

NDIA



2024

UNDERSEA WARFARE

FALL CONFERENCE

Undersea Warfare: Delivering Decisive Combat Power

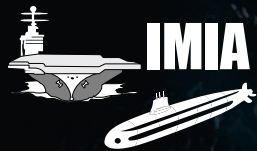
September 16 – 18, 2024 | Groton, CT | [NDIA.org/USW](https://ndia.org/USW)



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The National Defense Industrial Association is the trusted leader in defense and national security associations. As a 501(c)(3) corporate and individual membership association, NDIA engages thoughtful and innovative leaders to exchange ideas, information, and capabilities that lead to the development of the best policies, practices, products, and technologies to ensure the safety and security of our nation. NDIA’s membership embodies the full spectrum of corporate, government, academic, and individual stakeholders who form a vigorous, responsive, and collaborative community in support of defense and national security. For more than 100 years, NDIA and its predecessor organizations have been at the heart of the mission by dedicating their time, expertise, and energy to ensuring our warfighters have the best training, equipment, and support. For more information, visit **NDIA.org**.

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Schedule at a Glance

Monday, September 16

Registration

Mystic Marriott Hotel & Spa | 3:00 – 6:30 pm

Networking Reception

Mystic Marriott Hotel & Spa | 5:00 – 6:30 pm

Tuesday, September 17

Registration

Dealey Center Auditorium | 7:00 am – 5:00 pm

General Session

Dealey Center Auditorium | 8:00 am – 5:00 pm

Networking Clambake Reception

North Lake | 6:00 – 7:00 pm

**A ticket is required for entry that will be distributed at on-site registration.*

Networking Clambake Dinner

North Lake | 7:00 – 9:00 pm

**A ticket is required for entry that will be distributed at on-site registration.*

Wednesday, September 18

Registration

Dealey Center Auditorium | 7:00 am – 5:00 pm

Technical Sessions

Various Base Locations | 8:00 am – 5:00 pm

Welcome to 2024 Undersea Warfare Fall Conference

This fall conference theme, *“Undersea Warfare: Delivering Decisive Combat Power”* focuses on maintaining and maximizing present undersea warfare capabilities and readiness, while designing and fielding the undersea warfare systems of the future. This year’s outstanding group of plenary speakers represents the full spectrum of undersea warfare expertise, include AUKUS partners and USSOCOM.

Your attendance here this week provides you with the opportunity to gain insights into the challenges and capability gaps that the Navy faces across the entire spectrum of the undersea domain. Take advantage of this opportunity to hear our Defense and Navy leader’s views on the issues confronting the Navy-industry-academia team as we navigate an uncertain future with new challenges to sustaining our undersea dominance.

CAPT Eric Irwin, USN (Ret)
Chairman, Undersea Warfare Division Fall Conference
General Dynamics Electric Boat

Get Involved

Learn more about NDIA’s Divisions and how to join one at [NDIA.org/Divisions](https://www.ndia.org/Divisions)



Undersea Warfare Division

Who We Are

NDIA’s Undersea Warfare Division fosters both the exchange of technical information between government and industry and the expansion of research and development in areas related to undersea warfare. To this end, the Division furthers communication by providing a variety of ways for government and industry to work together to solve problems, identify affordable solutions, and meet specific requirements. The Division also supports both government and industry by providing advice on undersea warfare policies and acquisition planning.

Leadership & Committees

Alan Lytle, Ph.D.
Division Chair

Tom Callender
Division Deputy Chair

RADM Jim Shannon, USN (Ret)
Vice Chair

CAPT Eric Irwin, USN (Ret)
Chair, Undersea Warfare Division
Fall Conference

CAPT Rob Dunn, USN (Ret)
Deputy Chair, Undersea Warfare
Division Fall Conference

CAPT Paul Rosbolt, USN (Ret)
Session Chair, Combat Systems,
Warfighter Performance & C4I

Kevin Hagan
Session Chair, Mine Warfare

Chuck Fralick
Session Chair, Undersea Vehicles

Glen Sharpe
Session Chair, Aviation Systems

Joe Cuschieri
Session Chair, Undersea Sensors

Event Information

Location

Conference Venue

U.S. Naval Submarine Base New London
1 Crystal Lake Road, Groton, CT 06340

Headquarter Hotel

Mystic Marriott Hotel & Spa
625 North Road (Route 117), Groton, CT 06340

Survey and Participant List

You will receive via email a survey and list of participants (name and organization) after the conference. Please complete the survey to make our event even more successful in the future.

Event Contact

Sarah Komar

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Erin Peters

Meeting Manager
(703) 247-2586 • epeters@NDIA.org

Security

NOTE-TAKING: Classified note-taking by session attendees is prohibited during the conference. Attendees will only be allowed to bring approved paper materials into the conference sessions for unclassified note taking. Electronics are not permitted. Individual presenters will retain the authority to mandate whether or not unclassified note-taking will be permitted.

PHOTOGRAPHY, VIDEOGRAPHY, AND ELECTRONIC RECORDING: No recording of sessions by any means is permitted.

PROHIBITED ITEMS: The following items are prohibited: wireless microphones (within classified session locations), cellular telephones, smart phones, computers, tablets, Bluetooth or RFID devices, backpacks, briefcases, purses, smart watches, and other personal electronic or data storage devices. These items must be left outside session rooms. Security personnel will ensure prohibited items are not carried into sessions. Signs posted at session entry points will remind personnel of prohibited items.

Speaker Gifts

In lieu of speaker gifts, a donation is being made to the Fisher House Foundation.

Harassment Statement

NDIA is committed to providing a professional environment free from physical, psychological and verbal harassment. NDIA will not tolerate harassment of any kind, including but not limited to harassment based on ethnicity, religion, disability, physical appearance, gender, or sexual orientation. This policy applies to all participants and attendees at NDIA conferences, meetings and events. Harassment includes offensive gestures and verbal comments, deliberate intimidation, stalking, following, inappropriate photography and recording, sustained disruption of talks or other events, inappropriate physical contact, and unwelcome attention. Participants requested to cease harassing behavior are expected to comply immediately, and failure will serve as grounds for revoking access to the NDIA event.

Event Code of Conduct

NDIA's Event Code of Conduct applies to all National Defense Industrial Association (NDIA), National Training & Simulation Association (NTSA), and Women In Defense (WID) meeting-related events, whether in person at public or private facilities, online, or during virtual events. NDIA, NTSA, and WID are committed to providing a productive and welcoming environment for all participants. All participants are expected to abide by this code as well as NDIA's ethical principles and practices. Visit [NDIA.org/CodeOfConduct](https://www.ndia.org/CodeOfConduct) to review the full policy.

Anti-trust Statement

The NDIA has a policy of strict compliance with federal and state antitrust laws. The antitrust laws prohibit competitors from engaging in actions that could result in an unreasonable restraint of trade. Consequently, NDIA members must avoid discussing certain topics when they are together at formal association membership, board, committee, and other meetings and in informal contacts with other industry members: prices, fees, rates, profit margins, or other terms or conditions of sale (including allowances, credit terms, and warranties); allocation of markets or customers or division of territories; or refusals to deal with or boycotts of suppliers, customers or other third parties, or topics that may lead participants not to deal with a particular supplier, customer or third party.

