

Naval Undersea Warfare Center

Division Newport



Mr. Don Aker
Deputy Technical Director
NUWC Division Newport



Undersea Superiority Today and Tomorrow

We research, develop, test, evaluate, engineer, analyze, and deliver undersea warfare capabilities to expand United States Navy readiness

PEOPLE

Empower our diverse team of world-class professionals

PROCESS

Optimize speed, agility, and rigor of our technical and business processes

RESULTS

Ensure fleet readiness today and innovate for next generation systems tomorrow

NAVSEA
Campaign Plan to
Expand the Advantage 2.0

The Force Behind the Fleet

MISSION PRIORITIES

- ON-TIME DELIVERY OF SHIPS & SUBMARINES
- IMPROVE WARFIGHTING CAPABILITY OF SHIPS & SYSTEMS
- CYBERSECURITY

AFFORDABILITY

PEOPLE

High Velocity Learning ENVIRONMENT

NAVY

A Design for Maintaining Maritime Superiority 2.0

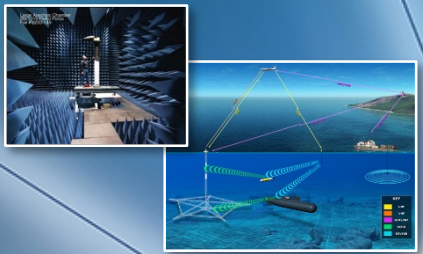
LOE Purple: Expand and Strengthen Our Network of Partners

LOE Green: Achieve High Velocity Outcomes

LOE Gold: Strengthen Our Navy Team for the Future

LOE Blue: Strengthen Naval Power at and from the Sea
20-NUWC-GRA/0006 FY20V16

USW ELECTROMAGNETIC SYSTEMS



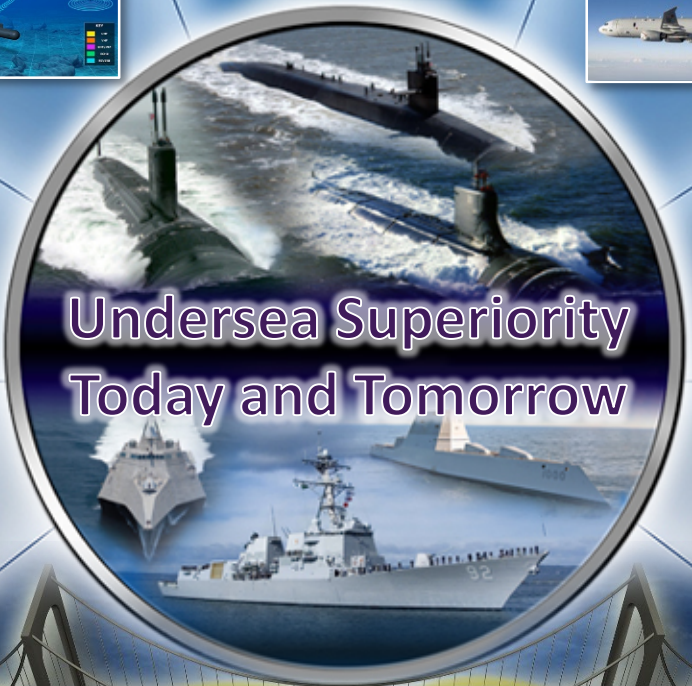
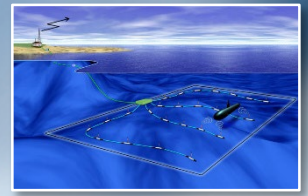
USW PLATFORMS & PAYLOAD INTEGRATION



