarine capability, supporting warfighting requirements, including third-party targeting.

and defeat time sensitive mobile targets in forward deployed environments

- NSWC Panama City successfully completed a flight test of the Airborne Surface Quad Thruster Interface Device (ASQUID), a device that attaches to the side of a MH-60 helicopter and lowers the MK-18 underwater drone into the water to search for mines; this system will prevent Navy personnel from having to enter a minefield during mine hunting and clearing missions



DAHLGREN, VA — Navy leaders and scientists are joined by local officials at a ribbon cutting ceremony for the new Missile Support Facility at Naval Surface Warfare Center Dahlgren Division (NSWCDD). The facility features state-of-the-art labs, offices, and equipment for more than 300 NSWCDD Strategic and Computing Systems Department scientists, engineers, and technical experts who develop, test, and maintain the Submarine Launched Ballistic Missile fire control and mission planning software.

**From left to right:** Lauren Falkenstein, a scientist representing the NSWCDD Strategic and Computing Systems Department's newly-hired junior workers; John Fiore, NSWCDD technical director; Vice Adm. Johnny Wolfe, director of Navy Strategic Systems Programs; U.S. Rep. Rob Wittman; Margaret Ransone, Virginia delegate; Kyle Jones, head of the NSWCDD Strategic and Computing Systems Department; Lisa Weisbeck, a scientist representing the NSWCDD Strategic and Computing Systems Department's senior level workers.

features state-of-the-art labs, offices, and equipment for more than 300 NSWC Dahlgren Strategic and Computing Systems Department scientists, engineers, and technical experts who develop, test, and



Knifefish System

Underway Integration Testing on USS Independence (LCS 2) and USNS Hershel "Woody" Williams (T-ESB-4)

- NUWC Newport developed the Submarine Launched Unmanned Aerial System (UAS) which enables the platform to identify



Airborne Surface Quad Thruster Interface Device

## Campaign Plan Highlights

- Navy Experimental Diving Unit (NEDU) in partnership with NSWC Panama City designed and fabricated the Fluctuating Altitude Simulation Technology (FAST) to investigate a physiological effect that has plagued Naval Aviation since 2010; conducted the first-ever human subject research of physiological effects associated with rapid cabin pressure fluctuations



- AN/AQS-20 towed sonar completed Developmental Testing with formal initial operational capability (IOC) planned after integration with MCM USV; 9 of 10 Low Rate Initial Production (LRIP) units delivered in FY19
- Delivered the Escort Mission Module Pre-Production Test Article (PPTA) for the Anti-Submarine Warfare Mission Package on schedule in support of a Q2 FY20 IOC
- Completed at-sea demonstration of the Greenough Advanced Rescue Craft (GARC) and Towed Airborne Lift of Naval Systems (TALONS) prototype, an integrated low-cost solution being evaluated to provide enhanced communication ranges for the Mine Counter Measure Mission Package (MCM MP); went from concept to at sea demonstration in less than 10 months
- Certified the Navy's only portable, fly away, saturation diving system (SATFADS) for manned diving operations and began planning for the first operational deployment to Papua, New Guinea in 2020 in support of the Defense POW/MIA Accounting Agency
- Achieved initial operating capability for the San Diego Combined Integrated Air Defense and Anti-Submarine Warfare Trainer (CIAT) Spiral 3, and completed six CIAT Fleet Advanced Weapons Systems Phase II training events

- Delivered enhanced COVE III integrated Navigation Team Trainers to Rota, Spain and Bahrain, UAE
- Delivered Phase I, II, and III modifications to the Navigation Seamanship and Ship-handling Team Trainer (NSST) at 7 fleet concentration areas and delivered Junior Officer of the Deck courses in San Diego, Norfolk, and Newport yielding 338 Officer Graduates
- Delivered 37 Surface Training Advanced Virtual Environment (STAVE) Courses of Instruction (CINs), exceeding FY19 goal by 16%
- Developed 122 Manpower, Personnel, and Training (MP&T) Plans and 31 Navy Training System Plans (NTSPs) in support of modernization
- Conducted a three-day underway demonstration whereby an LCS Mine Countermeasure Mission Package was integrated on USNS Hershel 'Woody' Williams to prove ESB class ships have the ability to serve as MCM capable platforms and provide increased agility to operational forces
- Awarded an Other Transaction Authority (OTA) for the rapid development of Model Based Product Support (MBPS); the effort to integrate applications for data acquisition, product data management, and readiness forecasting to operational availability began in partnership with the National Security Technology Accelerator (NSTXL); NSTXL coordinated with the Training and Readiness Accelerator (TRex) team to conduct the overall solicitation and support the OTA process
- NSWC Indian Head Explosive Ordnance Disposal Technology Division's Moser Nitration Facility celebrated the production of its one millionth pound of Otto Fuel II; Otto Fuel II is uniquely manufactured at this facility and is used in both heavyweight torpedoes and lightweight torpedoes
- PEO IWS earned the praise of VADM MJ



*Our PEO Integrated Warfare Systems (IWS) team successfully tracked a ballistic missile target using the AN/SPY-6(V)1 Air and Missile Defense Radar during testing in Hawaii.*

- Noonan, Royal Australian Navy Chief of Navy, for their commitment and flexibility in orchestrating the Combat System Ship Qualification Trials on the HMAS Hobart, Australia's first AEGIS capable ship
- DDG 116 (USS Thomas Hudner) fires an SM-2 missile during a live-fire missile exercise off the coast of Virginia. Thomas Hudner's crew operated the Virtual Twin to fire a missile against an incoming target, proving the Virtual Twin can control radars and missiles to execute an engagement



- Successful completion of RAM BLK 2A flight tests
- Delivered SM-6 BLK 1A to the Fleet
- Delivered the second Dual-Level Fire Fighting Trainer to Submarine Learning Center Detachment San Diego and the First No-Motion Ships Control Operator Trainer (SCOT) to Portsmouth NSY
- Certified LCS Combat System Baseline 3.1 for FREEDOM variant
- Executed 11 Building Partner Capacity cases totaling \$44.6M; these cases promote interoperability and enhance the regional stability of key allies by providing Special Forces and counterterrorism equipment, and familiarity training; countries supported include: Azerbaijan, Bosnia, Czech Republic, Jordan, Latvia, Lithuania, Mongolia, Nigeria, Philippines, Tunisia, and Uganda
- Provided radar upgrades for one Egypt Frigate (SMART-S) and three Philippine High Endurance Cutters (Sea Giraffe 3-D); these programs enhance the capability of these former USN/USCG transferred ships, critical in protecting national and global freedom of navigation interests on the South China Sea

## NAVSEA approves diving system for sustained operations

Naval Sea Systems Command (NAVSEA) approved the Navy's only Saturation Fly Away Diving System (SATFADS) for sustained operations after completing a 30 foot wet certification of the launch and recovery system in Panama City, Fla.

