



# 25

## UNDERSEA WARFARE COMBAT SYSTEMS

### Code 25 Industry Day Brief

*25 April 2023*



# Agenda

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- Introduction/Ground Rules
- Disclaimer Statement
- Background Information
- Anticipated Procurement Strategy
- Technical Requirements
- Conclusion/Wrap-Up

- Introduction of participants
  - NUWCDIVNPT Technical Code 25
  - NUWCDIVNPT Contracts Department
- Intent of Industry Day
  - Encourage competition by:
    - Ensuring all potential offerors receive and have access to the same information
- Technical “Q&A” is encouraged
  - Q&A (all questions submitted in writing) will be answered via SeaPort-NxG Portal

- Forms and receptacle are located at the Registration Table
- Please silence cell phones and pagers
- No personal recording
- The attendees list, Q&A and “Distribution Statement A” slides will be posted to the SeaPort-NxG portal and the Contracting & Office of Small Business Outreach page
  - Link: <https://www.navsea.navy.mil/Home/Warfare-Centers/NUWC-Newport/Partnerships/Contracting-and-Small-Business/Outreach-Events/>

- DO NOT directly contact NUWC technical code after today – all further dialogue will be accomplished via the Q&A feature on the SeaPort-NxG portal
- Requirements contained in this briefing are presented as a summary

*Full/updated requirements will be provided in the Requests for Proposal (RFP)*

# Disclaimer Statement

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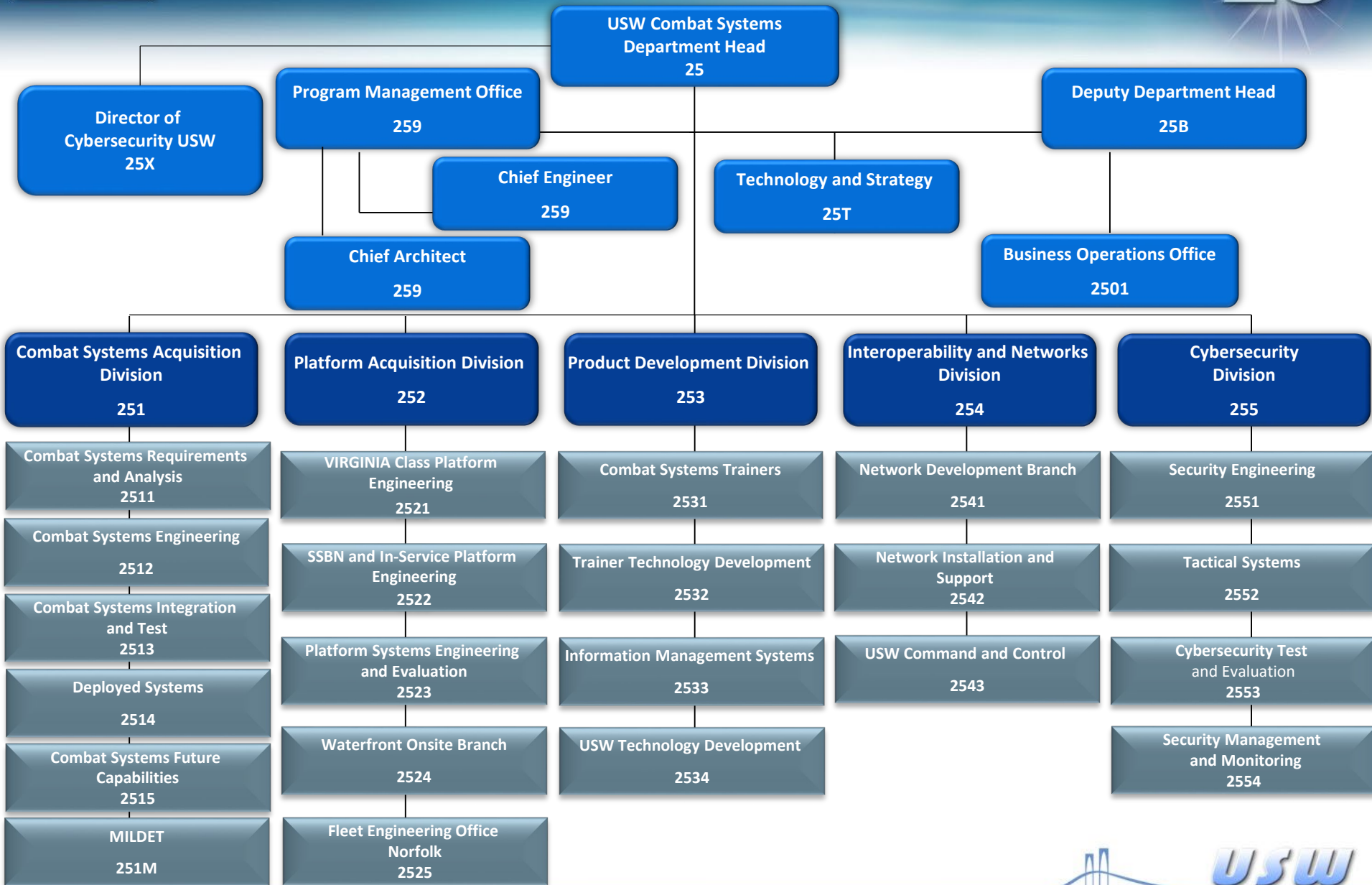
- Remarks today by Government officials involved in today's presentations should not be considered a guarantee of the Government's course of action in proceeding with any of the planned acquisitions discussed
- The informational briefing shared today reflects current Government intentions and is subject to change based on a variety of circumstances

