Naval Undersea Warfare Center
Division Newport

Mr. Don Aker
Deputy Technical Director
NUWC Division Newport
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

**Undersea Superiority**
**Today and Tomorrow**

**LOE Blue:** Strengthen Naval Power at and from the Sea

**LOE Green:** Achieve High Velocity Outcomes

**LOE Purple:** Expand and Strengthen Our Network of Partners

**LOE Gold:** Strengthen Our Navy Team for the Future
NUWCDIVNPT 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

NAVY = 99.4%
NAVSEA = 65%

NAVY Originated = 4.4%
Other DoD 3.35%
Private Parties 1.11%

Atlantic Fleet 4.06%
Pacific Fleet 0.70%

NAVWAR 5.80%
NAVAIR 9.49%
ONR 3.41%
Other Navy 7.56%
Other NAVSEA 10.93%
Other Services 0.64%

PEO SUB 42.99%
PEO CV 0.07%
PEO IWS 4.78%
PEO USC 4.42%
PEO SHIPS 0.69%

Full Spectrum Provider: Science & Technology to In-Service Engineers
Division Newport Providing Expertise in Submarine Technology

- Periscopes, Imaging Systems, & Antennas
- Sail Arrays
- Sonar Room
- Tomahawk Integration
- Launchers
- Spherical Array
- UUVs
- Exterior Comms
- Electronic Warfare
- Acoustic Transducers & Windows
- Fire Control Systems
- Combat Control Systems
- Submarine Unmanned Aircraft Systems
- Hull Arrays
- Interior Comms
- Hull Arrays
- Towed Arrays
- Subtracting Arrays
- Countermeasures
- Torpedoes
- Launchers
- Hull Arrays
Division Newport Providing Expertise in Surface Ship Technology

Surface Ship USW Offensive and Defensive Systems

Off-board and Distributed USW Systems

Sonar Processing

Sonar

Littoral Combat Ship Mission Modules

Towed Arrays And Transmitters

Torpedo Tubes

Towed Array Handlers

Torpedoes

Countermeasures

Airborne Systems
Focusing on Innovation in USW

Weapons & Vehicles

Non-Destructive Evaluation

Advanced Materials

Lasers & Optics

Biologically Inspired

Sensors

Marine Mammal Behavior

Antennas
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

**International Components**

- 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
Division Newport
Contributing to the Navy After Next

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

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

Undersea Distributed Networked Systems
- Multi-Phenomenology Sensor Field
- Coatings: Biofouling & Anti-Corrosion

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

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

Ranges
- Wargames
- Innovation Events

Sensors & Sonar
- Distributed Sensing for Missions from Under the Sea

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

- Stealthy communications to support interoperability

- Multifunction masts combining communications, EW, and Imaging

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

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

- Evolving National Maritime and Naval Strategies
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- Shorten kill chain
- Adaptive Systems and Technologies to Outpace the Threat

- Virtual Environment for M&S and Training

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 Stated Submarine Force and Supporting Organizations - December 2015

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Our People

The Navy’s Technical Steward in the Undersea Domain

An Award Winning Workforce
42 Wins in External Award Program in FY19

Total Employment by Classification

<table>
<thead>
<tr>
<th>Classification</th>
<th>Civil Service</th>
<th>Contract WYs</th>
<th>Est Overall Employment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Engineering/Science</td>
<td>2,454</td>
<td>833</td>
<td>3,287</td>
</tr>
<tr>
<td>Technician</td>
<td>236</td>
<td>605</td>
<td>841</td>
</tr>
<tr>
<td>Information Technology</td>
<td>151</td>
<td>118</td>
<td>269</td>
</tr>
<tr>
<td>Professional Administrative</td>
<td>490</td>
<td>761</td>
<td>1,251</td>
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<tr>
<td>Administrative Support</td>
<td>33</td>
<td>134</td>
<td>167</td>
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<tr>
<td>Clerical</td>
<td>27</td>
<td>40</td>
<td>67</td>
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<tr>
<td>Wage Grade/Other</td>
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<td>33</td>
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</tr>
<tr>
<td>Students</td>
<td>81</td>
<td>0</td>
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<tr>
<td><strong>Total</strong></td>
<td><strong>3,473</strong></td>
<td><strong>2,524</strong></td>
<td><strong>5,997</strong></td>
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Data as of 9/30/2019

Engineers & Scientists have advanced degrees

PhDs (140) 32%
Masters (780) 6%

Clerical 1%
Professional Admin 14%
Wage Grade <1%
Information Technology 4%
Technician 7%
Students 2%

Our People

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

Our Forward Presence Enables Rapid Response to Fleet Needs

180 reps worldwide

WASHINGTON (10)
Det Bangor, OSO Keyport, Port Angeles

CALIFORNIA (2)
SCORE, OSO San Diego

HAWAII (8)
COMSUBPAC, COMPACFLT, NSTCP (Det Newport)

CONNECTICUT (26)
OSO Groton, OSO Niantic, NUWC NOLN, 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)
CNMOC

SOUTH CAROLINA (1)
SSC-LANT

AUSTRALIA (1)
HMS Stirling

166 Det, OSO and ISEA
14 Field Team reps

12-NUWC-GRA/0000 FY20V16
3,173 Division workforce in SE New England

712

180

2,281

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

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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

Total Obl $’s
FY19: $699.2M
FY20: $822.8M

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