Speaking Sites

PLENARY SESSIONS

1. Dealey Center Auditorium
– General parking is not available

TECHNICAL SESSIONS

1. Dealey Center Theater: AUKUS Session
2. Building 83, Room 317: Undersea Vehicles 1
2. Building 83, Room 318: Aviation Systems
2. Building 83, Room 319: C4I
3. Bledsoe Hall: Undersea Vehicles 2
7. Building 84, Chaplin Center, Room 104: Undersea Sensors
7. Building 84, Room 106: Mine Warfare

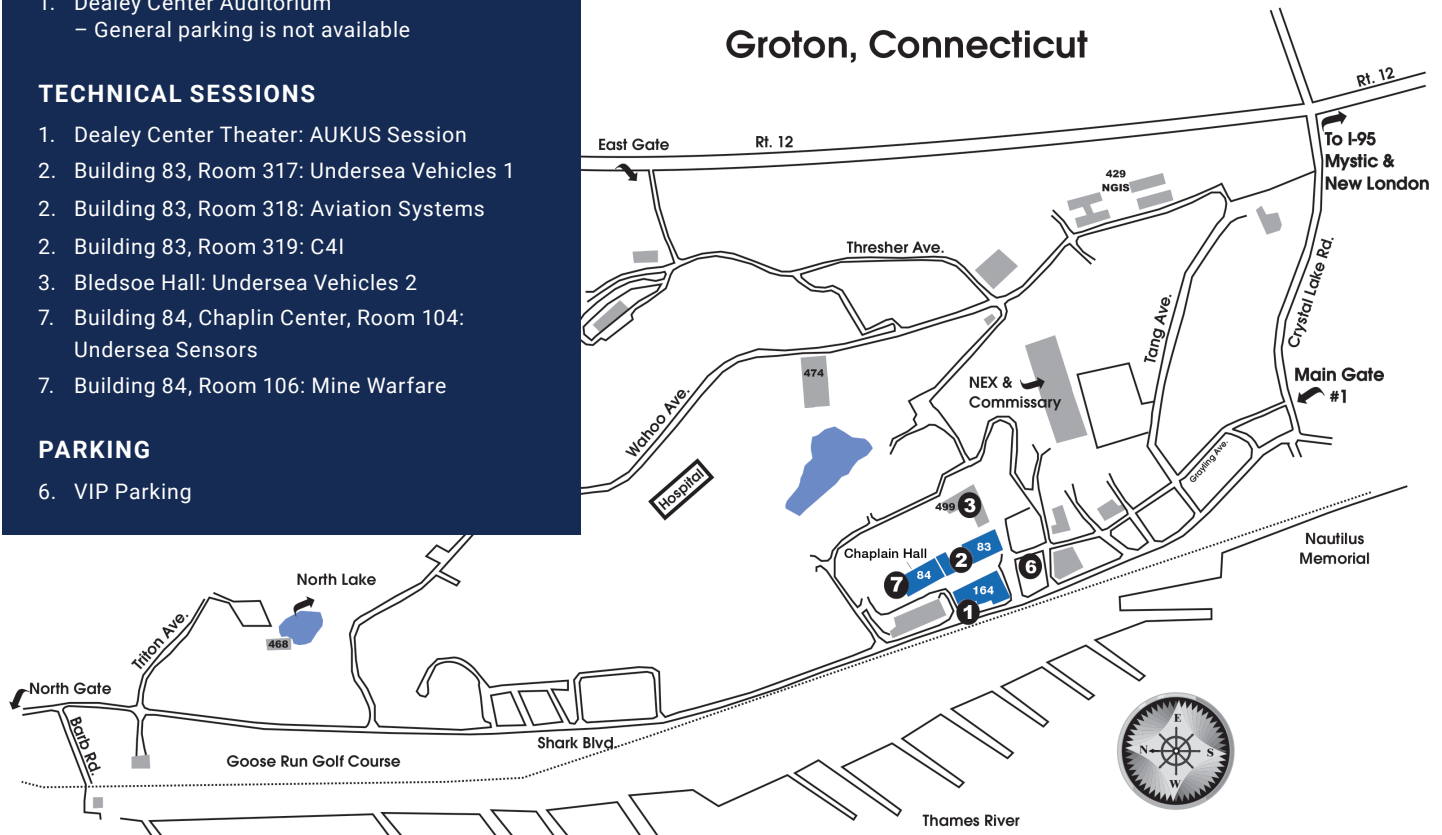
PARKING

6. VIP Parking

Naval Submarine Base

New London

Groton, Connecticut



Bus Schedule

Due to heightened security measures, it is in your best interest to take the shuttle buses provided. The use of POV is strongly discouraged and may result in entry delays and the risk of not being allowed access.

Tuesday, September 17

6:30 – 9:00 am

Buses will shuttle (as filled) from the hotels (Mystic Marriott, Hilton Garden Inn, and Hampton Inn) to the Dealey Center Auditorium.

10:00 am – 4:00 pm

Bus departs the Dealey Center Auditorium for the hotels (Mystic Marriott, Hilton Garden Inn, and Hampton Inn) every hour.

Bus departs Dealey Center Auditorium at:

10 am | 11 am | 12 pm | 1 pm | 2 pm | 3 pm | 4 pm

4:45 – 5:45 pm

Buses will shuttle in a loop from the Dealey Center Auditorium to the hotels (Mystic Marriott, Hilton Garden Inn, and Hampton Inn).

5:45 – 7:00 pm

Buses will shuttle in a loop from the hotels (Mystic Marriott, Hilton Garden Inn, and Hampton Inn) to the Clambake.

8:00 – 9:30 pm

Buses will shuttle from the Clambake to the hotels (Mystic Marriott, Hilton Garden Inn, and Hampton Inn). Drop-offs only.

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Wednesday, September 18

6:30 – 9:00 am

Buses will shuttle from the hotels (Mystic Marriott, Hilton Garden Inn, and Hampton Inn) to the Dealey Center Auditorium.

10:00 am – 4:00 pm

Bus departs the Dealey Center Auditorium to the hotels (Mystic Marriott, Hilton Garden Inn, and Hampton Inn) every hour.

Bus departs Dealey Center Auditorium at:

10 am | 11 am | 12 pm | 1 pm | 2 pm | 3 pm | 4 pm

5:00 – 6:30 pm

Buses will shuttle from the Dealey Center Auditorium to the hotels (Mystic Marriott, Hilton Garden Inn, and Hampton Inn). Drop-offs only.

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Agenda

Monday, September 16

3:00 – 6:30 pm

Registration

MYSTIC MARRIOTT HOTEL & SPA

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GENERAL DYNAMICS
Mission Systems

5:00 – 6:30 pm

Networking Reception

MYSTIC MARRIOTT HOTEL & SPA

Tuesday, September 17

7:00 am – 5:00 pm

Registration

DEALEY CENTER AUDITORIUM

SPONSORED BY

GENERAL DYNAMICS
Mission Systems

7:00 – 8:00 am

Networking Breakfast

OUTSIDE PLAZA

SPONSORED BY



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8:00 – 8:15 am

Call to Order & Introduction

DEALEY CENTER AUDITORIUM

Alan Lytle, Ph.D.

Chairman, Undersea Warfare Division, NDIA
Vice President, Northrop Grumman Mission Systems

CAPT Eric Irwin, USN (Ret)

Chairman, Undersea Warfare Division Fall Conference
Warfare Analysis Program Lead, General Dynamics Electric Boat

Jennifer Stewart

Executive Vice President, Strategy & Policy, NDIA

8:15 – 8:45 am

Presentation

DEALEY CENTER AUDITORIUM

ADM William Houston, USN

Director, Naval Nuclear Propulsion Program, Department of the Navy/Department of Energy



8:45 – 9:30 am

Presentation

DEALEY CENTER AUDITORIUM

VADM Robert "Rob" Gaucher, USN

Commander, Naval Submarine Forces; Commander, Submarine Force, U.S. Atlantic Fleet;
Commander, Allied Submarine Command

9:30 – 10:00 am	<p>Presentation DEALEY CENTER AUDITORIUM</p> <p>LtGen Francis Donovan, USMC Vice Commander, USSOCOM</p>	<p>SPONSORED BY </p>
10:00 – 10:30 am	<p>Networking Break OUTSIDE PLAZA</p>	
10:30 – 11:00 am	<p>Presentation DEALEY CENTER AUDITORIUM</p> <p>RDML Douglas Adams, USN Program Executive Officer, Undersea Warfare Systems</p>	
11:00 – 11:30 am	<p>Presentation DEALEY CENTER AUDITORIUM</p> <p>RDML Jonathon Rucker, USN Program Executive Officer, Attack Submarines</p>	
11:30 am – 12:00 pm	<p>Presentation DEALEY CENTER AUDITORIUM</p> <p>Dr. Matthew Sermon, SES Executive Director, Program Executive Office, Strategic Submarines</p>	
12:00 – 12:15 pm	<p>Awards Ceremony DEALEY CENTER AUDITORIUM</p> <p>Pierre Corriveau, Ph.D. Awards Chair, Undersea Warfare Division, NDIA</p>	
12:15 – 1:15 pm	<p>Networking Lunch BASE GYMNASIUM</p>	<p>SPONSORED BY </p>
1:15 – 1:45 pm	<p>Presentation DEALEY CENTER AUDITORIUM</p> <p>Marie Bussiere, SES Technical Director, Naval Undersea Warfare Center (NUWC) Division Newport</p>	
1:45 – 2:15 pm	<p>Presentation DEALEY CENTER AUDITORIUM</p> <p>Dr. Tom Drake, SES Department Head of Code 32, Ocean Battlespace Sensing, Office of Naval Research</p>	

2:15 – 2:45 pm

Presentation

DEALEY CENTER AUDITORIUM

Andrew Richardson, DISES

Deputy Director of Defense Intelligence, Operational Support & International Partnerships, USD (I&S)

2:45 – 3:15 pm

Networking Break

OUTSIDE PLAZA

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3:15 – 4:15 pm

AUKUS PANEL

DEALEY CENTER AUDITORIUM

Alan Lytle, Ph.D.