*The formal solicitation, when issued, is the only document that should be relied upon in determining the Government's requirements*

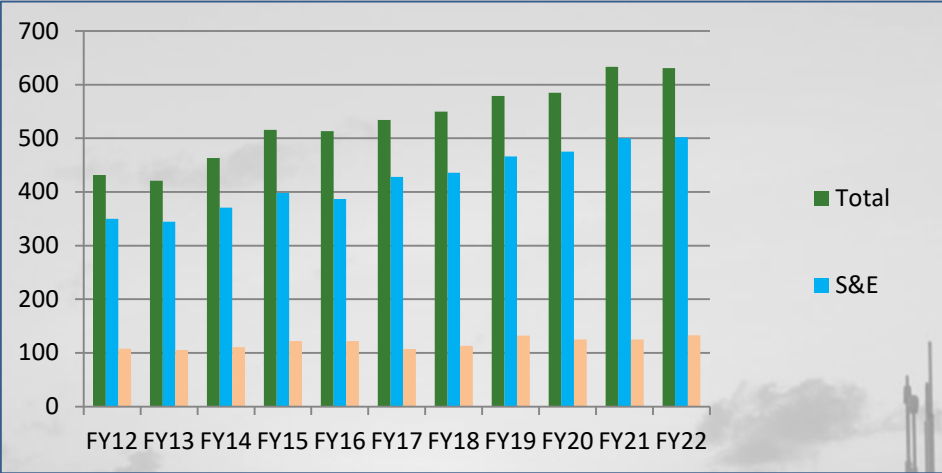


# USW Combat Systems Department

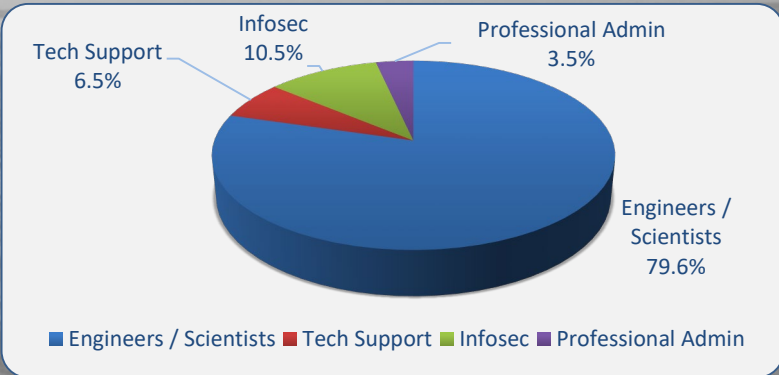
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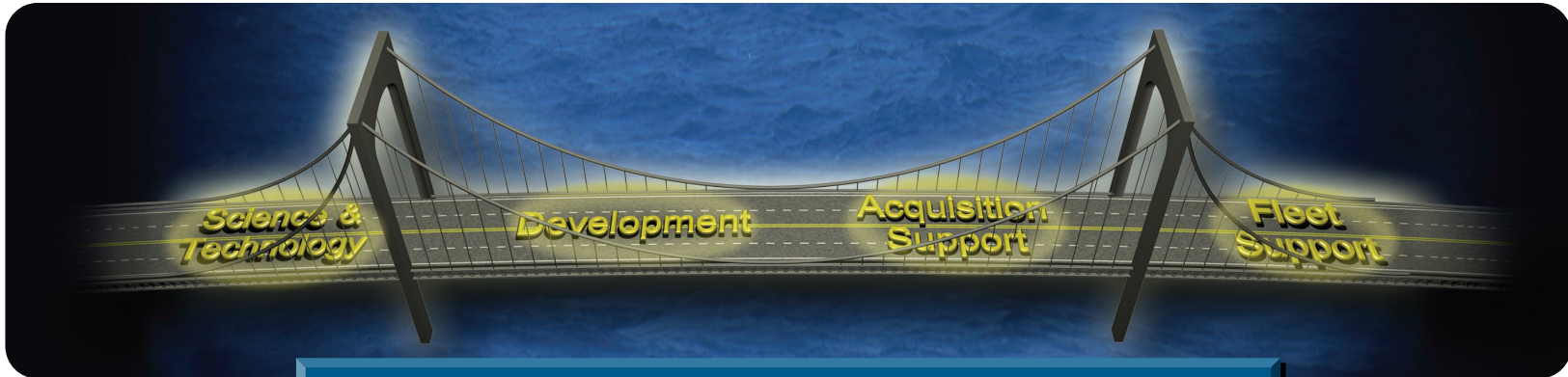
# Our People – Skilled Workforce



- **Maintained end strength in the face of a volatile job market**
- **Continued participation in Part Time Academic Degree Program!**
  - **9 PhD, 124 Masters Degrees**
- **Flexing our contracting portfolio to meet customer demand**
- **Grown by 200 personnel in past 10 years (47% growth)**



