NUWC DIVISION, KEYPORT

CODE 20 TEST AND EVALUATION DEPARTMENT

Industry Engagement

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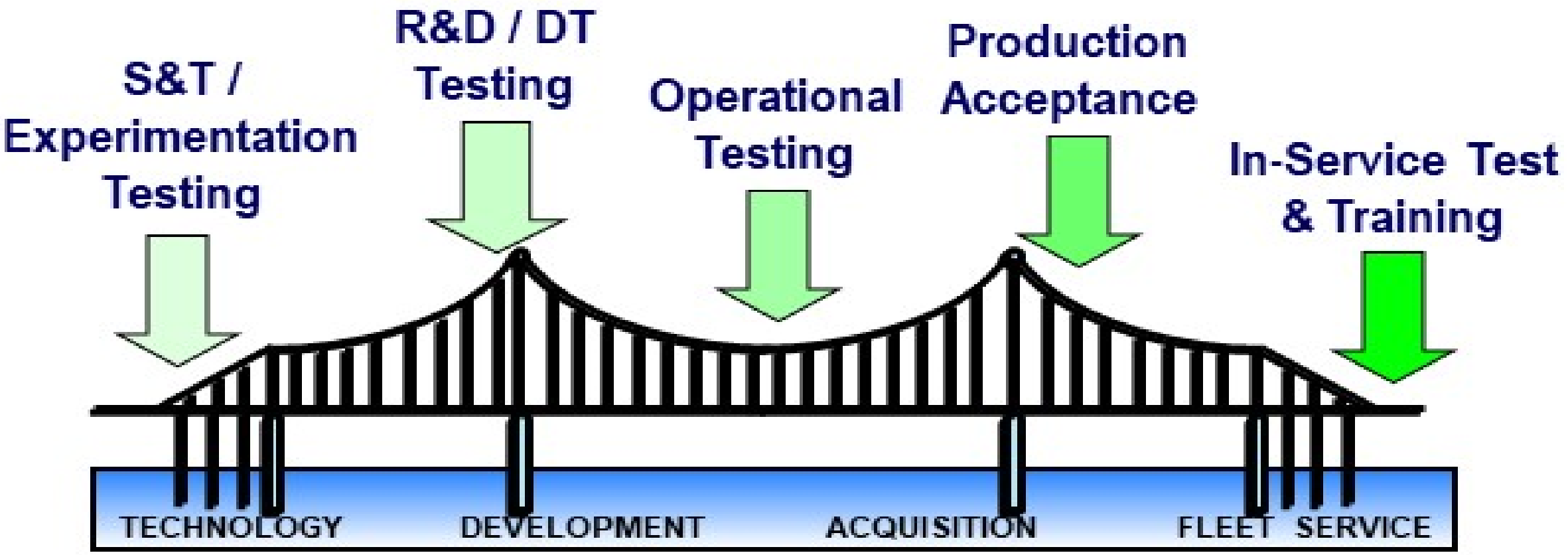
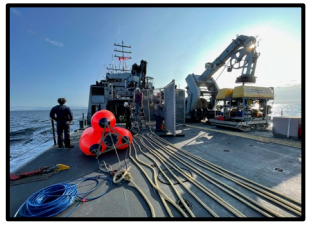
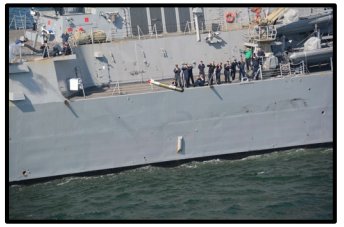
23 July 2025

