COMMAND OVERVIEW
Naval Undersea Warfare Center Division, Keyport

Presented to Industry

- 20 May 2020 -
Who We Are

• 115 years of undersea expertise
• Undersea weapons
  • Two of three heavyweight IMAs
  • World’s only lightweight IMA
• Unmanned vehicles and payloads
• Undersea warfare test and evaluation
• Sustainment engineering
  • Shipyard innovation
  • DoD experts in obsolescence management
  • Custom engineered solutions
• Dispersed: NSLC, Hawaii, San Diego, Nevada, Japan and Guam
• Global partnerships
  • Internationally connected
  • International weapons training courses
  • Torpedo IMAs
NAVSEA Warfare Centers

Enabling Maritime Superiority Today, Tomorrow, and the Navy After Next
Mission:
Provide advanced technical capabilities for test and evaluation, in-service engineering, maintenance and industrial base support, fleet material readiness, and obsolescence management for undersea warfare.

Vision:
Expand America’s Undersea Dominance

Core equities:
• Undersea weapons research & development, production, and sustainment
• Unmanned underwater vehicles
• Undersea warfare test & evaluation
• Theater undersea warfare
• Obsolescence management
• Prototyping and custom engineered solutions
• Sustainment engineering
• Cyber engineering
Capabilities

Expanding America’s Undersea Dominance
Excellence in execution
Advancing undersea readiness through innovation
Urgency: Delivering tomorrow’s capability today
Aligned, better, faster

Prototyping & Custom Engineered Solutions
- Custom Engineered Solutions for Material Readiness
- Data science solutions for optimized and predictive maintenance
- Reverse Engineering & Redesign
- Advanced Depot Repair

Data Sciences and Analytics
- Predictable trend analysis
- Reliability analysis
- Manpower readiness tools
- Obsolescence management

USW Weapons and Targets
- Advanced undersea weapons R&D
- Advanced propulsion and energy
- IMA Digital Twin

Unmanned Underwater Vehicles
- Advanced undersea vehicles R&D
- Advanced propulsion and energy
- UxS payloads and integration

Operational Undersea Warfare Systems
- Countermeasure set acoustic ISEA and development
- Special operations forces undersea mobility support

Ranges – USW Test and Eval
- Range of the future
- Physics-based test & training
- Modeling and simulation
- Sensors and threat simulation
- T&E of autonomous systems

Undersea Defensive Warfare Systems
- Aircraft Carrier Tactical Support Center (CV-TSC)
- Undersea Warfare Decision Support System (UWDS)
- Littoral Combat Systems ASW Module

Shipyard & Maintenance Innovation
- Advanced repair and maintenance technologies
- Advanced materials / manufacturing
- Industrial engineering
- In situ automated forward repair systems
NSLC Capabilities

Lifecycle Logistics
- Readiness Based Sparing
- Product Modeling and Metrics
- Product Support Element Management
- Outfitting
- Integrated Logistics Supply (ILS) Certifications

Data Sciences and Analytics
- Predictable trend analysis
- Supportability Analysis

Maintenance
- Planned Maintenance System
- Reliability Centered Maintenance (RCM)
- Future of PMS (FoPMS)

Information Technology
- Software Lifecycle Support
- Operations and Information
- Information and Assurance

Certifications
- Navy Common Readiness Model (NCRM)
- Navy Product Data Management (NPDM)
- Navy Data Acquisition Requirements Tool (NDART)
- Human Centered Design

Model Based Product Support
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- Navy Product Data Management (NPDM)
- Navy Data Acquisition Requirements Tool (NDART)
- Human Centered Design

Deliver the power of innovative logistics solutions to Expand the Advantage
Ranges and Strategic Locations

- Yokosuka, Japan
- Pearl Harbor, HI
- Apra Harbor, Guam
- Keyport, WA
- Nanoue, Canada
- Dabob Bay, WA
- Hood Canal Site
- Bangor, WA
- Hawthorne, NV
- San Diego, CA
- Mayport, FL
- Indian Head, MD
- Portsmouth, NH
- Norfolk, VA
Ranges

- Nanoose Site
- Dabob Bay Site*
- Hood Canal Site*
- Quinault Site
- Vancouver Island
- Washington State
- Seattle
- Tacoma
- NUWC Keyport

* These Sites are known as the Dabob Bay Range Complex (DBRC)
Customers

Customers, Products and Services History

Reimbursable $321.6M

Total: $565.6M
New Funds: $399.6M
Reimbursable: $321.6M
Direct Cite: $78M

*as of 30 Sep 2019
Data Sciences
Adopt and develop data analytics best practices across an integrated suite of In-Service Engineering decision-making tools and processes by 2024 that will transform warfighter readiness and capability.

Cybersecurity
Cyber immunity and cyber hygiene are key pillars in the face of insider and supply chain threats. Traditional compliance based security is important but no longer enough to meet an ever-evolving threat.

Sensor Aggregation
Provide sailors using C2 and combat systems necessary information for threat assessment based on the platform and weapons characteristics of target platforms using threat data from ONI’s MEPED database. Provide an independent, portable system to process Sonobuoy data and support analysis in identifying, classifying, and localizing acoustic contacts based on proven government-owned technologies.