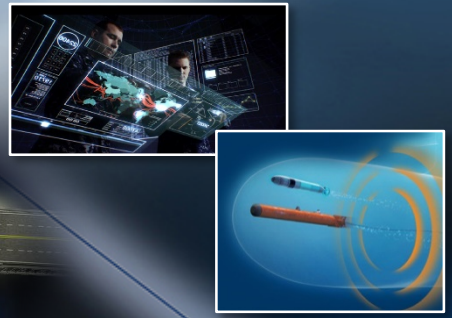
USW MISSION ENGINEERING AND ANALYSIS



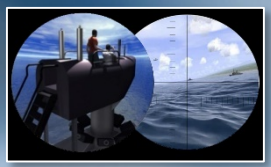
RANGES, ENGINEERING, & ANALYSIS



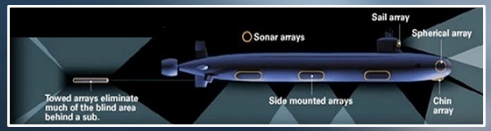
USW WEAPONS, VEHICLES, AND DEFENSIVE SYSTEMS



USW COMBAT SYSTEMS



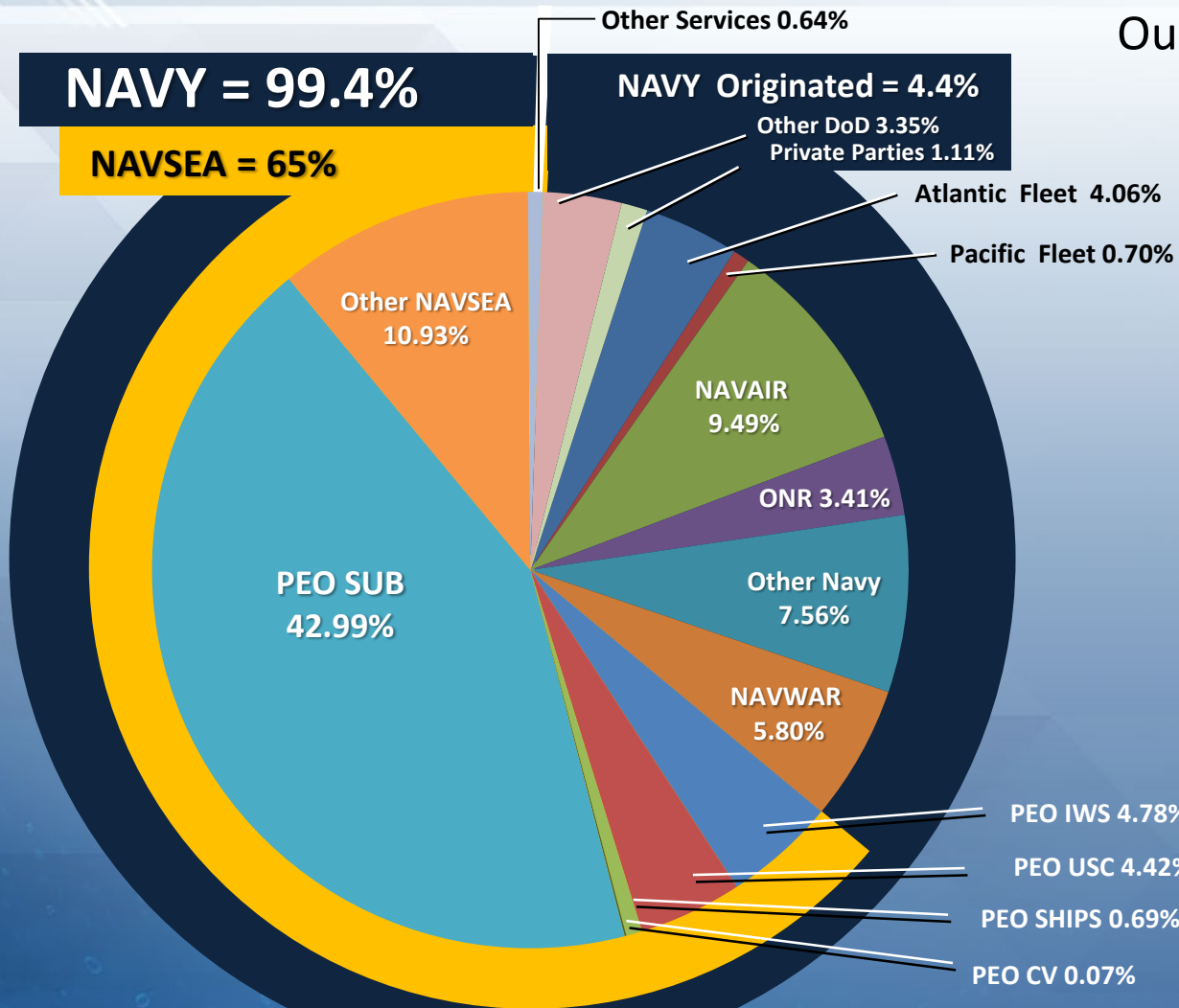
SENSORS AND SONAR SYSTEMS