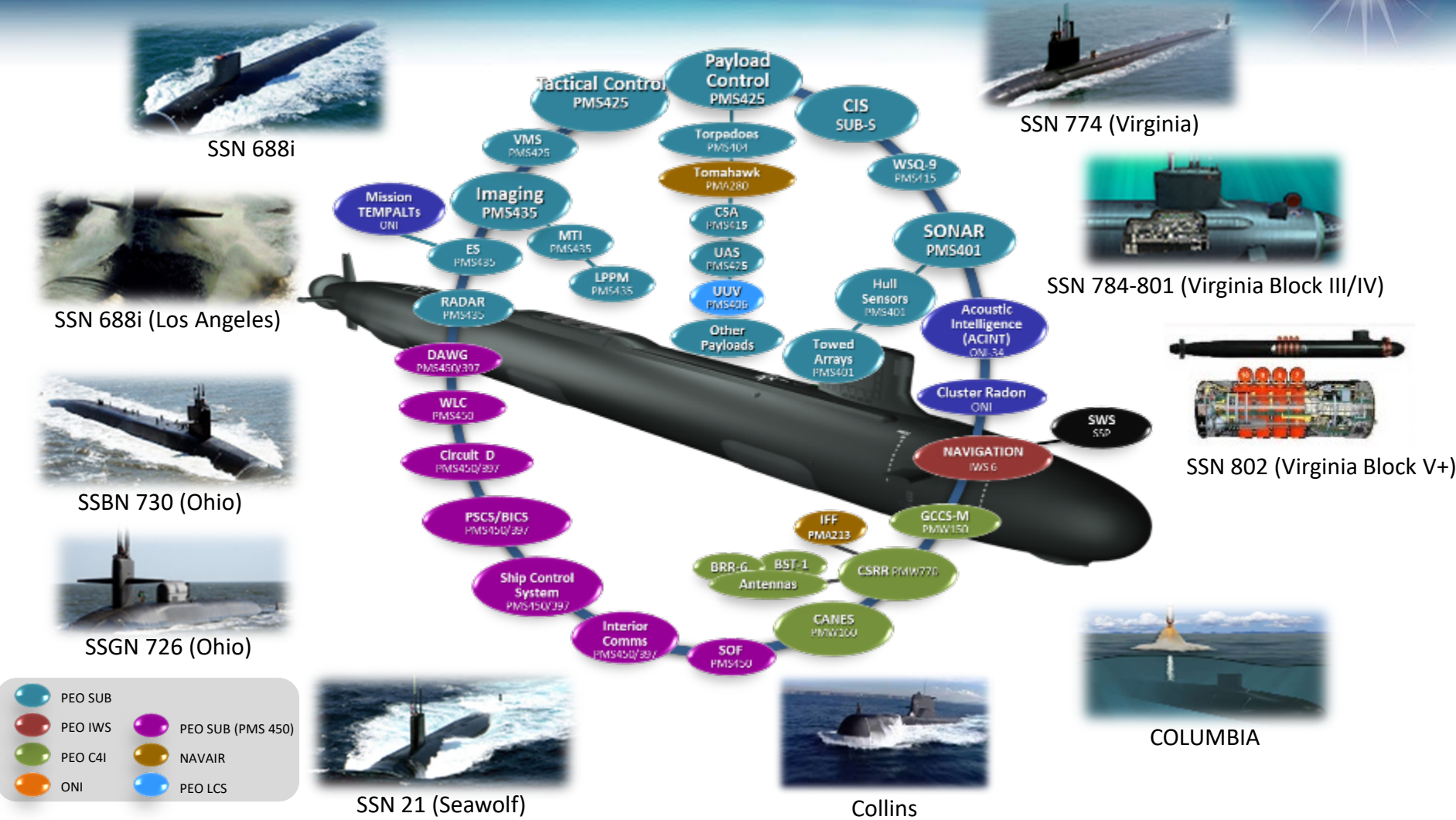




## Diverse Set of Customers Across SYSCOMs, ONR and the Fleet

- SSN(X) Concept Exploration
- Naval Tactical Cloud
- UxV Common Control System
- UxS Experimentation and **Integrated Naval Prototypes**
- Human Factors Engineering
- Cyber Security (**Zero Trust and Multi Level Security**)
- Combat Systems Hardware/Software/Network Architectures
- Virginia Block VI/VII/**SSN(X)/AUKUS**
- Combat Systems Virtualization
- SWFTS Seamless Re-architecture
- Live/Virtual/Constructive (LVC)
- **Future Navy Capabilities**
- **Unmanned Aerial Systems Family of Vehicles (Small/Medium)**
- **Undersea Dominance Payload Prototyping**
- **AN/BYG-1 CI/CID Pipeline**
- Cyber Security Systems Engineering
- AN/BYG-1
- TTWCS
- Virginia
- Columbia/Ohio
- Trainers (SMMTT, SBT)
- SWFTS
- Submarine CANES
- USW Strike
- International Programs
- Cybersecurity
- USW DSS
- **Project Overmatch**
- Submarine Combat Systems ISEA
- Ohio/Seawolf ISEA
- Tomahawk Logistics and Fleet Support
- SSGN Attack Weapon Control System
- Operational Documentation
- Trainer On Site Agents
- GCCS-M
- NTMPS
- SEAWARE-LMS/SOBT
- **Surge Readiness**
- **Trident Shield**