The Saturation Fly Away Diving System (SAT FADS) is designed to provide a mobile and worldwide capability for deep water sustained diving operations. SATFADS can support six saturation divers for a period of 21 days, with an additional nine days of decompression.



*The US Naval Sea Systems Command (NAVSEA) has approved the navy's only Saturation Fly Away Diving System (SATFADS) for sustained operations after completing a 30 foot wet certification of the launch and recovery system in Panama City, Fla.*

## Virtual Laboratory on Ship demonstrates the capabilities

Sailors aboard Arleigh Burke class destroyer *USS Lassen (DDG 82)*, in partnership with Program Executive Office Integrated Warfare Systems (PEO IWS) 5.0, Undersea Systems, successfully tested the Virtual Laboratory on Ship (VLOS), a virtualized Undersea Warfare Combat System (AN/SQQ-89 A(V)15), during a recent weeklong underway period. VLOS represents another important step forward in the U.S. Navy's efforts to speed combat system element development and software upgrades.

During the past year, IWS 5.0 developed VLOS in close collaboration with Applied Research Laboratory – University of Texas (ARL-UT) and Naval Undersea Warfare Center Division



*The VLOS, located in USS Lassen's sonar equipment room throughout the 2019 exercise, consists of five commercial off the shelf workstations and two processors.*

Newport to meet the Department of the Navy's demand to speed the development of cutting-edge weapon systems with

industry's advancements in software virtualization and virtual machine applications. VLOS is a virtualized sonar sensor subset of the tactical AN/SQQ-89A(V)15 system and operates alongside the ship's AN/SQQ-89 system via passive receipt of acoustic and navigation data from the tactical system. The VLOS was installed on board *USS Lassen* alongside the existing AN/SQQ-89A(V)15 tactical system to evaluate new advanced sensor capabilities in an operationally relevant environment against live submarine targets and weapons. During the weeklong underway period, PEO IWS 5.0, ARL-UT and NUWC engineers demonstrated the ability to transmit a software fix from a shore site to a ship at sea using VLOS.

## Structural Test Firing of the LCS Surface-to-Surface Missile Module



The Littoral Combat Ship (LCS) Mission Modules (MM) program will begin developmental testing on an Independence-variant LCS in August, following a successful structural test firing of the ship's Surface-to-Surface Missile Module (SSMM) on the Point Mugu Sea Range.

The test firing was the first ever aboard the Independence variant and the first in a series of test events that will assess the SSMM capability on the variant. SSMM testing on the Freedom variant was successfully completed earlier this year.

# Navy Successfully Completes Developmental Testing of AN/AQS-20C Towed Minehunting Sonar

After completing Developmental Testing (DT) in February of 2019, the U.S. Navy is another step closer to delivering the AN/AQS-20C (Q-20C) towed minehunting sonar to the Fleet. The Q-20C has advanced acoustic and electro-optic sensing capabilities that will detect, localize and classify bottom, close-tethered, moored, and volume-moored mines.



Sonar Sensor Post Mission Analysis (PMA) Operators gather pier side with the Naval Surface Warfare Center Panama City Division (NSWC PCD) Q-20C project team's subject matter experts. Pictured from left to right are: NSWC PCD Q-20C Project Lead Joe Thomas; Technician David Barnett; PMA Operator/Mineman First Class Petty Officer Jonathan Roden; PMA Operator/Aerographer's Mate Chief Petty Officer Larry Pacquer; PMA Operator/Mineman Petty Officer Third Class Jeremy Woods; Technician Dan Lucarelli; and Lead Operator Gordon Reece.

According to Naval Surface Warfare Center Panama City Division's (NSWC PCD) Q-20C Lead Project Engineer Joe Thomas, the Q-20 C variant has increased capabilities, particularly with regard to searching in multiple modes in the water column. NSWC PCD is considered the nation's premier technical center for Mine Warfare and Mine Countermeasures (MCM). NSWC PCD's subject matter experts partnered with Q-20C post mission analysis (PMA) operators during this phase of DT to evaluate the system performance with these latest improvements.

Thomas said the improvements implemented into the C-variant ready the system to be integrated with its intended tow platform, the MCM Unmanned Surface Vehicle (MCM USV) in Fiscal Year 2020. The MCM USV is a long endurance, semi-autonomous, diesel-powered, all-aluminum surface craft that supports the employment of various MCM payloads. Jonathan Roden reported an equally optimistic outlook for the Q-20C's potential Future Naval Capabilities.



The AN/AQS-20C Towed Mine-hunting Sonar is streamed into Gulf of Mexico waters of the Naval Surface Warfare Center Panama City Division Gulf test range. Developmental Testing was completed. The testing marks completion of incorporating the 'Charlie' variant sonar sensor modernization.

## NSWC Philadelphia achieving outcomes via Naval Innovative Science & Engineering Hammer Activated Measurement System for Testing & Evaluating Rubber

During FY18, NSWC PD identified an impact hammer technique that analyzes the impact force to determine coating adhesion. Subsequently, the Hammer Activated Measurement System for Testing and Evaluating Rubber (HAMSTER) was successfully developed and tested. To date, HAMSTER has demonstrated 100% correlation with the current test method during three separate field tests. FY19 Naval Innovative Science and Engineering (NISE)-funded effort focused on continuing field-testing at shipyards, ruggedizing the prototype for shipyard usage, refining data acquisition and evaluation algorithms, and evaluating analysis methods for underwater testing.

### How it began

#### Problem Statement and Synopsis:

Identification of debonded coatings is necessary to support maintenance activities, but the current process is both ill-suited to use underwater and inefficient when applied to extremely thick polymeric coating systems. Early inspection and identification of adhesion failures, both above and below the waterline, will allow for complete coating inspection before the ship enters dry dock, providing increased forecasting accuracy for work planning and reducing growth-work delays.