Science & Technology Development Acquisition Support Fleet Support



NUWC DIVNPT Customers – All Funding



Our FY19 Customers

\$1,207M

Navy Working Capital Fund Activity

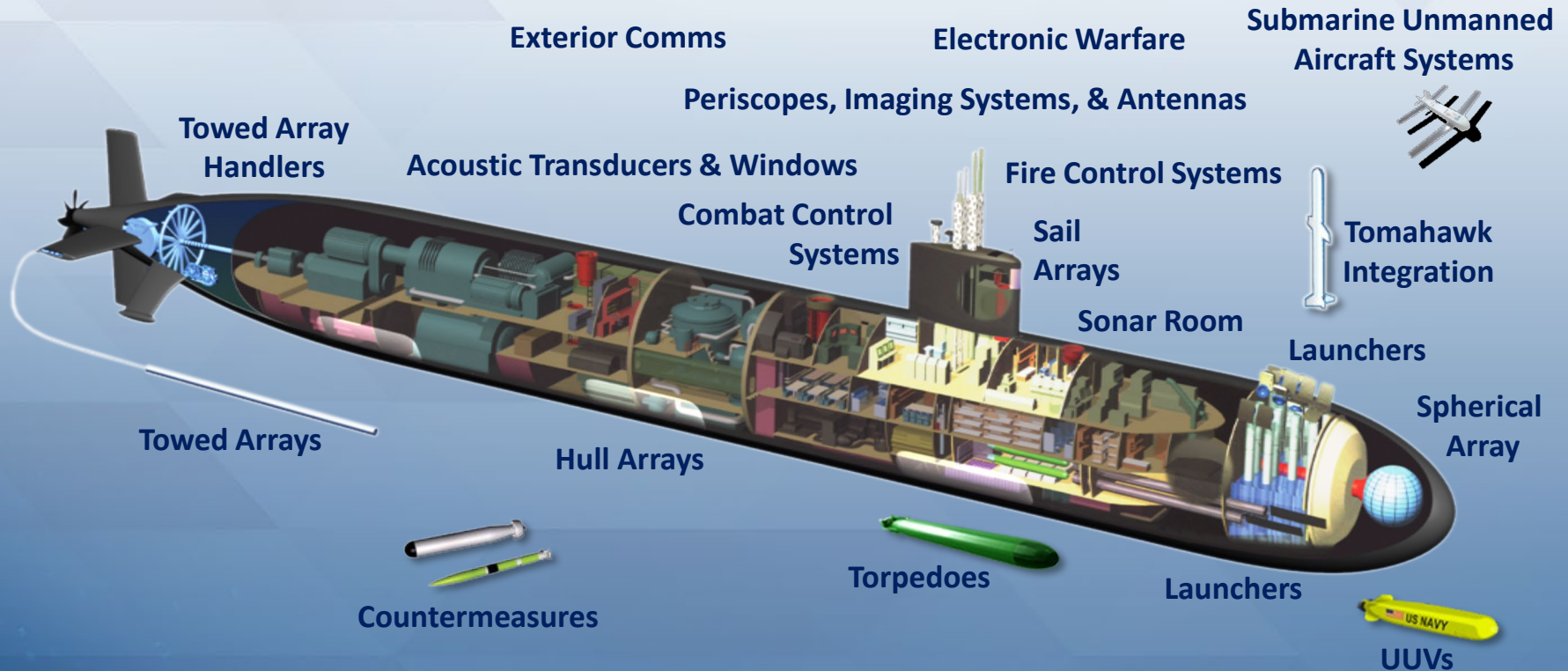
- Not a congressional line item
- Customers choose the Warfare Centers
- NUWC is accountable for efficient delivery of products and services