Chairman, Undersea Warfare Division, NDIA
Vice President, Northrop Grumman Mission Systems
Moderator

Jose “Mario” Miranda, SES

Director, Technology Security and Technology Programs Directorate, Navy International Programs Office (NIPO)

CDRE Michael Jacobson, CSM, RAN

Director General Submarines, Royal Australian Navy

CDRE Marcus Rose, RN

Deputy Director of Underwater Battlespace, British Royal Navy

VADM Blake Converse, USN

Deputy Commander, U.S. Pacific Fleet

4:15 – 4:45 pm

Presentation

DEALEY CENTER AUDITORIUM

RADM Mark Behning, USN

Director, Undersea Warfare Division, Office of the Chief of Naval Operations, N97

4:45 – 5:00 pm

Closing Comments

DEALEY CENTER AUDITORIUM

CAPT Eric Irwin, USN (Ret)

Chairman, Undersea Warfare Division Fall Conference
Warfare Analysis Program Lead, General Dynamics Electric Boat

6:00 – 7:00 pm

Networking Reception

NORTH LAKE

Ticket Required

7:00 – 9:00 pm

Networking Clambake Dinner

NORTH LAKE

Ticket Required

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Technical Sessions

Wednesday, September 18

7:00 am	Registration DEALEY CENTER AUDITORIUM		
7:00 am	Networking Breakfast DEALEY CENTER OUTSIDE PLAZA		
	Aviation & Combat Systems Glen Sharpe Session Chair	C4I Dr. Robert Zarnich Session Chair	AUKUS Session Eric Irwin Session Chair
	Building 83 Room 318	Building 83 Room 319	Dealey Theater
8:00 am	Air ASW Overview Shawn Slade USN Katie Bartz PMA-264		1871311 Undersea Communications & Integration Program Office, PMW 770 Jon Wrinn PMW770 Michael Hutter PMW 770
8:30 am	Air ASW Overview Continued Shawn Slade USN Katie Bartz PMA-264		1856473 IWS 5.0 Program Status & Plans Leroy Mitchell IWS 5.0
9:00 am	Virtual Ocean Acoustic Simulation & Stimulation Sara Groth Advanced Acoustic Concepts, LLC		Russian Seabed Warfare Capabilities ONI

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Undersea Sensors Joe Cuschieri Session Chair	Undersea Vehicles 1 Chuck Fralick Session Chair	Undersea Vehicles 2 Brian McKeon Session Chair	Mine Warfare Kevin Hagan Session Chair
Building 84 Room 104	Building 83 Room 317	Bledsoe Hall	Building 84 Room 106
1857008 A New Sensing System For The Arctic D. Benjamin Reeder Naval Postgraduate School John Joseph Naval Postgraduate School	1843235 UUV/ROV Payload Needs for SSW Applications Walter Smith Advanced Undersea Systems (PMS394) Zachary Seither Advanced Undersea Systems (PMS394)	1866673 DARPA's Ultra-Reliable Unmanned Surface Vessel: Defiant Gregory Avicola DARPA / TEC Solutions	Development of New Underwater Explosives & Warheads Daniela Wagus NSWC Indian Head
1854914 PMS 485 Deployable Surveillance Systems Update Susan LaShomb PEOUWS PMS485E Aaron Bengston NUWCKPT Detachment San Diego	1880019 Manta Ray & Goblin Program Updates Kevin Sloan DARPA	1853645 Does Swarming Make Sense for Underwater Combat Power? Peter Drewes SAIC	1872444 NSWC Panama City Division Mine Warfare Training Shape Support Options Brian Brock NSWC Panama City
PMS 485's Mobile Surveillance Systems Future Capabilities Donald Ringel NAVSEA PEO UWS PMS 485 Rabon Cooke NAVSEA PMS 485	1880019 Manta Ray & Goblin Program Updates Continued Kevin Sloan DARPA	1875655 Engaging the Commercial Industry To Shape Autonomy For Security Needs Matthew Chapman Oceaneering	1874435 Single Sortie Detect to Engage Jeff Williams Ocean Aero

9:30 am	<p>1834471</p> <p>Explainable Readiness Predictions With The Digital Aviation Readiness Technology Engine</p> <p>Jamal Rorie Naval Information Warfare Center Pacific</p>		<p>China Seabed Warfare Capabilities</p> <p>ONI</p>
10:00 am	<p>Networking Break DEALEY CENTER OUTSIDE PLAZA</p>		
10:30 am	<p>1864934</p> <p>ASW Using Non-Traditional ASW Air Platforms</p> <p>Rob Kunz RDA, Inc.</p> <p>Ron Hidde RDA, Inc.</p>	<p>1878019</p> <p>Submarine Deployed Optical Water Column Characterization to Enhance Environmental Awareness</p> <p>David Shane Boston Engineering</p>	<p>1854512</p> <p>SSN AUKUS Combat System – The Path to A Trilateral, More Agile Future</p> <p>CAPT Kevin Moller, USN U.S. AUKUS A&I Office</p> <p>Pascal Gagnon Australian Submarine Agency (ASA)</p>
11:00 am	<p>1848141</p> <p>Digital Electronics Systems Engineering (DESE) Return on Investment (ROI) Calculation Methods for Major DoD Platforms</p> <p>James Chew Cadence Design Systems</p>	<p>1869053</p> <p>The Electronic Guard Book (E-Guard): A Tool for Expediting Submarine Escape Time Calculations</p> <p>Jeffrey Bolkhovsky Naval Submarine Medical Research Laboratory</p>	<p>1853768</p> <p>Combat Systems Improvements to ASW Systems for Surface and Submarine Platforms</p> <p>Rich Arnold PEO IWS 5A</p>
11:30 am	<p>1867443</p> <p>Jargon Aware Artificial Intelligence for Anti-Submarine Warfare Training</p> <p>Thomas Murray Signal Systems Corporation</p>	<p>1870209</p> <p>C2 Considerations for Theater Mine Warfare Sustainment Using Low-Profile Vessels (LPVs)</p> <p>Don Brutzman</p>	<p>Chinese & Russian Submarine Platforms Update</p> <p>ONI</p>
12:00 pm	<p>Networking Lunch BASE GYMNASIUM</p>		