**Impact:** False positive test results reported by the current subjective inspection method could cause unnecessary work, while false negatives lead to missed repair opportunities and degradation of coating system performance.

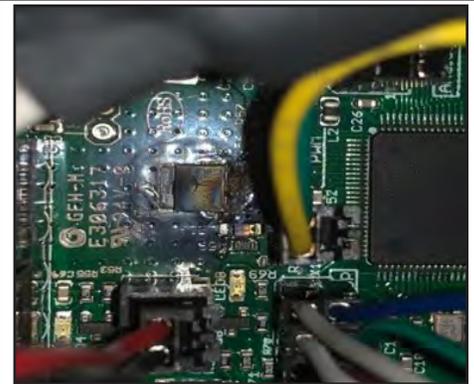
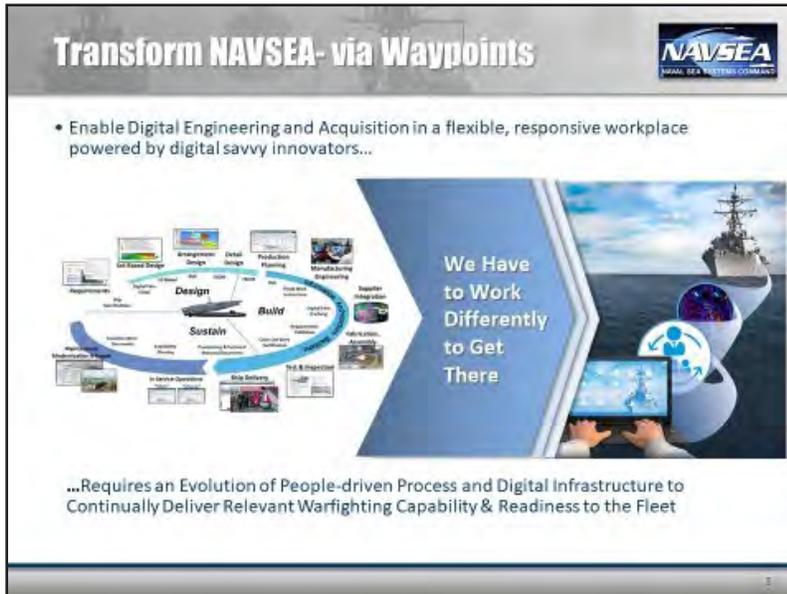
**Efficiencies/Benefits:** The principal efficiency provided by HAMSTER is for coating maintenance planning. The current method requires a dry hull to complete the inspection and relies on a subjective evaluation to identify failed coatings. HAMSTER objectifies the evaluation and requires minimal applicator training. Ultimately, HAMSTER provides high-confidence identification of debonded material allowing for accurate planning, thereby minimizing growth-work delays.

### Solution

As validation of HAMSTER's ability to detect debonds continues, it is anticipated HAMSTER will be able to identify failures that current methods cannot. Early detection of adhesion issues is critical to ensure coating systems are 100% functional prior to exiting maintenance availabilities and to prevent short-term failures from occurring shortly after ships return to service.



# Rapid change intensifies Navy's digital experience



## Waypoint Key Insights

- Warfare center engineers and data scientists were on every first place team, demonstrating that the Navy technical workforce, given modern tools, can lead the digital transformation. All first place teams also included a diverse representation of experience and backgrounds.
- Identified over 25 new vulnerabilities in 3D printers targeted for ship board use that will be mitigated via appropriate RMF controls.
- Completed the first adversarial test of an ONR FNC for machinery controller cybersecurity identified previously unknown transition requirements.
- Validated that systemic cyber risks in commercial maritime electronics are applicable regardless of the marine electronics vendor.
- Created a data redaction and release process with NAVAIR that will continue to improve and increase the data science opportunities for a larger talent base to support aviation readiness.
- Developed advanced manufacturing requirements for a custom tool that will allow a Sailor to repair a mission critical HM&E system while afloat. Without this tool the repair would require a master mechanic ashore.

## Waypoint 1

Today's digital landscape is a dynamic and rapidly changing environment which requires users to forecast trends, and accept perpetual movement as the new norm. Naval Sea Systems Command (NAVSEA) has taken initiative to align their organizations' vision, strategy, goals, and language in order to remain on the leading edge of Naval acquisition, design, and development. The transformation will occur gradually and will involve course corrections along the way. However, NAVSEA recognizes this journey must be undertaken to remain at the forefront of Naval acquisition, design, and production.

## Waypoint 2

The NAVSEA Enterprise came together at NSWC Carderock to identify challenges, share ongoing efforts, and study success stories across the digital realm. RADM Selby interviewed team leads of six efforts, spanning the enterprise which are delivering impact by encouraging a culture of digital transformation. These efforts discussed the use of digital tools in weapons system development, logistics and sustainment, business data management, cloud strategy, and model-based engineering.



(October 2019)— During the NAVSEA Cyber Summit, VADM Moore re-iterated his Campaign Plan message of creating the right sense of urgency to achieve 5x-10x improvements.

# The U. S. Navy digital experience



HACKtheMACHINE is a technology prize challenge where people from all walks of life – from software engineers to fashion designers, from students to professionals – help the Navy solve its foremost cybersecurity and technical problems. The challenge was organized as a 3-track contest held over a three day period in the largest tech ecosystems around the country. Previous events in the series were in San Francisco, '16, Austin '17, Boston '17, Seattle '18 and New York in 2019.

HACKtheMACHINE New York was held Sept. 6-8 onboard the former USS INTREPID and at New Lab in the Brooklyn Navy Yard. There were more than 800 registration inquiries with over 625 on-site attendees. Cash prizes were awarded to participants who produced key insights or solutions. Up to \$140,000 in prize money was available. RADM Lorin Selby, NAVSEA 05 provided Executive leadership and track sponsorship was broad-based from NAVSEA, NAVAIR, NAVWAR, ONR and Navy Cyber Warfare Development Group.



## Track 1: Maritime cyber – Hack the Ship

NAVSEA 05, NCWDG and ONR sponsored “Capture-the-Flag” based on commercial marine electronics. Additionally, ONR cybersecurity technologies were tested for transition readiness and 3D printers were hacked to inform ongoing accreditations.

## Track 2: Data Science – Cleared for Takeoff

NAVAIR and PEO C4I sponsored data science challenge on F/A-18 data in which participants assessed the utility of machine learning to predict maintenance problems in difficult to troubleshoot wiring and corrosion scenarios.