AR/VR
The implementation of Augmented and Virtual Reality (AR/VR) technologies can revolutionize the way we perform many existing evolutions such as; training, performance support, mission rehearsal, maintenance rehearsal, and system design.
• Technology transfer
  • Northwest Tech Bridge
  • Local / regional / national relationships with industry, national labs and academia
  • Patent Council / Office of Research and Technology Application (ORTA)
  • Relationships with Manufacturing Extension Programs and TechLink
• Patents
  • 11 patent applications filed in first half of FY20
  • Patent-sourcing workshops
• Pedigree
  • Growing pool of S&E with PhDs
  • Key roles on NAVSEA / Navy wide technology initiatives
    • PEO USC S&T Autonomy Lead
    • NAVSEA Cold Spray Program Manager
**Barrier Removals**
- 500,000 hours initiative

**Comptroller**
- Electronic delegation of authority letters
- Leave Overtime Comp time User System (LOCUS)
- Authorities Tracking Tool (ATT)

**People**
- Development of Propel training for supervisors
- Workforce Management System (WMS) – DEMO/WDS

**Command Assessment**
- Development of Propel training for WCs
- NAVSEA Enterprise Planning System (NEPS)
- Task Assignment & Acceptance Tool (TAAT)

**Information Technology**
- Desk guides tracking - iNFUSION
- Shop Workload Management System (SWMS)
- Corrective and Preventative Audit Application (CAPA)
- User Wizard (UW)

**Property Management**
- Procurement request (PR tool)
- Digital property pass

**Contracts**
- Contract Management Process Guide (CMPG)
Partnerships & Collaboration

- Strong recruiting relationships
- Outreach through senior design projects
- Collaborative research proposals
- Research supporting IMA modeling and simulation
- NEEC collaborations on data analytics, robotics and material science
- 8 Special Purpose CRADAs
- 8 Educational Partnership Agreements
- 3 Program Intermediary Agreements

- Mutually developing research program at local Washington State University campus
- Long relationship via NEEC on testing autonomy with University of New Hampshire
- Collaboration on Modeling the Millennia and UUVs for range support
- Micro grant on UUV fault detection
- NNED on autonomy testing
- Collaborating on COVID PPE response with UAF
- Exploring additional partnerships leveraging UAFs expertise on power and energy and in the Artic
UNDERSEA WEAPONS

UNMANNED VEHICLES & PAYLOADS

USW TEST & EVALUATION

SUSTAINMENT ENGINEERING

Expanding America’s Undersea Dominance
Questions?
• Weapons research, development, test & evaluation
• Weapons in-service engineering
• Weapons maintenance
• Depot repair
• Fleet material readiness
• Maintenance and repair technology development
• Ordnance handling, transportation, and storage
Unmanned Vehicles & Payloads

- Advanced propulsion and energy systems
- UUV Maintenance
- Design agent and logistics
- Maintenance planning and process development

Programs Supported

- DSS (Glider Only)
- Orca
- Snakehead
- PHS
- Razorback
- MK30
- DSS

- UUV S&T and R&D
- UUV in-service engineering agent (ISEA)
- UUVRON Homeport
- Payload design and integration
USW Test & Evaluation

Core capabilities:

- Physics-based test and training (at sea and land-based)
- Performance and assessment
- Test, training and evaluation (TT&E) design and deployment
- System acquisition and procurement
- Modeling and simulation
- Data sciences
- Sensors
- Performance and assessment
- Threat emulation
- T&E of autonomous systems
- LVC

Full-Spectrum T&E Capabilities for S&T, R&D, Technology Evaluation, Systems Acquisition, and In-Service Performance Assessment
**Sustainment Engineering**

### Rapid Prototyping & Manufacturing
- Additive Manufacturing
- Advanced Materials
- Advanced Coating Technologies

### Waterfront Fleet Support
- Submarine ISE support
- Electronic warfare support
- Cyber support
- Technical services

### Industrial Fabrication
- Circuit Card Prototyping
- Electronics Fabrication
- Metal Fabrication
- Undersea Encapsulated Cables
- Composites and Coatings

### Rapid Prototyping & Manufacturing
- Additive Manufacturing
- Advanced Materials
- Advanced Coating Technologies

### Cybersecurity & Engineering
- Serial protocol inspection
- Zero trust architecture
- Exploitation assessment

### Data Sciences and Analytics
- Predictive Trend Analysis
- Reliability Analysis
- Manpower Readiness Tools

### Submarine In-Service Engineering
- Platform Acquisition Support – VA and CLB Class
- NPES ISE and Logistics (SONAR, CCS, EW, Towed systems, Imaging, RADAR, Hull sensors)
- Acquisition Support – Technical Insertion Hardware
- Non-Tactical Software Development

### Fleet Technical Support
- Analysis, Prediction & Resolution
- Real-time Tracking & Mitigation
- AV/VR Training & Maintenance

### Theater Undersea Warfare
- Aircraft Carrier Tactical Support Center (CV-TSC)
- Undersea Warfare Decision Support System (USW-DSS)
- Littoral Combat Systems Anti-Submarine Warfare Module

### Obsolescence Management
- Analysis, prediction and resolution
- Real-time tracking and mitigation

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- Countermeasures Set Acoustic ISEA and Development
- Special Operations Forces Undersea Mobility Support