# System of Systems (SoS) Engineering Expertise 25

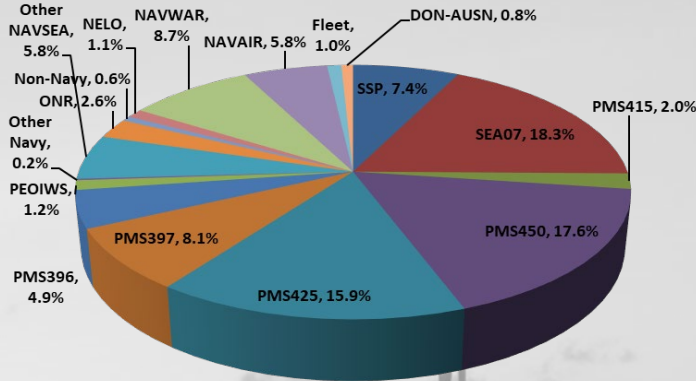


Executing Technical Authority Across Programs, Platforms, and System of Systems



### Funding Profile by Customer

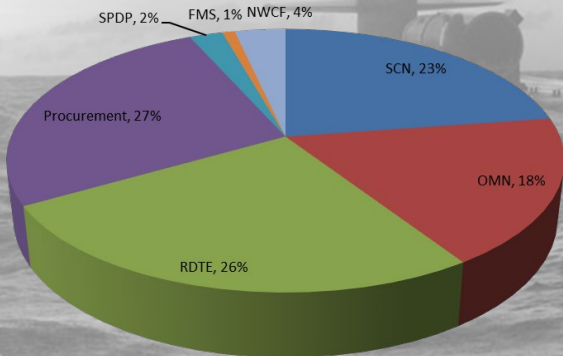
- FY22 New Customers
- PMS 4XX
  - Project Overmatch



### Funding Profile by Appropriation

\$335M\* Plan FY23

\*FY23 TCHA data



Steady demand for our products and services 11% increase over 2022

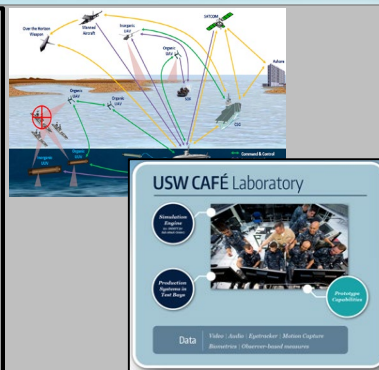
# Major Programs

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Program	Sponsor
USW Combat Systems Trainers	PEO UWS TR
AN/BYG-1 Combat Control System	PEO UWS PMS425
Virginia/COLUMBIA Class Submarine	PEO SSN PMS450/ PEO SSBN PMS397
• Platform Engineering	
• Test & Evaluation (T&E)	
• Combat Systems	
Tomahawk Weapon Control System (TWCS)	PEO (U&W) PMA-280
Ohio Non-Propulsion Electronic System (NPES) Engineering	PEO SSN PMS392
Submarine Warfare Federated Tactical System (SWFTS)	PEO SUB-S
Submarine Networks	PEO C4I PMW160
Cyber Security	TEAM SUB (PMS 425/397/450), SSP, SEA 05, Fleet, PHD NSW
Strategic Systems Programs	SSP 2012, 23, 208, 24, 27, C

## Unmanned Systems

- Submarine Launched Unmanned Aerial Systems (SLUAS) integration and production
- Combat Systems prototyping to enable integration of Unmanned Undersea Vehicles (UUVs) on Submarines
- ONR Full Spectrum Innovative Naval Prototype (FS INP) Family of Small and Medium Unmanned Aerial Vehicles
- UxS Fleet Experimentation for Autonomy and Sensing with Common Control System

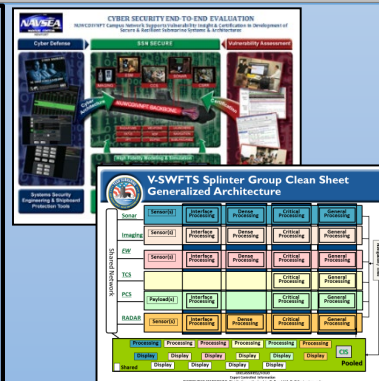


## Payload Integration

- Advanced prototyping and Concept of Operations (CONOPS) Experiments for Virginia Block 5+
- Conventional Prompt Strike (CPS) Development and Integration
- Emerging payloads requirements definition, interface development documents and risk reduction activities
- Program of Record (Tomahawk, ADCAP, Harpoon) lifecycle support and capability enhancement

## Cybersecurity

- USW Enterprise Policy Development
- VA/CLB Cyber Capstone Development Test Fleet Exercise Technical Lead
- SWFTS and BYG-1 Cybersecurity Engineering
- SSP Cybersecurity Policy and A&A
- SSN(X) Cyber Technical Lead
- SYSCOM/PEO Program Support (Development, Accreditation)
- Development of Cyber Security Workforce
- Submarine Security Program Liaison