<p>1858426</p> <p>DARPA Banyan Program</p> <p>Katherine Woolfe DARPA</p> <p>David Pfundstein DARPA</p>	<p>Current Challenges With Increasing the MK 48 MOD 7 Heavyweight Torpedo Inventory</p> <p>CAPT Chris Polk, USN PMS 404</p>	<p>1861764</p> <p>Environmentally Aware Intelligent Navigation for Unmanned Underwater Vehicles</p> <p>Nathaniel Mack Penn State Applied Research Laboratory</p>	<p>Mining & Mine Countermeasures Acquisition Portfolio Update</p> <p>Robert Dellsy Mine Warfare Program Office (PMS 495)</p>
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<p>1851007</p> <p>Submarine Sensor System Development</p> <p>Rich Arnold PEO IWS 5A</p>	<p>1877605</p> <p>The Slocum Sentinel Glider – Expanded Capabilities for Enhanced Missions</p> <p>Thomas Altshuler Teled</p>	<p>1875698</p> <p>Harbor & Critical Infrastructure Protection is a Growing Concern Adversaries Ability to Apply Subsea Effects Will Grow</p> <p>Matthew Chapman Oceaneering</p>	<p>1867897</p> <p>Underwater & Seabed EOD</p> <p>Amanda Bobe ONR32</p>
<p>1856518</p> <p>ONR Anti-Submarine Warfare S&T Overview</p> <p>Michael Vaccaro Office of Naval Research</p> <p>Tracey Fischer Office of Naval Research</p>	<p>1864937</p> <p>Increasing Submarine Capability with Minimal Increases in Submarine Size</p> <p>Michael MacTaggart Huntington Ingalls Industries Newport News Shipbuilding</p>	<p>1857111</p> <p>Power Over Fiber</p> <p>Adam Card Northrop Grumman</p>	<p>1872625</p> <p>Mining Improvements to Increase Operational Agility</p> <p>Andrew Blair NSWC PCD</p>
<p>1858473</p> <p>ONR Code 32 ASW S&T Future Roadmap</p> <p>Tracey Fischer Office of Naval Research</p> <p>Michael Vaccaro Office of Naval Research</p>	<p>1854223</p> <p>Programming by Demonstration for Dual Arm Manipulation</p> <p>Kelly Sprehn Draper</p>	<p>1840135</p> <p>Insights into Autopilot Design for Undersea Vehicles Using Nonlinear Control Theory</p> <p>Daniel Kustaborder The Applied Research Laboratory</p>	<p>1848125</p> <p>As Synthetic Aperture Sonar in MCM Operations Becomes Tactically Common Then Contact Management Becomes A Challenge Given The Level of Detail Allows Detecting Virtually Every Object On The Sea Floor</p> <p>Terry Miller AAC</p>

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1:00 pm	<p>COCO UW ISR CAPT Jon Haase, USN Navy Expeditionary Mission Program Office (PMS 408)</p>	<p>1856019 400 Ft At-Sea Antenna for Expanded Communications Gregory Niehaus RDA, Inc.</p>	<p>Russian SSN / SSGN Ops & Tactics (Sonobuoy Evasion Emphasis) ONI</p>
1:30 pm	<p>AI Driven Multi-Agent Mission Planning & Autonomy CAPT Jon Haase, USN Navy Expeditionary Mission Program Office (PMS 408)</p>	<p>1832207 Enhancing Machine Learning Model Cross- Device Applicability to Capture Encryption Keys from Power Expenditure Ian Garrett Virginia Tech</p>	<p>Russian SSN / SSGN Ops & Tactics (Sonobuoy Evasion Emphasis) Continued ONI</p>
2:00 pm	<p>1827177 Data Distribution Service (DDS) Use in Undersea Autonomous Vehicles and Combat Systems John Patchin RTI Paul Pazandak RTI</p>	<p>1854226 Long Range Acoustic Communications Jeffery Hoyle Elbit America</p>	<p>1861329 PMS 406 Updated on UUV Programs and Enabling Capabilities CAPT Matt Lewis, USN PEO Unmanned and Small Combatants, Navy Unmanned Maritime Systems (PMS 406)</p>
2:30 pm	<p>1842206 Busting the Myths of Applying State of the Practice Digital Electronic Systems Engineering To the Navy's Undersea Warfare Enterprise James Chew Cadence Design Systems</p>	<p>1840036 Scalable Event-Triggered Data Fusion for Acoustic Communications Gregory Sinsley Penn State Applied Research Laboratory</p>	<p>1874938 Universal Launch & Recovery of UUVs Eric Hendricks NIWC Pacific Jason Bench NIWC Pacific</p>
3:00 pm	<p>Networking Break DEALEY CENTER OUTSIDE PLAZA</p>		

<p>1848145</p> <p>Operational Hold Time Performance Against High-End Peer Submarines during Out of Area Deployments</p> <p>Jeffrey Cares Alidade Incorporated</p>	<p>1861186</p> <p>Advancing the Undersea Fight with Lethal Uncrewed Undersea Vehicles (Update on Extra Large Uncrewed Undersea Vehicle Capability & CONOPS)</p> <p>Brian Quarles The Boeing Company, Maritime and Intelligence Systems</p> <p>Brian Grubel The Boeing Company, Maritime and Intelligence Systems</p>	<p>1864193</p> <p>Insight: A Foundation for Undersea Vehicle Introspective Health Management (IHM)</p> <p>Mark Shanks Metron, Inc.</p> <p>Micah Eassa Metron, Inc.</p>	<p>Mine Countermeasure Mission Module Program Update</p> <p>Ed Sujecki LCS Mission Modules Program Office (PMS 420)</p>
<p>1861824</p> <p>Inertial Navigation System Inspection and Detection of Evolving Roles (INSIDER)</p> <p>Jamie Winterton Boston Fusion Corporation</p> <p>Julia Mertens Boston Fusion Corporation</p>	<p>1876800</p> <p>TALON: Torpedo Tube Launch ROV</p> <p>John Pfeifler Lockheed Martin</p> <p>Matt DeLuca Lockheed Martin</p>	<p>1854067</p> <p>Project Mazu – Applications of Subsea Pulsed Power</p> <p>Nate Gonzales General Dynamics Mission Systems</p>	<p>1861223</p> <p>Impact of a “Combined Arms” Approach to Enabling the Submarine Force’s Operational Tasking</p> <p>Jim Clancy JHU/APL</p>
<p>1861244</p> <p>Advanced Submarine Sensor Surface Warfare Utility</p> <p>Jonathan Sass Johns Hopkins University Applied Physics Laboratory</p>			<p>1847351</p> <p>Counter UUV Effectors</p> <p>Matthew Searle Oceanetics, LLC</p>
<p>1861881</p> <p>Non-Acoustic Detection of Unmanned Underwater Vehicles</p> <p>Seth Meiselman U.S. Naval Research Laboratory</p> <p>Geoffrey Cranch U.S. Naval Research Laboratory</p>			<p>1877016</p> <p>Review of NPS Research Projects in Mine & Undersea Warfare</p> <p>Rick Williams Naval Postgraduate School</p>

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3:30 pm	<p>1831947</p> <p>Exploring Knowledge Retrieval Techniques in SWFTS Using Open Domain Large Language Models</p> <p>William Matuszak SeaCorp</p> <p>Matthew Corser NUWC</p>	<p>1863226</p> <p>Challenges and Opportunities for Enabling Submarine Operations in the Arctic</p> <p>Michael Brawner General Dynamics Electric Boat</p> <p>Joshua Malero General Dynamics Electric Boat</p>	<p>1880042</p> <p>PMS415 Updates</p> <p>CAPT Gene Severtson, USN</p>
4:00 pm	<p>1874802</p> <p>Future Naval Power Systems Considerations for Combat Weapon Systems</p> <p>Elvis Crespo Booz Allen Hamilton</p>	<p>1862350</p> <p>Collaboration for Undersea Decision Advantage (CUDA)</p> <p>Todd Cloutier Monterey Technologies, Inc.</p>	<p>Russia / China Torpedo / Counter Developments</p> <p>ONI</p>
4:30 pm	<p>1847432</p> <p>Hybrid Drone: The World's Only Multi-Domain (Marine, Ground, Air) Autonomous Vehicle</p> <p>Scott Kempshall HyALTA Aeronautics, Inc.</p>	<p>1875725</p> <p>Oceaneering's Onshore Remote Operation Centers</p> <p>Matthew Chapman Oceaneering</p>	<p>Russia / China UxV (Platforms + Ops)</p> <p>ONI</p>
5:00 pm	Conference Adjourns		

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Northrop Grumman is a leading global aerospace and defense technology company. Our pioneering solutions equip our customers with the capabilities they need to connect and protect the world, and ensure strategic dominance from seabed to space. From cutting-edge sensors and mine hunting systems to autonomous vehicles and next-generation ship capabilities, we are improving mission capability in the undersea domain. Driven by a shared purpose to solve our customers' toughest problems, our employees define possible every day.