Customer Base

- Fleet
- Program and resource sponsors
- Scientific sponsors
- Intelligence community
- Defense industry
- Non-defense industry
- Foreign Navies

Full Spectrum Provider: Science & Technology to In-Service Engineers

Division Newport Providing Expertise in Submarine Technology

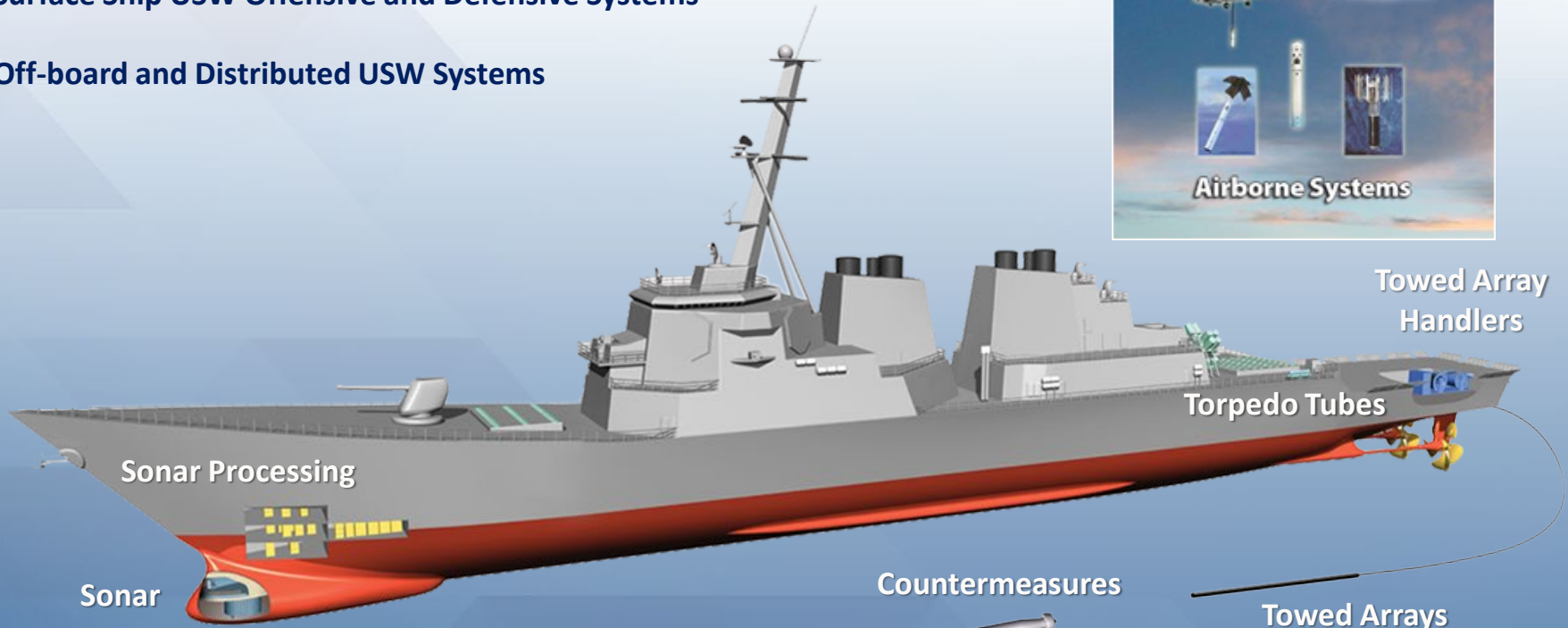


Division Newport Providing Expertise in Surface Ship Technology



Surface Ship USW Offensive and Defensive Systems

Off-board and Distributed USW Systems