NAVSEA
WARFARE CENTERS
Keyport

Full-Spectrum Test & Evaluation

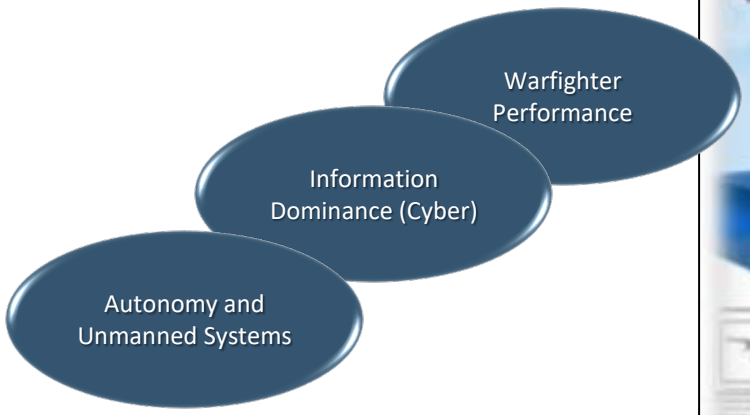


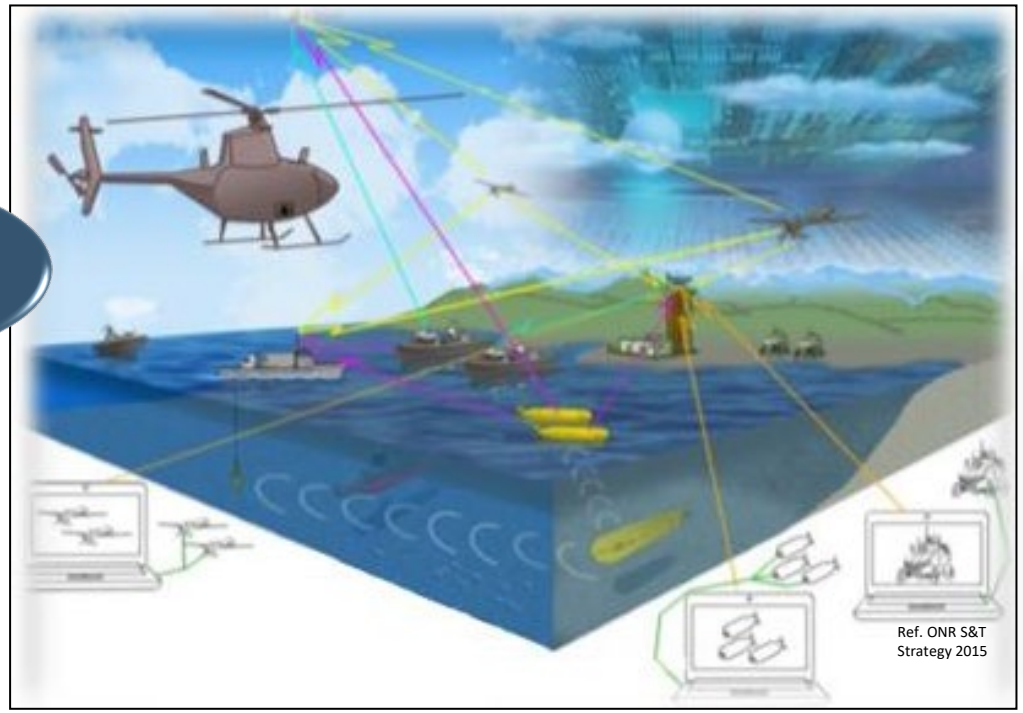



Full-Spectrum T&E Capabilities for Technology Evaluation, Systems Acquisition & In-Service Performance Assessment

Core Mission Area – Undersea Test, Performance Assessment and Analysis





Potential Game Changers/ Disruptive Technologies

- Networked adaptive autonomous vehicles
- Supercavitating and stealth vehicle T&E
- Clandestine system testing
- Wideband acoustic system use
- Large area and long duration missions T&E Systems
- ISR stimulation (threat representative)
- Stealth communications
- Improved mission planning
- Live virtual constructive events
- High-performance cloud computing
- Big data analytics
- Machine learning and autonomy
- Persistent sensor networks

Today's Navy

- Scripted tests
- Short duration events
- Acoustic sensors
- Post-event analysis
- Localized stimulation
- Limited threat emulation

Next Navy (+5-10 years)

- Incorporation of network and cyber testing capabilities to enable live, virtual and constructive events
- Integrating underwater communications technology to enable frequency agile monitoring and measurement capabilities
- Improved planning and assessment capability for near real-time feedback to fleet and developers
- Improved emulator systems (agile threat representative)
- Long-term test scenarios including periodic communication, evaluation, and re-tasking

Navy After Next (+20 years)

- Undersea network of distributed autonomous self-deploying and intelligent sensors
- Advanced integrated planning and assessment capability
- Advanced incorporation of simulation/stimulation capabilities for live, virtual and constructive testing
- Agile stimulation systems for threat representation
- Capability to provide assessment and confidence in complicated future systems

depth/speed

Undersea Distributed Test & Range Sustainment

Planned Overhauls

Shipyard overhaul contracts anticipated:

- Yard Torpedo Test Class (YTT). 187', 1200 tons, open ocean capable: Qty 2
- Torpedo Weapons Retriever (TWR). 85', 95 tons, open ocean capable: Qty 2
- Barge (IX-536) 175', 1680 tons, multipurpose barge: Qty 1