<p>1863789</p> <p>Automated Machine Learning Neural Network Model Architecture Search Framework for Underwater Acoustic Signal Detection & Identification</p> <p>Ira Morgan Applied Research Laboratories University of Texas at Austin</p>			<p>1852424</p> <p>KnowGeo: Underwater Acoustic Sensor Network</p> <p>Colin Funai Raytheon BBN Technologies</p>
<p>1856462</p> <p>Automated Detection of Novel Targets In Synthetic Aperture Sonar Imagery Using Training Data Generated by Simulation</p> <p>Joshua Humberston Sandia National Laboratories</p>	<p>1875667</p> <p>Engaging the Seabed and Performing Careful Identification and Access To Critical Areas of Concern</p> <p>John Zimmerman Oceaneering</p>	<p>1853375</p> <p>ROMULUS: Remote Operational Monitoring Unit Leveraging UUV Simulation</p> <p>Thomas Stubbs Integer Technologies, LLC</p> <p>Josh Knight Integer Technologies, LLC</p>	<p>Navy Expeditionary Mine Countermeasures Program Update</p> <p>CAPT Jon Haase, USN Navy Expeditionary Mission Program Office (PMS 408)</p>
<p>1875843</p> <p>Transparent Oceans Using Coordinated Autonomous Network Sensors</p> <p>Andrew March MIT LL</p> <p>Nicholas Beard MIT LL</p>	<p>1854227</p> <p>At-Sea Testing of a Blended Wing Glider</p> <p>Scott Mahar General Atomics</p>	<p>1854187</p> <p>Submarine High Energy Laser Weapon System</p> <p>Stuart Shoppell Naval Surface Warfare Center Dahlgren Division</p>	<p>Airborne Laser Mine Detection System and Airborne Mine Neutralization System Fleet Operations</p> <p>LCDR Rob "OG" Swain, USN Helicopter Sea Combat Squadron 21</p> <p>LT Charles "Handyman" Thomas, USN Helicopter Sea Combat Squadron 21</p>

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Teledyne Technologies, Incorporated is a leading provider of sophisticated digital imaging products, instrumentation, aerospace and defense electronics, and engineered systems. Over the past two decades, Teledyne has acquired a group of leading-edge marine technology companies, referred to as Teledyne Marine. This group of companies has evolved into a Maritime industry powerhouse with a portfolio consisting of Unmanned Underwater Vehicles, Acoustic Imaging Systems, Subsea Instruments, Interconnect and Seismic Survey technology which provides solutions to the defense, commercial and science markets. Its technologies are key enablers for a broad array of the Navy's systems and support missions, including IPoE, SSW, and ASW.



Barber-Nichols (BN) is a distinguished small business specializing in the design, prototyping, and production of advanced turbomachinery and controls, including high-speed turbines, pumps, compressors, and power electronics. With nearly six decades of support for the US Navy, BN has been pivotal in developing advanced torpedo propulsion systems as well as building and maintaining torpedo ejection pumps. We proudly provide mission-critical turbomachinery for various undersea weapons programs and the SSN and SSBN submarine fleets. At Barber-Nichols, our mission is to safeguard freedom through innovative turbomachinery solutions, serving the defense and aerospace industries.



Marotta Controls' technologies and systems have been relied on by the US Navy and naval platforms around the world for over 60 years. Our ability to design, develop, qualify, test and manufacture all on-site has led us to become a leading control systems solutions provider. Core competencies include pressure, power, motion, fluid and electronic control systems for mission-critical applications on surface ships, submarines and deep submergence vessels. Our submarine systems meet the stringent naval requirements and key MIL standards for shock, vibration, low acoustics and seawater corrosion. Technologies include thermal management systems, power conversion, complex manifold assemblies and control actuation systems.



SAIC® is a premier Fortune 500® technology integrator focused on advancing the power of technology and innovation to serve and protect our world. Headquartered in Reston, Virginia, SAIC has approximately 24,000 employees and annual revenues of about \$7.4 billion. Through expansive digital capabilities, SAIC® is recognized within the undersea domain for advancing heavyweight torpedo production, modernizing torpedo test equipment, and software refactoring and containerization. Our employees supporting Undersea Dominance, based in Middletown, Rhode Island and other Fleet concentration areas, are committed to introducing innovative and emerging technology into mission critical operations.



Peraton drives missions of consequence spanning the globe and extending to the farthest reaches of the galaxy. As the world's leading mission capability integrator and transformative enterprise IT provider, we deliver trusted and highly differentiated national security solutions and technologies that keep people safe and secure. Peraton serves as a valued partner to essential government agencies across the intelligence, space, cyber, defense, civilian, health, and state and local markets. Every day, our employees do the can't be done, solving the most daunting challenges facing our customers.

SAVE THE DATE

2025

**UNDERSEA
WARFARE
SPRING
CONFERENCE**



March 17 – 19
San Diego, CA

Track Information



Aviation Systems

Glen Sharpe

Advanced Acoustic Concepts

The Aviation Committee focuses on the technologies and capabilities that the airborne undersea warfighting community provides. This committee is interested in a wide range of "aviation platforms," manned and unmanned fixed wing and rotary winged. The committee is interested in articulating the contributions and potential of these weapons systems. Desired technical subjects cover the broad areas of signal processing, human factors, training, undersea capable weapons, sensors, man-machine interface, artificial intelligence (AI) littoral and large area search concepts. The presentations cover a large range, including theoretical discussions by academic institutions and laboratories, reports and roadmaps on experimental systems and systems being developed for Fleet introduction, and discussions of Navy programs of record.



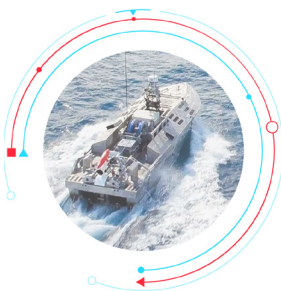
C4I

CAPT Paul Rosbolt (Ret)

Systems Planning
& Analysis, Inc.

The C4I & Combat Systems Technical Committee focuses on Communications, Information Exchange, Data Fusion, and Command and Control enablers for the ASW Kill Chain F2T2EA (Find, Fix, Track,

Target, Engage, and Assess). Committee presentations are given by academia, government and industry and cover a broad range of topics from theoretical discussions to updates on technology, programs of record and test results.



Mine Warfare

Kevin Hagan

Peraton, Inc.

The Mine Warfare (MIW) session provides the opportunity for industry, government, and academia to exchange information and express their views in addressing technical,

programmatically, and operational issues and activities in the MIW community. The Committee addresses threats, programs, operations, CONOPS, and future technologies across the MIW spectrum of mine hunting, mine sweeping, neutralization, command and control, mining, and other areas of interest.

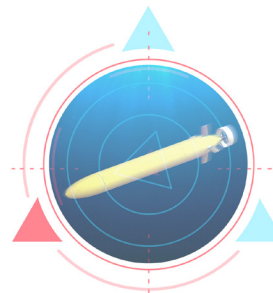


Undersea Sensors

Joe Cuschieri

Lockheed Martin Corporation

The focus of the Undersea Sensors session is to provide guidance to the U.S. Navy about the application of cutting edge technology. Abstracts submitted to this section relate to the following: underwater acoustic transduction and acoustic sensor arrays, electro-optic sensors, magnetic sensors, electrostatic sensors, chemical sensors, gravity sensors, signal processing, test and evaluation, operational use/sea test results, and theoretical studies. This list is not exhaustive but representative of several disciplines and associated sciences.



Undersea Vehicles

Chuck Fralick

Leidos

The Undersea Vehicles session focuses on both large and small hull undersea vehicles (both manned and unmanned) and unmanned surface vehicles. Technical subjects cover the broad areas of weapons, unmanned vehicles, defensive systems and hull, and mechanical and electrical systems. The technical presentations range from theoretical discussions by academic institutions and laboratories and reports on experimental systems and systems being developed for Fleet introduction to discussions of Navy programs of record.