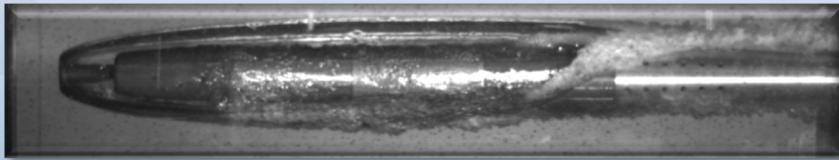
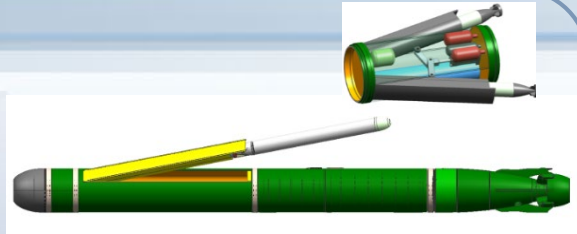
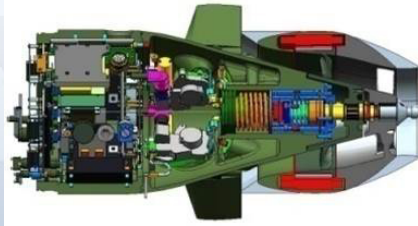
Littoral Combat Ship Mission Modules



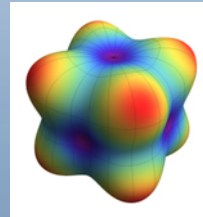
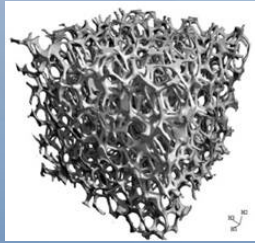
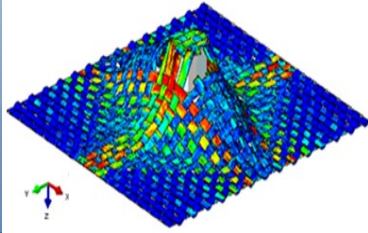
Torpedoes

Focusing on Innovation in USW

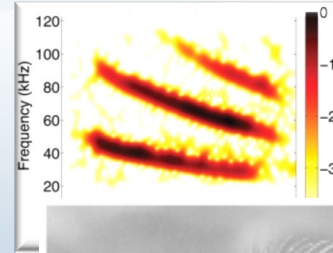
Weapons & Vehicles



Advanced Materials



Biologically Inspired



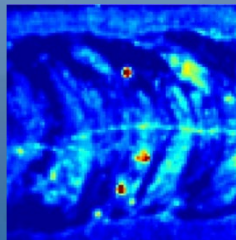
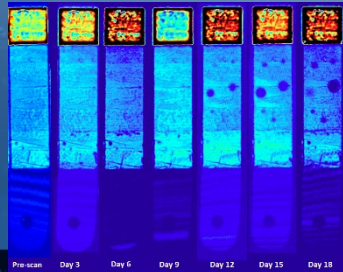
Sensors