## Architecture

- Defining next gen systems architecture - SSN(X)
- Leveraging state of the practice technology across BYG-1, SWFTS, USW Trainer and Network systems
- Technical leadership for SWFTS Seamless Re-architecture (Common/Resilient Cluster)
- Technical Direction Agent for SWFTS Common Infrastructure and AN/BYG-1 TCS & PCS
- institutionalize SECDEVOPs w/ USW stakeholders
- Maritime Test Bed – East Command and Control System for Payloads, Sensors and Vehicles

## Platform Engineering

- Ohio SWFTS Modernization
- Columbia and Virginia Class Block V+ Non Propulsion Electronic Systems
- SSN(X) Requirements Definition and Concept Explorations
- SSW Platform and Mission Systems
- Navigation Subsystem Integration
- Submarine CANES Full Spectrum
- SOF Reconstitution on VA BLK V/VI



## Virtual Environment

- Enterprise-level Live, Virtual, Constructive (LVC) capability
- Expanding on SIM/STIM capabilities for POR systems such as Submarine Bridge Trainer (SBT)
- Enhancing NUWC Virtual Sub constructs in support of new payload initiatives
- Enabling the Virtual Undersea Battlespace for joint theater/platforms analysis and war gaming across multiple mission areas



# Virginia (VA) / Columbia (CLB) / SSN(X) Special Projects Contract

## RFP N66604-23-R-3017

# VA/CLB/SSN(X) Special Projects Contract Anticipated Procurement Strategy

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- Summary of Contract Scope:
  - Conduct advanced system engineering to assess, recommend, develop and introduce improvements to system design and operation in VIRGINIA Class, COLUMBIA Class, and SSN(X) submarine NPES system performance, interoperability and integrity.
  
- RFP: N66604-23-R-3017
- Contracting Method: SeaPort NxG
- Anticipated Period of Performance: 03/02/2024 – 03/01/2029
- Acquisition Strategy: Unrestricted
- Level of Effort: Estimated 312,000 hours & \$1,150,000 ODCs
- Anticipated Work Location: 57% Government Site, 43% Contractor Site
- Contract Type: CPFF

# VA/CLB/SSN(X) Special Projects Contract Anticipated Procurement Strategy (continued)

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- Unique Characteristics:

- Key Personnel requirements: STR plus a Minimum of 6 Key Personnel to Cover Designated Areas of Expertise
- Facility Security Clearance: Top Secret
- Required Certifications/Designations: N/A
- If large ODCs provide any details: ODCs primarily for travel
- Follow on? Yes, follow-on to N00178-19-D-8623-N66604-20-F-3001, SEACORP, Acquisition Strategy was Unrestricted
- Does OCOI clause apply? Yes
- Expected RFP release: FY23 QTR 3

# VA/CLB/SSN(X) Special Projects Contract Technical Requirements

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- Background:
  - NAVSEA tasked the NUWCDIVNPT Code 25 to participate in the conduct of VA, CLB, and SSN(X) submarine rapid improvement efforts. These efforts are focused on NPES system performance, interoperability & integrity, Payload Integration & Employment and VA submarine Payload Module (VPM) utilization.
  - The goal of this effort is to rapidly assess the design and operation of the systems. Next, using the data and information from these assessments, introduce and recommend system design and operational changes with a primary objective of improving the VIRGINIA Class, COLUMBIA Class and future SSN(X) submarine performance and payload employment capabilities.
- Scope:
  - Provide engineering and technical services necessary to design, build, test, maintain, and support operation in VIRGINIA Class, Columbia Class, and next generation SSN(X) submarine Non-Propulsion Electronic Systems (NPES).