Scope of work:

- Dry-docking
- Diesel engine replacement
- Switchboard replacement
- Ship Alterations
- Crane overhaul (hydraulics, wire rope, preservation)
- Hull, tank, and bilge repair/preservation
- Generator replacement
- Hydraulic system overhaul/preservation
- Various corrective maintenance

Maintenance and Services Requirements

Craft Maintenance & Repair

Replacement Parts Support

Engineering System Design

Range Operations

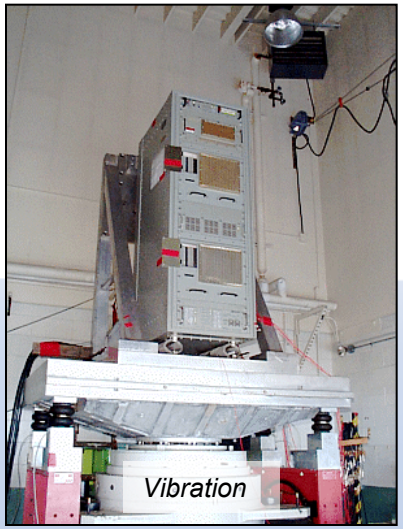
Yard Torpedo Test Class (YTT)

Torpedo Weapons Retriever (TWR)

Barge (IX-536)

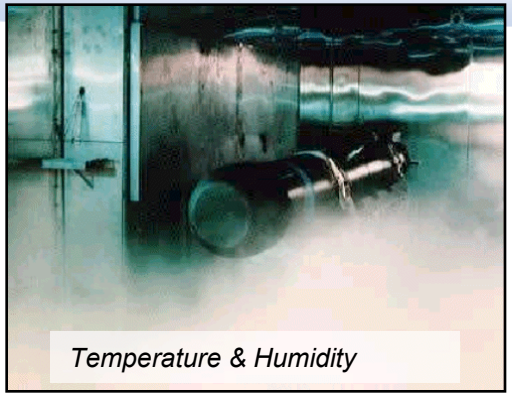
Environmental Testing Capabilities

- **Comprehensive land based testing of hardware performance, reliability, and survivability**
- **Test Set design and manufacture for hardware functional testing before, during, and after environmental stress testing**
- **Explosive, Non-Destructive, and X-ray / Computed Tomography testing**
- **Industry opportunities:**
  - **Fabricating fixtures**
  - **Piping**
  - **Cable fabrication**


Vibration


HALT Chamber


3-Axis Rate Table


Temperature & Humidity

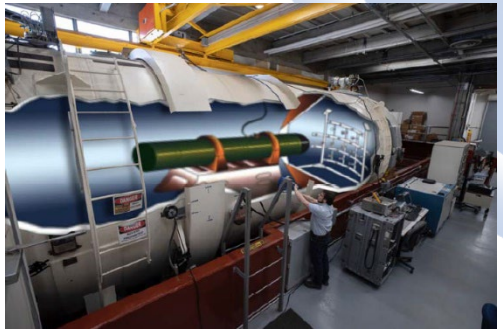

Drop Shock System


Linear Acceleration

Environmental Test Capabilities for Early Design, Production and Reliability Growth Assessment

Acoustic Test Laboratories

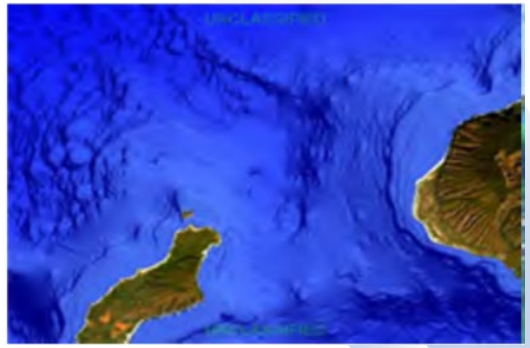
Mission: To provide acoustic test and evaluation for weapons, vehicles and sensors while maintaining a culture of affordability.