Warfighter Performance & Combat Systems

CAPT Paul Rosbolt, USN (Ret)

Systems Planning
and Analysis, Inc.

This special session on Warfighter Performance & Combat Systems is intended to address evolving operational needs and solutions in the area of USW warfighter performance that employs a combination of components such as technology, HSI, Serious Games, Virtual Worlds, and other emerging concepts. Presentations in this session will address approaches that effectively combine cross discipline techniques and methodologies to provide real capability to the Warfighter across all USW Warfare Domains/Enterprises (i.e., Submarine, Surface, Air, and MIW Enterprises).

Human Systems Integration (HSI) – Improving data visualization techniques and enhancing intuitive decision making; improving the reliability of critical information Operator Capability

Training – Establishing linkages between theory, experiments, and training system design; integrating M&S to increase realism as well as cost efficiency of onboard submarine training capability

Health and Wellness – Reducing or countering the negative effects of fatigue, stress, illness, etc.; improving on-board environment with respect to atmosphere, nutrition, exercise, noise exposure, and so on.

Abstract Descriptions

Aviation Systems

1834471 – Explainable Readiness Predictions With The Digital Aviation Readiness Technology Engine

Jamal Rorie

The Digital Aviation Readiness Technology Engine (DARTE) is a suite of machine learning (ML) and statistical models used to predict readiness metrics for various platforms. These models are then explored with explainable AI to provide actionable insights to subject matter experts and decision makers.

1864934 – ASW Using Non-traditional ASW Air Platforms

Rob Kunz, Ron Hidde

RDA has been tasked by the Office of Naval Research (ONR) to enhance the existing Low Cost Advanced Processor (LCAP) system into the ExCAAP system. ExCAAP is a Roll on/Roll off platform agnostic ASW system capable of being operated by non-ASW trained warfighters. The system can be loaded onto a variety of air platforms but is currently tailored for the MV-22 Osprey operated by the USMC. Operator interfaces have been reduced and simplified for use by non-ASW trained personnel. The long-term roadmap includes integrating AI processing and bell ringers to reduce ASW sensor data for exfiltration to monitoring ground stations.

1848141 – Digital Electronics Systems Engineering (DESE) Return on Investment (ROI) Calculation Methods for Major DoD Platforms

Steve Carlson, James Chew

Digital Electronics Systems Engineering (DESE) coupled with Hardware-Accurate Digital Twins (HADT) is critical for developing, maintaining and upgrading microelectronics-based systems. These tools, when used together, increase program execution efficiency and quality which result in cost savings and a measurable return on investment (ROI). While it may be challenging to arrive at an agreeable ROI calculation method for Department of Defense (DoD) programs for a number of reasons, with some simple assumptions, using a DESE and HADT approach is shown to generate an ROI of 60:1 for a major DoD program as explained in this paper. A brief survey of the landscape is first described, followed by an overview of what is meant by DESE and HADT. The paper then presents several examples of the use of DESE and HADT on major DoD programs and the types of ROI achieved from those methods.

1867443 – Jargon Aware Artificial Intelligence for Anti-Submarine Warfare Training

Thomas Murray

Signal Systems Corporation's (SSC) Jargon AWARE AI (JAWA) is an innovative Artificial Intelligence (AI) assistant for sonar operators that presents classification recommendations and supporting rationale using the same language as subject matter experts. JAWA brings state-of-the-art deep learning performance to bear on wide-area search in a way that automated decisions remain easily explainable.

C4I

1869053 – The Electronic Guard Book (E-Guard): A Tool for Expediting Submarine Escape Time Calculations

Jeffrey Bolkhovsky

The Electronic Guard Book (E-Guard): A tool for Expediting Submarine Escape Time Calculations

1870209 – C2 Considerations for Theater Mine Warfare Sustainment using Low-Profile Vessels (LPVs)

Don Brutzman

This work is informed by public feedback received during two prior preliminary presentations, as noted in the references. Recent completion of the 10-student outbrief plus comparison with an active USMC acquisition program has continued to add significant value to prior presentations.

1856019 – 400 ft At-Sea Antenna for Expanded Communications

Gregory Niehaus

Radio frequency (RF) communications at-sea are primarily limited by the Earth's curvature and further constrained by wave height, which impede line-of-sight (LoS) transmission. RDA developed the Aerial Platform Performance Antenna (APPA) as a solution to increase communication ranges and reliability for undersea sensors and vehicles without relying on Satcoms.

1832207 – Enhancing Machine Learning Model Cross-Device Applicability to Capture Encryption Keys from Power Expenditure

Ian Garrett

Side-channel attacks exploit secondary information, such as power expenditure from cryptographic systems, to gather sensitive data like encryption keys. While machine learning methods have significantly advanced the efficacy of these attacks, they traditionally require extensive, device-specific training data. This requirement limits their applicability across different devices, even of the same model, and demands access to labeled data from the target device, thus presenting a weak threat-model reliant on full attacker knowledge of the target system.

Addressing these limitations, our research introduces a domain adaptation strategy that enhances the usage of machine learning models for cross-device side-channel attacks. We also introduce a reinforcement learning methodology to generate high-entropy datasets, which significantly reduces the necessary training data volume, thereby enhancing the models' applicability across diverse hardware environments. Our method is validated on energy-efficient microcontrollers, demonstrating substantial performance improvements. This presentation will detail the methodology and the potential for broader defense applications."

1854226 – Long Range Acoustic Communications

Jeffery Hoyle

Very Low Frequency (VLF) acoustic sources in compact form can enable undersea and cross domain communications for submarines and unmanned undersea vehicles and equipment without the requirement for platform near surface operations. C-Bass VLF sources are a family of coherent sound projectors with resonance frequencies ranging from 15 Hz to 300 Hz. This presentation will provide technical specifics, testing and tactical employment of C-Bass VLF acoustic communications capabilities to date and demonstrate its applicability and advantages for future undersea warfare mission operations.

1840036 – Scalable Event-Triggered Data Fusion for Acoustic Communications

Gregory Sinsley

This presentation demonstrates an event-triggered data fusion system for distributed tracking and classification onboard unmanned underwater vehicles. The event-triggered scheme only communicates when doing so is likely to have a large influence on tracking or classification performance. This allows vehicles to have the benefit of collaborating with one another while using less bandwidth than traditional methods for communication.

1863226 – Challenges & Opportunities for Enabling Submarine Operations in the Arctic

Michael Brawner, Joshua Malaro

This brief will review the unique challenges of command and control while operating in the Arctic environment and discuss potential technology based solutions that can be explored and prototyped.

The goal is to foster community dialog and technical exchanges concerning increased submarine superiority."

1862350 – Collaboration For Undersea Decision Advantage (CUDA)

Todd Cloutier

Using research and design techniques based on the psychology of Naturalistic Decision Making has led us to develop a more comprehensive approach to supporting submarine crews and their need for collaborative undersea decision advantage. Extending what we have learned from having the Mission Planning Application (MPA) in the fleet since 2014, and adding new research centered that worked backwards from the decision-making requirements of the submarine crews, Monterey Technologies has begun translating these findings into designs for an APB25 Collaborative Undersea Decision Advantage (CUDA) application.

1875725 – Oceaneering's Onshore Remote Operation Centers

Matthew E. Chapman

Remote integrated tactical operations require a remote environment offering compatibility to employ software across the entire system of systems (adaptability), hot-swapping to other locations (redundancy) and an open architecture allowing integration of multiple robots (flexibility – sea, air and land.)

Combat Systems

1827177 – Data Distribution Service (DDS) Use In Undersea Autonomous Vehicles & Combat Systems

John Patchin, Paul Pazandak

The Object Management Group (OMG) Data Distribution Service (DDS) is an open international software specification mandated for use in defense systems. It is used in a wide variety of military applications and is particularly important for autonomous systems. This is because it provides real-time quality of service (QoS), safety, security, scalability, and functionality for denied, degraded, intermittent, and limited (DDIL) operating conditions. This presentation discusses the multi-domain usage of OMG DDS for undersea warfare, in particular the Unmanned Maritime Autonomy Architecture (UMAA) and the Open Autonomous Underwater Vehicle (OpenAUV) framework.