# VA/CLB/SSN(X) Special Projects Contract Technical Requirements

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- High Level SOW Tasking:
  - Submarine System Design Improvement
    - Develop and prototype concepts for System Design improvements for NPES that relate to submarine mission areas
  - Submarine System Operational Improvements
    - Analyze and recommend System Operational improvements for NPES
    - Design, build, upgrade, maintain and deliver prototype hardware and software solutions
  - Test and Evaluation of System Design and Operational Improvements
    - Develop test plans and procedures, install system improvements, and execute Test and Evaluation on operational platforms dockside, at-sea, and at land-based test facilities



# VA/CLB/SSN(X) Special Projects Contract

## Key Personnel Requirements

**Minimum 6 Key Personnel, with at least one (1) key person for each of the seven (7) below areas covering the below designated areas of expertise. A person may be designated as key in more than one area below.**

PWS Task	Quantity of Key Personnel	Required Qualifications
4.1, 4.2, 4.3	(1) Key Person	<p>Resume must demonstrate the following: Submarine Operations and Tactical Employment</p> <p>(A) Submarine operational and tactical experience and mission area knowledge.</p> <p>(B) Experience with submarine weapon systems employment and development of related guidance</p> <p>(C) Experience and participation in submarine pre deployment training and certification phases of the POM cycle</p> <p>(D) Knowledge of the Integrated Combat System Certification and Accreditation Program as it relates to the overall submarine test process</p>
4.1, 4.2, 4.3	(2) Key Person	<p>Resume must demonstrate the following: Integration and Test of Submarine Combat, Weapon Systems and Payloads</p> <p>(A) Experience with the NPES subsystem, SoS, Integrated Weapon System and Installation test process including test plans, procedures, reports, data collection, and analyses;</p> <p>(B) Knowledge of laboratory and shipboard equipment and configurations (Submarine related);</p> <p>(C) Knowledge of Undersea Dominance and Conventional Prompt Strike Payloads</p> <p>(D) Knowledge of SWS and interfaces to submarine combat system</p>
4.1, 4.2	(1) Key Person	<p>Resume must demonstrate the following: Design and development of system software</p> <p>(A) Knowledge of AN/BYG-1 WCS software and hardware architecture</p> <p>(B) Linux operating system</p> <p>(C) ADA, C/C++, object oriented programming, Qt software development kit (SDK)</p> <p>(D) Implementation of real-time controls for safety critical interlocks in weapon systems demanding and extreme high level of dependability</p>

# VA/CLB/SSN(X) Special Projects Contract Key Personnel Requirements (continued)

**Minimum 6 Key Personnel, with at least one (1) key person for each of the seven (7) below areas covering the below designated areas of expertise. A person may be designated as key in more than one area below.**

PWS Task	Quantity of Key Personnel	Required Qualifications
4.1, 4.2, 4.3	(2) Key Person	Resume must demonstrate the following: Launcher Systems (A) Knowledge of Virginia Payload Tube (VPT) and Virginia Payload Module (VPM) (B) Knowledge of Payload Support Electronic System (PSES); (C) Knowledge of Common Weapon Launcher (CWL) (D) Knowledge of Horizontal and Vertical Launch Systems (E) Knowledge of Internal/External Countermeasure Launchers.
4.1, 4.2, 4.3	(1) Key Person	Resume must demonstrate the following: Submarine Acoustic Systems (A) Experience with NPES Baseline (B) Experience in integration and test of submarine acoustic systems both in a laboratory and shipboard environment (C) Experience in evaluation of acoustic system performance (D) Development of acoustic systems operational guidance.
4.1, 4.2	(1) Key Person	Resume must demonstrate the following: Digital Engineering (A) Experience in developing digital models (B) Experience in Model-Based Systems Engineering Architecture, languages, methods and tools
4.1, 4.2, 4.3	(1) Key Person	Resume must demonstrate the following: Tactical Navigation Systems (A) Experience with NPES baseline (B) Experience in integration and test of submarine tactical navigation systems both in a laboratory and shipboard environment; (C) Experience in Tactical Navigation Interfaces and Data Exchange with Strategic Weapons Systems

# **Code 25 Trainers Test and Evaluation (T&E) Contract**

**RFP N66604-23-R-3015**

# Code 25 Trainers T&E Contract Anticipated Procurement Strategy

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- Summary of Contract Scope:

- Maintain, modify, and upgrade software during all evolutions and deployments of trainer systems. Services shall include systems engineering and prototyping, certification and regression testing, verification and validation (V&V), software and hardware configuration management, system administration, system deployment, and program integration.