## Track 3: Advanced manufacturing – Rendering aid

NAVSEA 05 sponsored assessment of the digital thread to capture repair requirements for a damaged high pressure air compressor. A follow-on global crowd sourcing challenge to design repair components and custom tools is underway.

# LINES OF EFFORT : P

## People empowerment

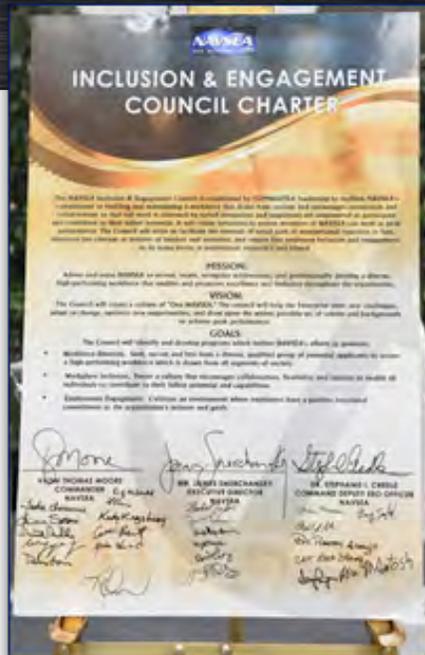
- Graduated four Fellows through NAVSEA's Commander's Executive Fellows Program (CEFP), 24 employees from our Journey Level Leadership Program (JLL), and 44 employees from our Next Gen Program; we also inducted 51 employees into NextGen, 27 employees into JLL, and six new Fellows into CEFP
- SEA 10 executed 28 Navy Civilian Careers and NAVSEA Enterprise events with over 300 recruiters/hiring managers participating and engaging with over 4,300 candidates, enabling over 540 on-the-spot offers and 300 site visit offers to be extended
- Inclusion & Engagement Council:
  - Charter signing (Oct. 18, 2018)
  - Meeting in Norfolk, VA (April 2019)

## Inclusion & Engagement Council



(Above) VADM Tom Moore and Executive Director Jim Smerchansky welcomed 25 newly appointed members of the NAVSEA Inclusion and Engagement Council Oct. 18 for their initial meeting at NAVSEA Headquarters. The council's goal is "to identify and develop programs which further NAVSEA's efforts to promote workforce diversity, inclusion and engagement," according to the council's official charter signed by Moore, Smerchansky and appointed members of the council.

(Right) The NAVSEA Inclusion and Engagement Council Charter states that the mission is to advise and assist NAVSEA to recruit, retain, recognize achievement and professionally develop a diverse and high-performing workforce that enables and promotes excellence and inclusion throughout the organization.



## Total Force Mission Area

- Completed Capability Health Assessment (CHA) Pilot Exercise to demonstrate the Warfare Center CHA methodology and tools will work for HQ/PEO
- Created Workforce Analysis Capability Suite (WACS) which provides automated capability to predictive workload and workforce requirements to aid in leadership decision making
- Launched NAVSEA Enterprise Planning System (NEPS) as the Enterprise standard planning tool and system of record for program planning inclusive of task and financial execution planning
- Conducted Enterprise Universities Study resulting in recommended requirements and framework for a future-state NAVSEA Enterprise University



**For all TFMA Pillars:**

- Capture the relevant efforts going on across the Enterprise and document the current state ("how we do business")
- Create communities and cross-organizational teams chartered to share and leverage the work being done

**For Specific Areas: (Red Boxes in FY19)**

- Charter teams to develop an integrated future-state vision and a plan for achieving it

The Right People with the Right Skills to Meet our Mission as it Evolves



The Force Behind the Fleet

# People, Affordability & High Velocity Learning

## NAVSEA awards & recognition

### RDML Huan Nguyen becomes first Vietnamese U.S. Navy Rear Admiral

Huan Nguyen became the first Vietnamese-American promoted to the rank of rear admiral during a ceremony held at the Navy Memorial in Washington, D.C., Oct. 10.

Rear Adm. Huan Nguyen, age 60, will serve as the Deputy Commander for Cyber Engineering at the Naval Sea Systems Command (NAVSEA) on the Washington Navy Yard. NAVSEA commander, VADM Tom Moore, served as the presiding officer.



### Captain Dianna Wolfson named the first woman CO in the history of the four Public Naval Shipyards

Captain Dianna Wolfson took command as the 50<sup>th</sup> Commander of Puget Sound Naval Shipyard & Intermediate Maintenance Facility, Bremerton, Washington, June 12. Wolfson also commands Northwest Regional Maintenance Center.

Captain Dianna Wolfson graduated from the United States Merchant Marine Academy at Kings Point, New York in 1996 where she received a bachelors of science in Marine Systems Engineering (Magna Cum Laude) and was commissioned in the Nuclear Power Officer Candidate Program.

Wolfson received her surface warfare qualification aboard *USS George Washington (CVN 73)*. She subsequently became an

Engineering Duty Officer and received a masters of science in Civil and Environmental Engineering and a Naval Engineer's Degree from the Massachusetts Institute of Technology in 2001.

On being selected as the first woman commanding officer (CO) in the history of the four public naval shipyards, she commented "throughout my time so far in the Navy, I really haven't thought about my gender, that's never really been something that's been part of my daily vocabulary. In my upbringing as an Engineering Duty Officer, becoming CO has been the pinnacle of where I wanted to be. But it wasn't that I wanted to be the first female shipyard commander. I just wanted to be a shipyard commander. That's what's so exciting to me."

Wolfson was in the Navy's first groups of women surface nuclear officers in the mid-1990s. As women began serving on combatants only two years prior to her graduation from the Merchant Marine Academy in 1996, Wolfson is quick to credit her initial career opportunities to the diversifying climate. But if chance got her on the ship, it's capability that's proven her hand deserves to be on its wheel.

As far as advice Wolfson would provide to others aspiring to make history in their career fields, her answer is instantaneous. "I do a lot of mentoring with both young women and men. My answer is similar to both. You have to have a passion for what you're doing. If you have a passion for what you do every day in your job, then the heavy lifting is easy. No matter if you're a man or a woman, you're going to drive to be successful and you're going to figure it out. Men and women alike have to figure life out. But what's most cool to me is how this is encouraging to young women and helping them realize there's no glass ceiling in the Navy. You can do it too!"