Marine Mammal Behavior



Non-Destructive Evaluation

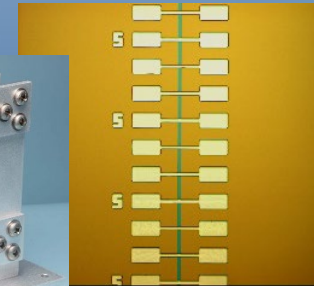
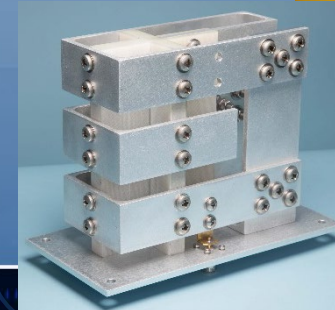


Flash IRT detection of 50-100 micron-wide crack in a MIG welded steel plate. Note: The crack is the line in the middle. The red spots are hot weld oxides.

Lasers & Optics



Antennas



Cybersecurity End-to-End Evaluation



Collaboration Fuels Global USW Innovation



DoD Partners



Academia

40 Educational Partnership Agreements (EPA)



Global Presence

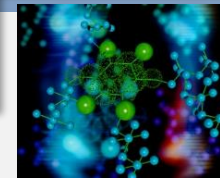
180 Reps Worldwide

- 166 at Detachments/On-Site Offices and In-Service Engineering Agents
- 14 Field Team Reps

Industry

Demo/Validation, Production

- 76 Cooperative Research & Development Agreements (CRADA)
- 3 Partnership Intermediary Agreements (PIA)
- 62 Small Business Innovation Research (SBIR) TPOCs
- 36% Contracts to Small Businesses



Foreign Military Sales

- 52 S&T Engagements in 11 Countries
- 76 FMS Cases in 16 Countries

Armament Cooperation Programs

Data Exchange Agreements

Technical Cooperation Programs

Cooperative Research and Development Programs

International Components



Division Newport Contributing to the Navy After Next



Theater Based Undersea Warfare Capabilities

- Wargames
- Innovation Events



Sensors & Sonar

- Distributed Sensing for Missions from Under the Sea



USW Platform & Payload Integration

- Transformational Weapons Integration to expand mission portfolio and use available volume most efficiently



Communications

- Stealthy communications to support interoperability



USW Imaging

- Multifunction masts combining communications, EW, and Imaging



USW Combat Systems

- On Demand System Upgrades
- Adaptive Task Management
- Automated Tactical Agents
- Flexible Payload Support

✓ Own the Best
 ✓ Grow longer arms
 ✓ Beat the adversary's "system"
 ✓ Protect our Strategic Assets and Threaten Theirs
 ✓ Get on the same page
 ✓ Get faster
 ✓ Be the Best*

* Commander's Intent for the United States Submarine Force and Supporting Organizations" - December 2015



Undersea Distributed Networked Systems

- Multi-Phenomenology Sensor Field
- Coatings: Biofouling & Anti-Corrosion



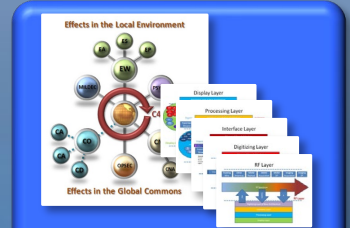
Ranges

- Indiscriminate Target Tracking
- Adaptive Signal Processing & Sensors
- Distributed & Autonomous Sensors
- Marine Mammal Behavior



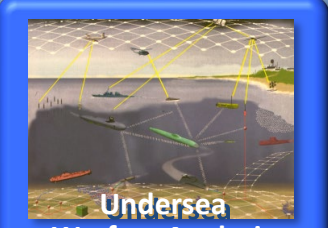
USW Weapons & Autonomous Vehicles

- Undersea Autonomous Influence Convergence
- Autonomy
- Long Endurance Power Sys.
- Multi-Vehicle Collaboration
- Biomimetic Vehicles



Electronic Warfare

- Modular masts
- Multi-spectral imaging
- Panoramic imaging and display
- Advanced Human Machine Interface