- RFP N66604-23-R-3015
- Contracting Method: SeaPort NxG
- Anticipated Period of Performance: 02/01/2024 – 01/31/2029
- Acquisition Strategy: Unrestricted
- Level of Effort: Estimated 237,125 hours & \$2,300,000 ODCs
- Anticipated Work Location: 90% Government Site, 10% Contractor Site
- Contract Type: CPFF

# Code 25 Trainers T&E Contract Anticipated Procurement Strategy (continued)

# 25

- Unique Characteristics:

- Key Personnel requirements: STR plus Minimum 2 Key Personnel Covering Areas of Expertise
- Facility Security Clearance: Secret
- Required Certifications/Designations: Cybersecurity Workforce (CSWF)
- If large ODCs provide any details: ODCs primarily for travel
- Follow on? Yes, follow-on to N00178-04-D-4122-N66604-19-F-3004, SEACORP, Acquisition Strategy was Unrestricted
- Does OCOI clause apply? Yes
- Expected RFP release: FY23 QTR 3



# Code 25 Trainers T&E Contract Technical Requirements

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- Background:
  - Mission is to support the evolution and maintenance of Combat Control (CC) segments of submarine trainers and portions of shore based surface ship trainers. This includes design, development, test, installation, upgrade, and maintenance of trainer simulation components at trainer facilities.
- Scope:
  - Maintain, modify, and upgrade software during all evolutions and deployments of trainer systems. Provide systems engineering and prototyping, certification and regression testing, verification and validation (V&V), software and hardware configuration management, system administration, system deployment, and program integration. Services include the research and development of prototypes for developing software models. This scope of covers submarine trainers and shore based surface ship trainers.
- Example Sponsors:
  - NAVSEA Program Management Systems (PMS) 339, 397, 401, 404, 425, 435, 450, 08, PEO UWS TR, Strategic Systems Programs, and Joint Program Office (JPO) (inclusive of Royal Australian Navy (RAN)) , Integrated Warfare Systems (IWS) 1, 5 and 7, Office of Navy Research (ONR), Office of Naval Intelligence (ONI), Submarine Learning Center (SLC), Commander Submarine Force Pacific (COMSUBPAC), Commander Submarine Force Atlantic (COMSUBLANT), Navy Education and Training Center (NETC), and the Joint Forces Command (JFCOM).

# Code 25 Trainers T&E Contract Technical Requirements

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- High Level SOW Tasking:

- Task 1: System Engineering (approx. 22% of tasking)
  - Analyze and evaluate combat control and trainer systems
  - Analyze and verify simulation and stimulation systems
- Task 2: Prototypes (approx. 16% of tasking)
  - Research and develop architectural, modeling, and interoperability prototypes
- Task 3: Test Engineering (8%)
  - Test procedure development and maintenance
  - Verification, certification, regression and interoperability testing of components
  - Installation testing
- Task 4: System Operability (4%)
  - Provide training and demonstrations of associated systems
- Task 5: Configuration Management (13%)
  - Auditing and configuration management of trainer systems and their associated components and classification levels
- Task 6: System Administration (26%)
  - Media production
  - Baseline maintenance of trainer systems at development and deployed facilities
  - Cybersecurity. All personnel performing cyber functions must be trained and qualified
- Task 7: System Deployment (2%)
  - Support shipping and delivery of hardware and software trainer systems and associated components
- Task 8: Program Management Planning (10%)
  - Maintain project planning documentation of associated trainer systems and associated components

# Code 25 Trainers T&E Contract Key Personnel Requirements

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The offeror shall propose a minimum of two (2) Key Personnel to support PWS Tasks 4.6.4 (Software Administration) and 4.6.5 (Cyber Security) that are Information Assurance Technical Level I certified. The certification shall be included with the resumes for these Key Personnel.

# Conclusion/Wrap-Up

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- Thank you for your interest in the Code 25 Industry Day for the Code 25 Trainer Test and Evaluation (T&E) Contract and the Virginia (VA) / Columbia (CLB) / SSN(X) Special Projects Contract
- The attendees list will be posted to the SeaPort NxG Portal
- This briefing will be posted to the SeaPort NxG Portal
- “Q&A” (today’s and subsequent) will be posted to the SeaPort NxG Portal
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