### Civilian Service Medal for Valor & Courage



Bill Taylor (AC-130W Weapons Specialist at NSWC Crane) received the Civilian Service Medal for Valor and Courage for his heroic actions in identifying and extinguishing a fire inside an AC-130W Stinger II aircraft valued at \$193 million and saved the lives of seven maintenance and flight crew personnel.



V.B. (Kisan) Pandit Awards for Metrology and Calibration Innovation



Mr. Frank Putzu and Ms. Rebecca Cressy won the 2018 Presidential Rank Award

**2018 Delores M. Etter Top Scientists & Engineers Award Winners**



**Submarine Mast Broadband Antenna (SuMBA) Team**

Mr. Glen Waring  
NSWC Dahlgren, Dam Neck Activity  
Mr. Daniel Corbet  
NUWC Newport

Dr. John Lundberg  
NSWC Dahlgren



Mr. Myron "Lyn" Thomas  
NSWC Dahlgren



Dr. Christopher Lloyd  
NSWC Dahlgren

**NSWC Carderock Employees Awarded National Defenses Industrial Association Bronze Medal**



Mike Slater, head of the Signature Measurement Technologies and Systems Division, left, is presented with the National Defense Industrial Association (NDIA) Award for Technical Achievement in Undersea Warfare by Mike Cortese, division chair for the Undersea Warfare Division.



Craig Madden, Propulsor Engineering and Manufacturing Liaison, was awarded the National Defense Industrial Association's Bronze Medal for his dedication in the area of undersea warfare, specifically his work in propulsor technologies, which has directly contributed to the acoustic superiority owned by the United States submarines and their future fleet.

**2019 Department of the Navy Acquisition Excellence Award Winners**



"Dr. Al Somoroff Acquisition Award" was earned by the PEO Carriers CVN 80/81 Two Ship Buy Team



The "Oreta B. Stinson Small Business Advocate Award" for Office of Small Business Programs was given to Ms. Dana Pennell (Acquisition & Contracts Manager, PMS 312, PEO Carriers)

**2018 Institute of Electrical and Electronics Engineers (IEEE)-U.S.A. Harry Diamond Memorial Award**

NUWC Newport's Dr. Donald Steinbrecher won the 2018 Institute of Electrical and Electronics Engineers (IEEE)-U.S.A. Harry Diamond Memorial Award for distinguished technical contributions in the field of electrotechnology while in U.S. government service; his work includes 25 patents in technological solutions, contributions to the evolution of software-defined radios, and groundbreaking work in broadband high dynamic range signals acquisition systems.



**Federal Engineer of the Year**



Norfolk NSY's Dan Stanley, supervisory mechanical engineer, was recognized as the Federal Engineer of the Year by the National Society of Professional Engineers for his work leading the design, implementation and execution of a unique cleanliness flush for a critical shipboard air system.

## Contributions achieved, recognized & rewarded



In a first for NSWC Corona Division, two employees, Elvis Acosta, Performance Assessment Department Head, and Sarah Reyes, Quality Engineer, were recognized for their outstanding contributions to the future of technology and the workforce by Great Minds in STEM (GMiS) during the 31<sup>st</sup> Hispanic Engineer National Achievement Awards Conference (HENAAC) conference in Lake Buena Vista, Florida, in September. Acosta, shown with Dianne Costlow, SES, NSWC Corona Division's Technical Director, received a 2019 STEM Hero Award. Reyes was named a Most Promising Engineer-Bachelor.



### Society of Women Engineers

Naval Surface Warfare Center (NSWC) Corona received a top Society of Women Engineers (SWE) award at the annual Women in Engineer conference in Minneapolis, the world's largest conference for women engineers. The Rodney D. Chipp Memorial Award recognizes NSWC Corona's outstanding commitment to recruiting and advancing women engineers, ensuring upward mobility of women across its ranks and for consistent outreach and recruitment aimed at building a vibrant science, technology, engineering and math (STEM) workforce. Ms. Dianne Costlow, NSWC Corona Technical Director, accepted the award on behalf of NSWC Corona.

- NAVSEA won TWO 2019 SECNAV Environmental Awards:
  - Ship Repair Facility and Japan Regional Maintenance Center earned the Environmental Quality - Overseas Installation award
  - The Environmental Planning award went to NAVSEA representatives for their work on the Atlantic Fleet Training and Testing Environmental Planning
- NUWC Newport's PAO shop won the 2018 Chief of Navy Information (CHINFO) Thompson-Ravitz Award in the Digital Engagement category recognizing the very best public affairs professionals and teams

## 2018 NAVSEA Sailors of the Year



- PEO SHIPS' PMS 377 and the Landing Craft, Utility (LCU) 1700 Acquisition Team won the 2018 Defense Standardization Award for their hard work and innovation by expanding procurement opportunities to small businesses which projects save \$240M over the planned 30-year life-cycle of the 32 craft

## Technical Cooperation Program Team Award

- NSWC Indian Head Explosive Ordnance Disposal Technology Division's Chief Technology Officer, Dr. Kerry A. Clark, as part of the Weapon Systems Group's Energetic Materials and Propulsion Technologies Technical Panel, received the Technical Cooperation Program Team Award along with her professional colleagues from Australia, Canada, and the United Kingdom for their role in creating data on environmental safety, occupational hazards, and the toxicity of dinitroanisole and DNAN-based explosives



**"Win them all!"**

VADM Tom Moore



## **STEM Radical Award winner**

NSWC Port Hueneme Division's Dr. Ramon Flores earned the STEM Radical Award presented by the Ventura County STEM Network. The award recognizes individuals who demonstrate a commitment to STEM education in Ventura County, CA.

Dr. Flores is the science, technology, engineering and mathematics (STEM) coordinator at NSWC Port Hueneme where his efforts range from meticulously planning and coordinating STEM events at the county's various schools to hosting presentations and giving speeches during various school career days – always with the goal to inspire students to pursue further education in STEM fields.

Part of Flores' outreach efforts includes a paid internship program he runs to help students from lower economic backgrounds begin participating in STEM jobs. Flores is a member of the Ventura County Board of Education and over the years has coordinated a variety of STEM-related events which is invaluable as it provides both context and real-world examples of how STEM education can benefit students later in life.