Undersea Warfare Analysis

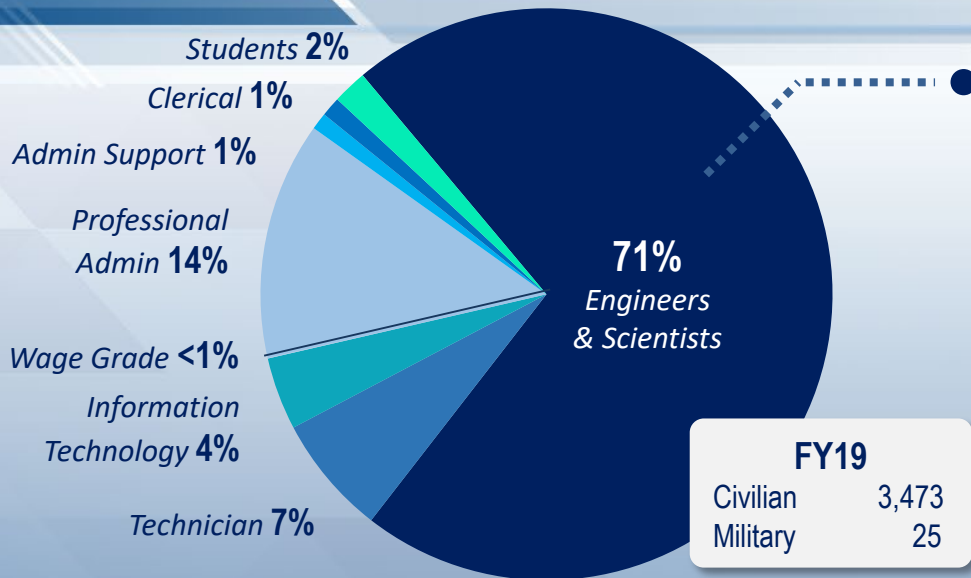
- Evolving National Maritime and Naval Strategies
- Design for USW
 - Resource constrained environment
 - Rapidly evolving threat capabilities



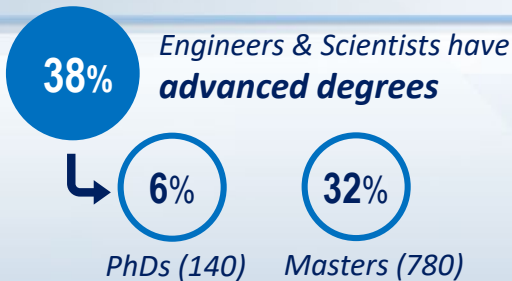
Cooperative Force Torpedo Defense

- Shorten kill chain
- Adaptive Systems and Technologies to Outpace the Threat
- Virtual Environment for M&S and Training

Our People



FY19	
Civilian	3,473
Military	25



An Award Winning Workforce

42 Wins in External Award Program in FY19

Total Employment by Classification	Civil Service	Contract WYs	Est Overall Employment
Engineering/Science	2,454	833	3,287
Technician	236	605	841
Information Technology	151	118	269
Professional Administrative	490	761	1,251
Administrative Support	33	134	167
Clerical	27	40	67
Wage Grade/Other	1	33	34
Students	81	0	81
Total	3,473	2,524	5,997

Data as of 9/30/2019



The Navy's Technical Steward in the Undersea Domain



Division Newport's Global Presence

Detachments (Det), On-Site Offices (OSO), In-Service Engineering Agents (ISEA) and Field Team

180
reps worldwide

WASHINGTON (10)

Det Bangor, OSO Keyport, Port Angeles

CALIFORNIA (2)

SCORE, OSO San Diego



HAWAII (8)

COMSUBPAC, COMPACFLT, NSTCP (Det Newport)

AUSTRALIA (1)
HMS Stirling

166 *Det, OSO and ISEA*

14 *Field Team reps*

CONNECTICUT (26)

OSO Groton, OSO Niantic, NUWC NLRN, SLC, UWDC HQ, UWDC TAG

NEW YORK (4)