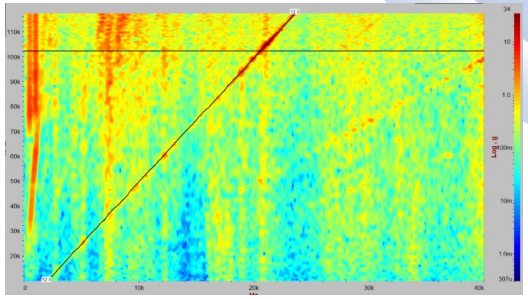


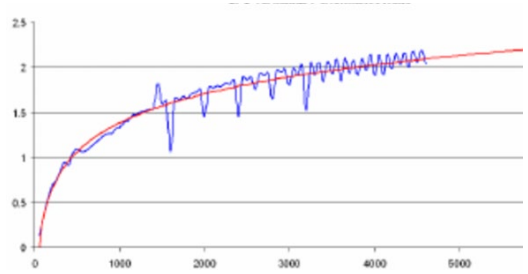
Industry Opportunities:

- Underwater cabling and connectors
- Anechoic materials
- Advanced transducer technology
  - Textured ceramic, single crystal
  - Vector sensor, fiber optic
- Pressure vessel expertise
  - Welding and repairs
  - Fittings
  - Locking ring alignment
- Industrial Instrumentation
  - Motor controllers
  - Pumps and valves
  - Filtering
- Advanced Acoustic Signal processing
  - Reverberant environments, near-field, measurements, AI/ML, HPC

System and Material Assessment





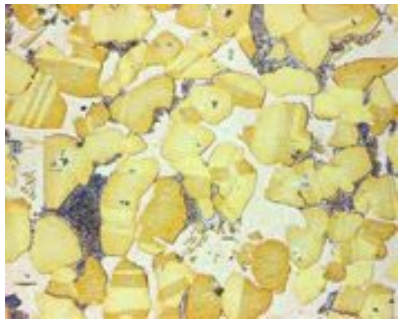


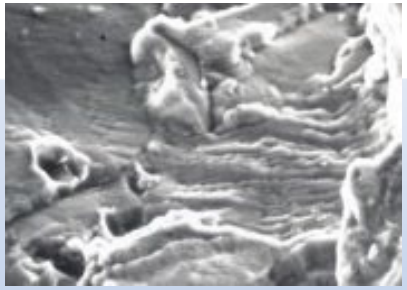
System Assessment

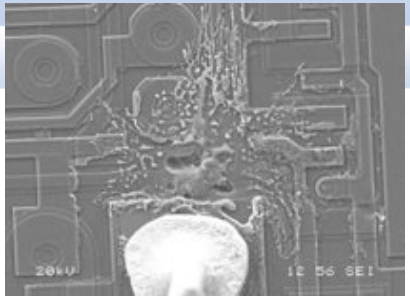
- Analysis of system data associated with in-water test operations
- Assess system performance
  - Multi-system comparisons, historical trend analysis, detailed failure analysis, integration of multiple data sources, etc...
- Reconstruction/replay of in-water test operations
- Development of data analysis tools
- Implementation of data science principles

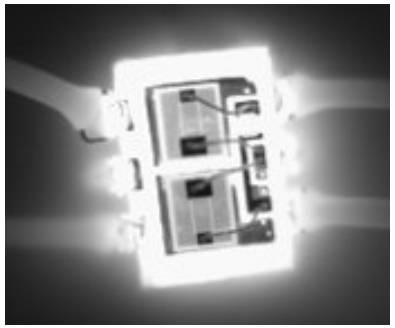
Material Assessment

- Independent scientific root-cause failure analysis, reverse engineering, and materials characterization
- Increase reliability of weapon systems
- Facilitate innovative solutions for the Fleet
- Methods include:
  - Destructive analysis, microprobing, x-ray, digital reconstruction, scanning electronic microscopy, optical microscopy, metallography, electrical characterization, and fracture analysis







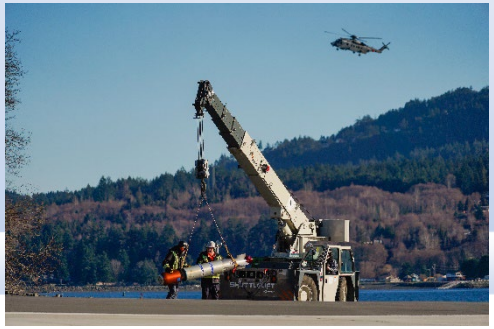


Test Resources Engineering and Planning

Mission: Develop test ecosystem to ensure testing, evaluation, and experimentation utilize modern methods and technology and continuously improve warfighter efficiency and effectiveness.

Future Needs for Undersea Test Range System Development:

- Prototyping of Undersea Range Equipment
- Enhanced sensors and underwater tracking equipment
- Fiber Optics
- Range craft for installation/recovery of range equipment
- Digital Signal Processing
- Secure communications
- Circuit Design & Printed Circuit Board Fabrication



Fleet Warfighting Readiness & Operations

Mission: Empower the Navy Fleet at the "tip of the spear" through comprehensive technical and operational support, integrating advanced capabilities, solving critical challenges, and ensuring systems are validated and optimized through rigorous Test & Evaluation for sustained warfighting dominance.