## *Celebrating 40 years of service to the Navy*

Jackie Johnston is a graduate of the Portsmouth Naval Shipyard Apprentice Program and a third generation employee at Portsmouth. She serves as a Community Plans and Liaison and Assistant Public Works Officer, and as part of her job she supports *USS Constitution* one of our Navy's original six frigates. To celebrate her 40 years of dedicated service to our Navy, Jackie had the honor to fire one of Old Ironsides' guns during morning colors.



## **Affordability Highlights**

- Established ESSM Block 2 Low Rate Initial Production (LRIP) Contracting Strategy saving ~ \$50M and maintaining Initial Operational Capability (IOC) timeline
- Divers conducted 458 hull cleaning operations resulting in \$147M in fuel savings
- Divers conducted 102 Underwater Ship Husbandry (UWSH) operations worldwide thereby avoiding 79 dry-dockings (42 submarines and 37 surface ships), returning 392 operational days to the Fleet, and saving \$61M
- SEA 21's Equipment Reutilization program harvested replacement parts which the supply system cannot immediately procure resulting in \$47.3M cost savings
- Building off of the success of the Integrated (USN/USCG) Program Office construct, the team coordinated with Industry to identify \$300M in cost avoidance and awarded a contract for the first Polar Security Cutter, recapitalizing the nation's icebreaking capabilities and ability to conduct national missions, respond to critical events, and project presence in the polar regions
- Awarded AN/SPQ-9B Design Agent contract three months ahead of schedule with a 10% cost savings
- Miniature Micro-miniature/Module Test and Repair (2M MTR) program created the "Second Chance Project" that re-routed repairable electronics modules from NAVSUP to the RMCs for screening and repair to facilitate filling long standing requisitions; 93 repairs were completed, correcting 38 CASREPS and resulting in \$400K cost avoidance and reducing average time to turn around repaired circuit cards from months to days

## **Innovation & Contracting Award**



The Naval Undersea Warfare Center Division Newport's Acquisition Workload Planning Tool Version 2.0 Team was awarded the Innovation in Contracting Award from the National Contracts Management Association during an NCMA

World Congress award ceremony held July 30 at the Hynes Convention Center in Boston, Massachusetts. Team members include Noel Roberts (second from left), Kelly Ross, Mark Snyder, Ryan Lord, Sofia Sinclair, Scott Wentzel, Steve Zbyszewski and Debra Young (not pictured). The award was presented by Debra Scheider (far left), NCMA president, and Kraig Conrad (far right), NCMA CEO.

## **Contracts awarded**



**CVN 80 / CVN 81 contracts awarded as a two ship buy with \$4B in savings to the Navy.**

# Activities around the Enterprise

## Summer internship program started

NSWC Crane Division launched its first summer internship program with the United States Naval Academy (USNA). Five USNA midshipmen were accepted to participate in internships supporting the fleet in strategic missions. Three of the midshipmen, studying science, technology, engineering and math (STEM), completed their final projects and presented to NSWC Crane Division subject matter experts and leadership.



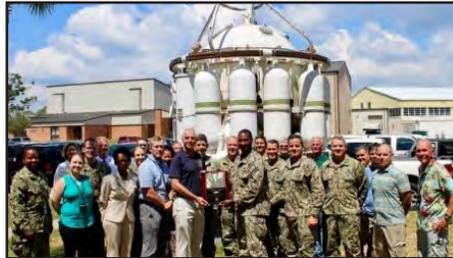
## Women's Equality Day celebrated

Retired RADM Kathleen Paige, former chief engineer at NSWC Port Hueneme Division, speaks to Sailors after her keynote address during the command's Leadership in a Diverse Environment Event, held in August to celebrate Women's Equality Day and passage of the 19<sup>th</sup> Amendment that gave women the right to vote.



## NEDU Scientific Library dedicated

Navy Experimental Diving Unit dedicated the NEDU Scientific Library to retired Navy Diving Medical Officer CAPT Edward T. Flynn Jr. in honor of over 50 years of devoted Naval service in the timeless pursuit of advancing capabilities of Navy divers and submariners through leadership and guidance in undersea medicine and decompression research.



## Senior engineering tech conducts borescope training with sailors



U.S. Navy Sailors attached to *USS Fitzgerald (DDG 62)* receive borescope inspection training conducted by Scott Brown, Senior Engineering Technician, at NSWC Philadelphia Division in October. The borescope tool provides access to the internal sections of an engine, enabling the users to view any damage, cracks or imperfections within the confined chambers of the engine.

## SEAP students greeted at IHEOD Tech Family Day



NSWC Indian Head EOD Technology Division Deputy Technical Director Amy O'Donnell greets students in the 2019 Science and Engineering Apprenticeship Program (SEAP) during an EOD Family Day event in June.

## CNRMC hosts roundtable discussions



RDML Tom Anderson, commander, Navy Regional Maintenance Center (CNRMC) and deputy commander, Ship Maintenance and Modernization (SEA 21) for the Naval Sea Systems Command (NAVSEA), held roundtable discussions with SEA 21 and CNRMC leaders the week of Aug. 26. The purpose of the event was two-fold: review and develop actionable metrics that allow for improved decision-making, and refine the acquisition strategies for upcoming surface ship availabilities to best position the maintenance community to achieve on time delivery, a key tenant of the NAVSEA Campaign Plan. The leadership team is approaching this methodology with a sense of urgency to refine acquisition plans, and establish methods to ensure effective and efficient measuring of the right things, at the right time, and to meet on-time delivery of our ships.

## Norfolk Naval Shipyard leads open mic session with senior leaders in honor of Black History Month

Executive Director of the Missile Defense Agency (MDA) for the Office of the Secretary of Defense John H. James, Jr. speaks to attendees on the importance of finding mentors to help guide them in their careers. Mr. James is the senior civilian advisor to the MDA Director on all issues relating to the Agency's operational and management activities and is a NAVSEA alumnus serving previously as the Executive Director of both SEA 07 and SEA 04.



## Vice Admiral Moore addresses NUWC Newport workforce at All Hands call

NAVSEA Commander Vice Adm. Thomas Moore addresses the workforce at the Naval Undersea Warfare Center Division Newport where he stressed the importance of maritime superiority but also focused on the need for employees to have other outlets than work. "We really are in an era of great power competition, and what NAVSEA is doing now has never been more important, but I need you to find some balance," Moore said to the standing room-only crowd. "Work can't be everything. Balance in my life helps me recharge my battery... if your single measurement is how many hours you spend at work, you're probably destined to fail."