1842206 – Busting the Myths of Applying State of the Practice Digital Electronic Systems Engineering To the Navy's Undersea Warfare Enterprise

James Chew

This presentation shatters the myths of applying state of the practice digital electric system engineering by making the audience aware of the DoD in-house capabilities can support the use of DESE. The author explains how acquisition, operational, sustainment, and modernization processes can benefit from the use of DESE, and how to implement DESE in all current PEO(USW) programs

1831947 – Exploring Knowledge Retrieval Techniques In SWFTS Using Open Domain Large Language Models

William Matuszak, Matthew Corser

In this presentation, we investigate knowledge retrieval from SWFTS artifacts utilizing open domain Large Language Models (LLMs). We investigate two prominent methodologies: extractive reference and Retrieval-Augmented Generation (RAG). Extractive reference involves selecting essential passages from a corpus, while RAG combines retrieval and generation to produce informative responses."

1874802 – Future Naval Power Systems Considerations for Combat Weapon Systems

Elvis Crespo

Over the past four decades significant advancements in electronics technology has greatly benefitted combat weapon systems economies of scale, increased size, weight, and power scaling. These advances have resulted in increased transient power demands which present significant challenges to the electric power distribution systems; particularly for applications requiring back fit of the new systems onto existing platforms with limited electric power generation capacities and with future platforms moving to more electric and higher voltage DC systems and higher energy loads such as directed energy weapons. This abstract seeks to provide considerations for design (e.g., EMC), development, technologies (e.g., lithium batteries, solid state power electronics), and integration of these combat systems with future naval platforms and leverages past and present defense programs, as well as aerospace/naval commercial and defense industry research and technology trends.

1874732 – Hybrid Drone: The World’s Only Multi-Domain (Marine, Ground, Air) Autonomous Vehicle

Scott Kempshall

Hybrid Drone is a transformational autonomous vehicle designed to operate in and easily transition between maritime subsurface, surface, ground, hover, and

forward flight domains. Hybrid Drone can operate in or back and forth between any or all these domains during a single sortie. This allows a single Hybrid Drone to perform missions that would otherwise require two to four separate vehicles with their separate attendant control and support systems.

AUKUS Session – Dealy

1871311 – Undersea Communications & Integration Program Office, PMW 770

Jon Wrinn, Michael Hutter

This presentation is focused on Accelerating Undersea and Shore Communications.

1856473 – IWS 5.0 Program Status & Plans

Leroy Mitchell

The Program Executive Office for Integrated Warfare Systems, Undersea Systems (PEO IWS 5.0) is responsible for maintaining a Cross-Enterprise focus in undersea warfare systems, developing an Open Architecture Computing Environment as foundation for future warfare systems and coordinating USW programs across the Enterprise. Advanced Development Programs, Surface Ship USW Combat Systems, USW Command and Control Systems and USW Systems Engineering make up the IWS 5.0 office.

1854512 – SSN AUKUS Combat System – The Path To A Trilateral, More Agile Future

CAPT Kevin Moller, USN, Pascal Gangon

SSN-AUKUS will include a trilateral combat system, largely derived from US BYG-1 and the current UK Common Combat System. This to-be-developed trilateral Common Compute Environment (CCE) is being managed by the AUKUS Combat Systems IPT and has potential to feed lessons learned back into all three national systems.

1853768 – Combat Systems Improvements To ASW Systems for Surface & Submarine Platforms

Rich Arnold

Mr. Arnold, the IWS 5A Director of Advanced Development for Undersea Systems will provide an update on IWS 5's combat system improvements to ASW systems for surface and submarine platforms. Mr. Arnold will address process and system changes supporting faster fielding of more capability, giving our undersea forces decision advantage over any adversaries.

1861329 – PMS 406 Updated on UUV Programs & Enabling Capabilities

CAPT Matt Lewis, USN

PMS 406 will provide a program office update on UUV programs and enabling capabilities, including a discussion of future capability and vehicle needs.

1874938 – Universal Launch & Recovery Of UUVs

Eric Hendricks, Jason Bench

1880042 – PMS415 Updates

CAPT Gene Severtson, USN

The speaker will provide an update on PMS415.

Mine Warfare

1872444 – NSWC Panama City Division Mine Warfare Training Shape Support Options

Brian Brock

As mining technology evolves, assessments of ship signatures by modern mine systems are required to inform U.S. naval mine countermeasures. This brief will provide an overview of mine training shapes, their uses, and how the community can utilize these devices to further the mine warfare mission area.

1874435 – Single Sortie Detect To Engage

Jeffrey Williams

Triton's ability to autonomously operate on the surface (as an Unmanned Surface Vehicle) and subsurface (as an Unmanned Underwater Vehicle) make it ideal for mine-countermeasures. Leveraging our advanced obstacle avoidance and threat evasion system, the Triton can infiltrate, conduct operations (surface or subsurface), recharge, communicate and be re-tasked or exfiltrate. Single Sortie Detect to Engage is accomplished with a four-Tritons permitting over the horizon find, fix and finish maintaining communications and near real-time data exfiltration.

1867897 – Underwater & Seabed EOD

Amanda Bobe

An overview and insights for the Seabed & Underwater EOD portfolio of the

MIWOE team, ONR32.

1872625 – Mining Improvements to Increase Operational Agility

Andrew Blair

As US Naval Mining evolves, critical gaps and operational challenges remain. Improvements are needed to expand mine performance, reduce operational timelines, and to provide greater flexibility to our Warfighters. This brief will provide an overview of these areas and discuss the technology, systems, processes, and opportunities that could be developed to address them.

1848125 – As Synthetic Aperture Sonar In MCM Operations Becomes Tactically Common, Contact Management Becomes A Challenge Given That The Level of Detail Allows Detecting Virtually Every Object On The Sea Floor

Terry Miller

This paper presents an in-depth discussion of the whole mine-hunting operation process with particular focus on contact classification and its relation to NATO risk doctrines. Some trade-offs are illustrated by comparing the mine hunting performance of four typical SAS configurations."

1861223 – Impact Of A “Combined Arms” Approach To Enabling The Submarine Force’s Operational Tasking

Jim Clancy

The USN’s submarine force has historically been equipped, trained, and employed to deploy far-forward and, if necessary, act as a key component of the U.S. military’s “Blunt Layer” intended to “delay, degrade or deny adversary aggression.” Doing so requires that the submarine force is equipped and trained to establish and enforce access at a pace that supports overall OPLAN objectives, while maintaining the force’s collective capacity in terms of ordnance that can be delivered in-theater.

This presentation describes an analytical effort in which we explored the impact of various mitigating solutions (including technical, tactics development, training, and Joint Force contributions) upon the submarine force’s ability to gain and enforce access and to do so at a pace that supports OPLAN objectives.

1847351 – Counter-UUV Effectors

Matthew Searle

A review of the means to detect and defeat the emerging threat of armed uncrewed underwater vehicles and self-propelled mines in the port environment. A look at active and passive sensors, their capabilities, range and ability to operate in real

world environments. The presentation also provides details of non-lethal effectors that can be deployed in peace time without the need for executive authority.”

1877016 – Review Of NPS Research Projects In Mine & Undersea Warfare

Rick Williams

Williams will review several MIW & USW related research topics and discuss several areas that are currently being considered for new, ongoing research efforts.

1852424 – KnowGeo: Underwater Acoustic Sensor Network

Colin Funai

As unmanned vessels have become more prevalent in military operations, it is becoming increasingly important to develop the means to communicate the locations of potential sea mines to unmanned underwater vessels (UUV). While the creators of the Robust Acoustic Communications for Underwater Networks (RACUN) have designed a system that can support UUV communications, RACUN has not been designed to support links longer than 10km. To this end, we present KnowGeo, a UUV communication network designed to address the shadow zones present in longer acoustic links.