Future Needs for Fleet Warfighting Readiness & Operations:

- Advanced Materials & Manufacturing
- Rapid Fabrication & Prototyping
- Reconstruction & Analysis
- AI/ML
  - Data Visualization Tools
  - Modeling & Simulation
- Joint Warfighter Communications

System Security & Cybersecurity Engineering

Reverse Engineering

Digital Forensics

Cyber Test & Evaluation

Software Analysis

Cyber Tabletop Support

Autonomy Security

5G Sandbox

Cyber Range, Emulation, and Sandbox Services

Prototype Cyber/EM Test & Evaluation, Experimentation

Open Source Technical Assessments

Risk Management Framework Assessment & Authorization Support

Risk Management Framework Validation

Cross Domain Solutions

SeaPort Task Orders

N00178-19-D-8586 / N0025321F3003
Technical Industrial Support Services (TISS)

- Range operations and systems, CM and drafting, environmental testing, UTRE, MK30 Depot and aircraft component depot (actuator motors) (all technical/no engineering)
- Awarded: 27 September 2021
- Expires: 12 September 2026
- Contractor: Strategic Technologies Inc. (SB Set-Aside)
- Follow on Contract in Early Planning stage

N00178-19D-7814 / N0025322F3003
Hawaii Support Services

- Ford Island, Pearl Harbor Waterfront, MK30/Kauai/Guam, MK48 IMA and Japan
- Awarded: 29 June 2022
- Expires: 28 June 2027
- INDUS Technology, Inc. (SB Set-Aside)
- Follow on Contract in early Planning stage

N00178-19-D-7331 / N0025320F3000
Acoustic Trials and Range Sustainment (ATRS)

- Surface Ship Radiated Noise Measurement (SSRNM), Fleet Sonar Self Noise (FSSN), Prairie-Masker Operability (PMO), range systems development, range data reduction and subject matter expert (SME) support
- Awarded: 01 April 2020
- Expires: 31 Mar 2026
- Celeris Systems, Inc. (SB - Unrestricted)
- Follow On Contract in Planning stage, RFP expected Q4FY25

Code 20 Simplified Acquisition Procedures (SAP) Actions

Annual Simplified Acquisition Procedures (SAP)
Supplies / Services

- **Information Technology Purchases**
  - Software licenses (perpetual) and software support
  - Software licenses (term)
  - Network hardware
- **Laboratory/Shop Tools and Consumables**
- **General Range Craft Vessel Support**
  - Safety equipment / inspections (rafts, buoys, fire prevention, beacons, etc.)
  - Crane and winches maintenance and repair
  - Consumables
- **Range System Maintenance and Repair**
  - Underwater tower manufacturing, preservation and repairs
  - Marine Systems Routine Maintenance and Repairs
  - Diesel Engines
  - Generators
  - Control Systems
  - Remotely Operated Underwater Vehicle Repair

– **Total SAP actions per year ~$1M**

Code 20 Contracts and Entities Leveraged

- Army AMRDEC Prototype Integration Facility (PIF)
- Defense Microelectronics Activity (DMEA) Advanced Technology Support Program (ATSP)
- DLA Troop Logistics Support
- NUWC Newport Undersea Technology Innovation Consortium
- NUWC Newport Undersea Weapons & Undersea Defensive (UW/UD) Family of Systems (FoS) Multiple Award Contract (MAC)
- Puget Sound Naval Shipyard: Range Vessels
- USSF Instrumentation Range Support Program (IRSP)

Additional Slides for table discussions

Code 21: Contracting Outlook

Maintenance & Repair

- Diesel engine repair and rebuild
- AC&R
- Crane hydraulics, luffing cylinder, wire rope
- L-Drive maintenance
- Anchor windlass, capstan hydraulics
- Bilge cleaning; oily waste pumping

Engineering System Design

- Impulse Launcher
- Hydraulic winch
- Underwater acoustic transmitter
- Fiber optic network
- Underwater remotely operated vehicle (ROV)
- Cross-domain solution
- UHF communications
- Surface search radars

Range Operations

- IT/Cyber technicians
- Electronics technicians
- Small craft operators/maintainers
- Able Bodied Seaman (ABS)
- Qualified marine engineer
- Communications technicians

Replacement Parts Support

- OEM parts
- Obsolescent parts
- Limited/scarce vendors
- International sources