## NAVSEA Leaders train at NSWC Philadelphia



Graduates of the most recent cohort of Propel training pose with NSWC Philadelphia Division Technical Director, Mr. Thomas Perotti, SES (far left). Propel is a five-day course that provides practical hands-on training for new supervisors focusing on real-world workplace issues and different ways to resolve them.

## Command Master Chief visits Forward Deployed RMC Divers



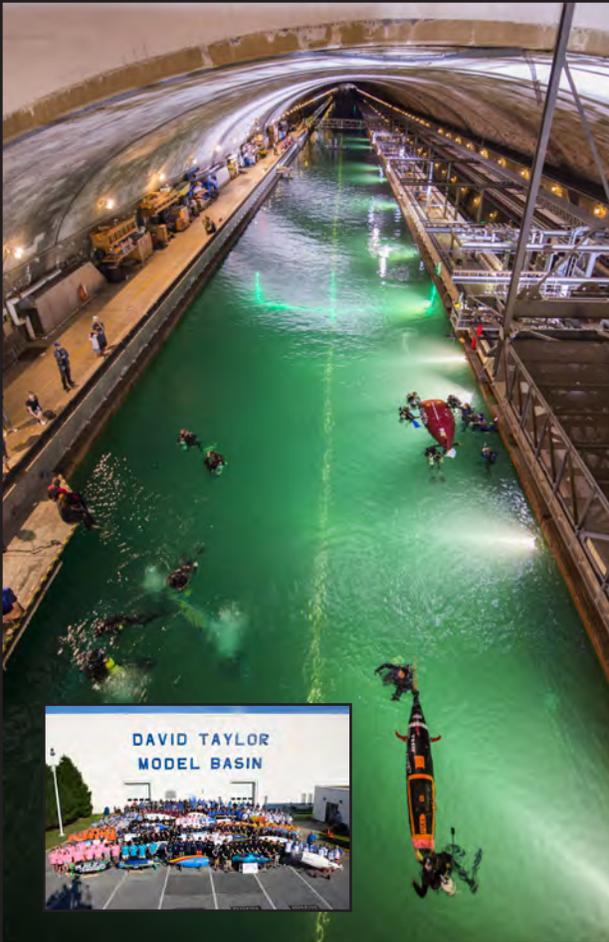
Command Master Chief (SW/SS) Robert Crossno, Command Master Chief, Naval Sea Systems Command, visits Forward Deployed Regional Maintenance Center divers prior to removal of the a propeller from USS Firebolt (PC 10).

## 15<sup>th</sup> Biennial International Submarine Races

For over 30 years, the Foundation for Underwater Research & Education (FURE) has sponsored the International Submarine Race (ISR) as the capstone Science, Technology, Engineering, and Mathematics (STEM) event for thousands of young men and women. The 15<sup>th</sup> biennial design competition for human powered underwater vehicles was hosted this year by the Naval Surface Warfare Center, Carderock Division in their 3,200-foot David Taylor Model Basin.

The International Submarine Race was created in response to the recognized challenge that a shortfall in the ocean and marine engineering fields and scientists was looming in the near future. The race provides a platform for teams at all grade levels to develop a one or two-person “wet” submarine. Crew members breathe SCUBA from the air supply carried aboard the submarine and propel the submarine over an underwater course. Each submarine is unique, designed from “scratch”, and relies upon novel techniques for propulsion and guidance.

Over 20 high school and college teams competed this year as students applied their STEM knowledge and skill to tackle the difficult challenges of submarine design, construction and operation.



## Pearl Harbor NSY & IMF Apprentice Program Graduation

Pearl Harbor Naval Shipyard and Intermediate Maintenance Facility (PHNSY & IMF) welcomed the largest class of apprentice program graduates in its history on August 15, 2019. U.S. Rep. Ed Case, Hawaii First Congressional District, was the keynote speaker welcoming 278 new journey-workers to the workforce at Kilo Pier 8 on Joint Base Pearl Harbor Hickam.

In delivering his address, Case noted the significance of the shipyard’s contribution to the nation’s security. He highlighted the importance of upgrading the shipyard infrastructure to keep the fleet “fit to fight.” CAPT Greg Burton (pictured above), shipyard commander, also congratulated the newest journey-workers, and reminded them of their important work.

The graduates, representing 22 shops and 18 trades, completed four-year, full-time, paid apprenticeships that combined academic study with on-the-job training. They earned associate’s degrees from Honolulu Community College as well as certification in their respective trades from the Navy and U.S. Department of Labor. Graduates transitioned to mechanic or journey-worker status in shipyard jobs that pay an average of approximately \$32 an hour.



# Innovation at the Shipyards

- Norfolk NSY Boilermakers are sharing what they know about how to safely conduct Hydro Lancing with their fellow mechanics at PSNY & IMF; Hydro Lancing uses high-pressure water to clean surfaces and can be dangerous if not done correctly; NNSY is sharing their best practices to ensure the safety of our workforce
- Portsmouth NSY's Innovation Project Team (IPx) accomplished the first ever complete 3-D imaging scan of a submarine; the team scanned *USS Cheyenne* (SSN 773) in preparation for her upcoming Engineered Refueling Overhaul (ERO), consisting of 40 billion precision measurements and more than 18,000 high-resolution images
- Norfolk NSY's Industrial Engineering Department made moving heavy industrial plant equipment more efficient by introducing the EVO Heavy Lifting Device; EVO has the same lift capacity as a forklift, but is smaller and more maneuverable making it an ideal tool for use in tight industrial and shop spaces



- Puget Sound NSY & IMF moved two inactivated submarines, ex *USS Jacksonville* (SSN 699) and ex-*USS Bremerton* (SSN 698) to a new monitoring system called Remote Monitoring Stations (RMS), reducing watch-standing requirements for submarines awaiting full inactivation and dismantling by 50 percent and allowing one watch-stander to monitor conditions on multiple submarines awaiting inactivation
- Portsmouth NSY's Innovation Project Team partnered with Naval Surface

Warfare Center Panama City to successful field test an Autonomous Dry Dock Survey Robot; the robot can traverse dry docks either autonomously or by an operator, to survey ships and will save up to 3,000 work hours per dry docking and decrease work stoppages to support the surveys

- Puget Sound NSY & IMF partnered with our Tactical Innovation Implementation Lab and Sarcos Robotics to develop a prototype of the full-body powered exoskeletons which will assist our shipyard workers in ergonomically challenging environments