OSO Dresden

PENNSYLVANIA (2)

ARL/PSU

MARYLAND (3)

NAS Patuxent River, ONI Suitland

VIRGINIA (28)

Det Manassas, FEO Norfolk, OSO Williamsburg, OSO Virginia Beach, NGNN Shipyard, NWS Yorktown, CNSL, CSF

PENTAGON, D.C. (23)

OPNAV, ASN/RDA, WNY, SCO, ONR

FLORIDA (55)

AUTEC-Det West Palm Beach, OSO Mayport, OSO Okahumpka

GEORGIA (2)

OSO Kings Bay

MISSISSIPPI (1)

CNMOG

SOUTH CAROLINA (1)

SSC-LANT

Our Forward Presence Enables Rapid Response to Fleet Needs

NUWC Impact On Southern New England



- 5,997 Total Work Years, (Gov't and Contracted)
- \$1,207M Total Funding
- \$751M to local economy for payroll, contracts, construction, and services purchased

Total Employment by Classification	Civil Service	Contract WYs	Est Overall Employment
Engineering/Science	2,454	833	3,287
Technician	236	605	841
Information Technology	151	118	269
Professional Administrative	490	761	1,251
Administrative Support	33	134	167
Clerical	27	40	67
Wage Grade/Other	1	33	34
Students	81	0	81
Total	3,473	2,524	5,997

Data as of 9/30/2019

FY20 Obligations



- \$822.8 million
 - NUWC (Traditional) \$571.6M
 - OTA \$75.4M
 - PEO SUB \$175.8M

\$531M (64.5%) occurred between 1 April – 30 September

\$ Obligations & Number of Actions (Cumulative) – FY19 vs FY20



Source: FPDS-NG

Obligation \$'s - Cumulative

\$900,000,000
 \$800,000,000
 \$700,000,000
 \$600,000,000
 \$500,000,000
 \$400,000,000
 \$300,000,000
 \$200,000,000
 \$100,000,000
 \$0

Total Obl \$'s
 FY19: \$699.2M
 FY20: \$822.8M

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
FY19	\$38,522,988	\$79,446,529	\$147,455,52	\$187,502,72	\$232,524,90	\$295,594,20	\$327,874,13	\$354,213,00	\$462,293,60	\$518,796,64	\$586,186,08	\$699,287,68
FY20	\$30,551,661	\$76,890,562	\$123,580,58	\$165,986,76	\$222,059,51	\$291,817,80	\$403,161,76	\$475,984,44	\$598,668,87	\$677,381,06	\$718,390,26	\$822,859,57

FY19 FY20

of Actions - Cumulative

3,000
 2,500
 2,000
 1,500
 1,000
 500
 0

Total # Actions
 FY19: 2,789
 FY20: 2,511

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
FY19	148	344	548	720	906	1,111	1,318	1,565	1,767	2,015	2,315	2,789
FY20	98	259	475	641	813	1,047	1,301	1,485	1,686	1,920	2,158	2,511

FY19 FY20

NUWCDIVNPT Multiple Award Contracts



Pre-Vetted
Industrial Base

- Seven Multiple Award Contracts
- Functional areas include:
 - UUV Family of Systems (FoS) hardware, services, systems, and subsystems
 - Weapons Family of Systems (FoS)
 - Submarine Multi-Mission Team Trainer (SMMTT)
 - Payload Integration engineering services
 - SUBSAFE hardware and services
 - Logistics support for open ocean special projects
 - Rapid prototyping for hardware and services
- \$1B+ in ceiling value
- 95+ orders issued
- Over 40+ vendors including local presence awardees/offices
 - SeaCorp, Rite Solutions, Raytheon, BAE, General Dynamics, Northrop Grumman, Booz Allen Hamilton, American Systems, Sonalysts

Subcontracting
Opportunities

On-Ramps