- Naval Shipyard innovations prototyped and launched this year:

- **Cold Spray:** cold spray booths are installed at three shipyards (PHSNY, PSNSY, NNSY); accomplishing valve repairs via cold spray in three days vice 10 + months in vendor repair time

- **Laser Ablation:** successfully demonstrated in the production environment on the CVN 70 ship structure by Puget Sound NSY Shop 71; fatigue, weld, and adhesion specimens were collected for analysis as we move to implement at all NAVSEA naval maintenance activities

- **Mobile passive Radio Frequency Identification (pRFID):** successfully deployed at Puget Sound NSY, pRFID systems are mounted on mobile platforms (e.g., forklifts, golf



carts) to read tags and transmit data wirelessly to the shipyard computer system to increase visibility of location of materials, equipment and other assets



**Hull Crawling Robots:** successfully deployed for testing on the *USS California* (SSN 781) within the 100 hour window of docking; further advancements will allow hull cleaning without staging and JLGs while making resources available to accomplish simultaneous work; Hull crawlers have been ordered and training has been developed; underway with advancements to ruggedize for waterborne hull cleaning

**Unmanned Ground Vehicle for Autonomous Dry Dock Scanning:** successfully prototyped in Dry Dock 1 at Puget Sound NSY, performs radiological surveys in less time and more safely by reducing avoidable exposure to personnel

**HVL**  
in  
**action**

## Crowdsourcing tool helps promote innovation ideas

IDEAstream initiated as an accretion to the High Velocity Learning Environment for continuing to Expand the Advantage. IDEAstream empowers all enterprise employees to share their ideas on how the enterprise can maximize performance across all areas to achieve the desired 5x/10x improvement required to maintain naval supremacy.



Website designed as a forum to offer up new ideas, make recommendations and provide feedback about burdensome administrative and technical issues, and to evaluate and provide comments on the ideas brought forth by other NAVSEA employees. It offers an opportunity for ideas to be heard by leadership and properly adjudicated to ensure we maximize the potential of each idea, and thus, each employee. To date, over 900 ideas submitted with over 4,800 users linked in.

IDEAstream is simple to use and maximizes accessibility, responsiveness, and transparency across the enterprise. Visit at <https://aimtc2.nuwc.navy.mil/ideastream>.

## Second Annual HVL Summit a huge success

NAVSEA Executive Director James Smerchansky kicked off the event speaking about the importance of creating a high velocity learning environment as a foundational line of effort in NAVSEA's Campaign Plan to Expand the Advantage 2.0 and in building the Navy the nation needs.

Smerchansky stressed the importance of sharing lessons learned on tools like INFUSION and IDEAstream so that the entire NAVSEA enterprise could benefit from these collaborations.

The summit's "swarming" workshops gave attendees the chance to experience one of the core concepts of High Velocity Learning – gathering the knowledge and experience of a diverse group of people to "swarm" a problem and begin to develop some ideas for how to solve it. As part of their Leadership Development Program, members of NAVSEA's Next Generation (NextGen) teams were tasked with identifying enterprise-wide barriers to creating a High Velocity Learning

environment. Each team identified and developed three potential topics, which were voted on by NAVSEA's HVL Community of Practice (CoP) in the months leading up to the summit. The topics chosen were Employee Burnout, Inclusion, Communication Within and Across Commands, Developing People, Knowledge Management, and Future Workplace. Each summit attendee selected a topic and participated in that workshop.

NAVSEA has three objectives in creating a High Velocity Learning Environment:

- Provide effective communication and education of HVL principles, concepts, and outcomes.
- Identify and remove organizational barriers to achieving a High Velocity Learning Environment.
- Implement processes and technologies that facilitate and encourage idea sharing and foster collaboration across the NAVSEA enterprise.



## Vice Admiral Moore stresses HVL in visit to NUWC Newport

John Averill (left) head, Corporate Business Office, gave NAVSEA Commander Vice Adm. Thomas Moore a card about the four principles of high velocity learning – See, Share, Swarm and Sustain – during his visit to the Naval Undersea Warfare Center Division Newport.

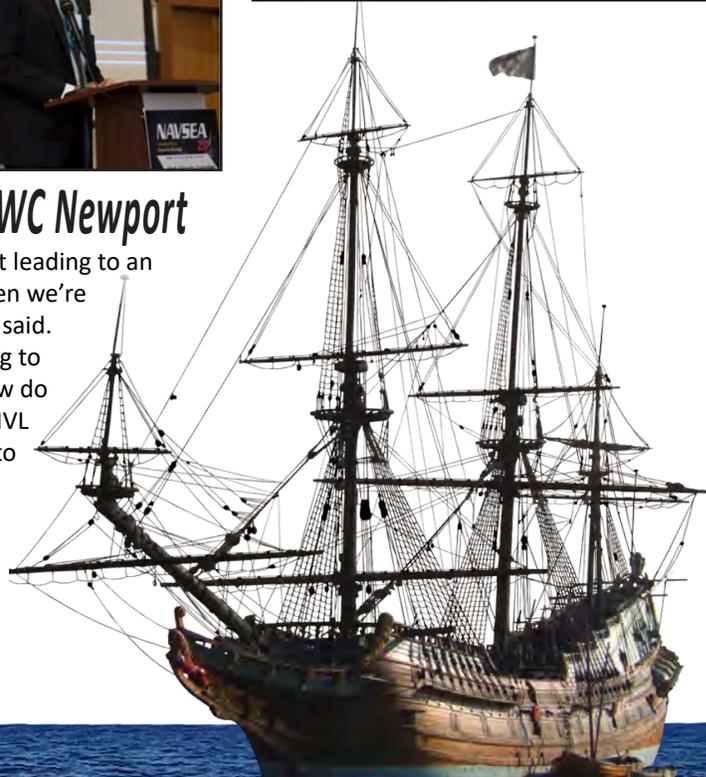


When asked what can be done to maintain momentum with high velocity learning, Moore noted that in addition to the way at which we learn with speed, we also have to focus on the outcomes.

"If the activity is not leading to an outcome we need, then we're wasting time," Moore said.

"What is it we're trying to get to? How do we apply HVL principles to get to that outcome?"

We have to be a little self-critical. That's an HVL principle."





***THE FORCE BEHIND THE FLEET***



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