Undersea Sensors

1857008 – A New Sensing System for the Arctic

D. Benjamin Reeder, John Joseph

Cold War, Navy-funded research demonstrated that mechanical properties of Arctic sea ice can be inferred by observation of the speeds of compressional, shear and flexural waves generated through in-ice conversion of impulsive energy. The impulsive signal was generated by a lead ball or sledge hammer dropped onto the top of the sea ice, and the inversion process required meticulous, manual extraction of signal amplitudes. The work presented here advances the work from the 1980s and 1990s by making use of (a) coherent sources with which broadband signals can be generated to replace the manually-generated hammer-drop signals, leveraging processing gain and improving temporal resolution via matched filter; (b) instruments with high frequency and sensitivity capabilities to observe compressional resonances from which information can be inferred; and (c) the physics of multimedia acoustic propagation for additional applications.

1854914 – PMS 485 Deployable Surveillance Systems Update

Susan LaShomb, Aaron Bengston

This brief outlines the incremental development of Deployable Surveillance Systems capabilities using the Middle Tier of Acquisition pathway for the Deep Water Active technology transition and upcoming opportunities for Industry engagement.

1861945 – PMS 485’s Mobile Surveillance Systems Future Capabilities

Donald Ringel, Rabon Cooke

This brief details the current PMS 485 Mobile Surveillance Systems, Surveillance Towed Array Sensor System (SURTASS) efforts and plans for future Mobile Surveillance System capabilities. SURTASS is currently fielded on two Expeditionary (SURTASS-E) and five T-AGOS platforms, and are programmed for ten T-AGOS 25 Class platforms.

1858426 – DARPA Banyan Program

Katherine Woolfe, David Pfundstein

DARPA will present an update on the Banyan program, which seeks to develop novel approaches to monitor the maritime environment using advanced opto-acoustic sensing techniques on existing undersea cables.”

1851007 – Submarine Sensor System Development

Rich Arnold

Mr. Arnold, the IWS 5A Director of Advanced Development for Undersea Systems, will provide an update on IWS 5’s submarine sensor system development. Mr. Arnold will address the status of EW sensors, new ASW sensors, and Fleet needs, including the processing and OMI support for new sensors.

1856518 – ONR Anti-Submarine Warfare S&T Overview

Michael Vaccaro, Tracey Fischer

The Office of Naval Research Anti-Submarine Warfare program invests in projects that apply the latest technology and scientific understanding of the ocean environment to eliminate submarines and undersea weapons as effective tools for our adversaries. The current investment portfolio will be presented, with a particular focus on projects that have transition potential in the next 3-5 years.

1858473 – ONR Code 32 ASW S&T Future Roadmap

Tracey Fischer, Michael Vaccaro

The ASW team in ONR’s Code 32 makes long term investments in technologies to address future capabilities as identified in key operational requirements identified by the fleet. Frequently though underlying technologies are not mature enough to show a viable path forward. For these technology challenges, the ASW team relies upon industry to help show the way forward. This presentation will discuss the future vision and identify area where industry can engage.

1848145 – Operational Hold Time Performance Against High-End Peer Submarines during Out of Area Deployments

Jeffrey Cares

This brief will present operational data from recent real-world events. This brief presents new Measures of Effectiveness (MOEs) – Hold Time and Regain Time statistics, and the Hazard Function, an associated Measure of Performance (MOP), which were recently developed at the UWDC TAG Submarine Operations Research Group. Hold Time and Regain Time statistics are useful for describing overall hold time effectiveness, while their associated Hazard Functions are very valuable tools for forensic analysis of Phase 0/1 Offensive ASW performance.

1861824 – Inertial Navigation System Inspection and Detection of Evolving Roles (INSIDER)

Jamie Winterton, Julia Mertens

Inertial Navigation System Inspection and Detection of Evolving Roles (INSIDER) is a Condition Based Maintenance (CBM+) technology that improves operational availability by finding subtle anomalies in Inertial Navigation Systems (INS). INSIDER uses graphical models to determine relationships between sensors. It applies Bayesian methods to measure deviances to flag and explain anomalies.”

1861244 – Advanced Submarine Sensor Surface Warfare Utility

Jonathan Sass

This presentation highlights the benefits provided by the latest advanced submarine sensor during the high-speed operations necessary to engage, evade, and re-engage ASW-capable surface combatants. By investigating the impact that the advanced sensor has in ASUW search, intercept, and engagement scenarios, we provide recommendations for future tactics development and present-day considerations for SSN operators and Fleet planners.

1861881 – Non-Acoustic Detection Of Unmanned Underwater Vehicles

Seth Meiselman, Geoffrey Cranch

Non-acoustic, electromagnetic signatures are used to detect, track, and in some cases identify UUVs. Active and passive methods using state-of-the-art electric and magnetic sensors enable this capability for strategic use in littoral waters and near critical undersea infrastructure.

1863789 – Automated Machine Learning Neural Network Model Architecture Search Framework For Underwater Acoustic Signal Detection & Identification

Ira Morgan

Automated Machine Learning (AutoML) Frameworks combined with Custom Training Loss Functions can provide an efficient means of building state-of-the-art Underwater Sound Detection Deep Neural Network Models. There is a continually growing selection of high performance architectures to choose from with significant potential to leverage transfer learning to mitigate small sample size acoustic training datasets. This research explores combining efficient acoustic data pre-processing software pipelines with a modified AutoKeras Automated Machine Learning (AutoML) Model Search framework to enable unique transfer learned model identification for targeted underwater acoustic detection and classification problems.

1856462 – Automated Detection Of Novel Targets In Synthetic Aperture Sonar Imagery Using Training Data Generated By Simulation

Joshua Humberston

Libraries of synthetic aperture sonar imagery of targets on a sandy seafloor were generated by the Modular Acoustic Simulation Toolset of the Department of the Navy (MASTODON). The data was used to train a multinomial pattern matching (MPM) algorithm, a methodology successfully demonstrated in the terrestrial realm, to identify targets and tested against real imagery including those targets. The methods and results of this study, as well as benefits and proposed applications, will be discussed.

1875843 – Transparent Oceans Using Coordinated Autonomous Networked Sensors

Andrew March, Nicholas Beard

This project aims to increase ocean forecasting skill by augmenting existing data sources with targeted, high-quality, low-cost autonomous sensing; developing novel sensing technologies that move beyond traditional in-situ point sensing to novel volume sensing approaches; and assimilating multiple types of data to estimate the structure of the uncertainty in ocean predictions in real time. The first year has focused on evaluation of the potential of two novel technologies: a constellation of small, low-cost multi-spectral imaging CubeSats; and a laser remote temperature profiler.

Undersea Vehicles

1843235 – UUV/ROV Payload Needs for SSW Applications

Walter Smith, Zachary Seither

Presentation will provide a TETRA vehicle overview and request industry assistance with new payload options to answer several SSW CONOP scenarios desired by CSL and CSP.

1880019 – Manta Ray and Goblin Program Updates

Kevin Sloan

Program updates from the Manta Ray and Goblin programs in the DARPA Tactical Technologies Office.

1877605 – The Slocum Sentinel Glider – Expanded Capabilities for Enhanced Missions

Thomas Altshuler

Teledyne Marine will provide an overview of the newly release Slocum Sentinel glider designed to expand the operational envelope Slocum G3 glider currently used by the U.S. Navy. The presentation will cover vehicle performance and recent sea 26 | #USWFall24 | @NDIAToday

test in preparation for expected U.S. Navy deployment.

1864937 – Increasing Submarine Capability with Minimal Increases in Submarine Size

Michael MacTaggart

Future submarine platforms will desire increased payload capability without growing the overall size of the platform. NNS will present one option that has the potential to substantially increase payload quantity and utility without a large impact to ship design.

1854223 – Programming by Demonstration for Dual Arm Manipulation

Kelly Sprehn

Underwater Remotely Operated Vehicle (ROV) operators continue to face significant challenges with manual control tasks including fatigue and workload management. To address this, we explore the adoption of a semi-autonomous control method to improve the work environment quality for operators with the goal of enhancing performance and safety. Building upon the success

of Programming by Demonstration (PbD) for single-arm industrial robotic applications, we seek to extend these techniques to dual-arm robotic control applications. We present a semi-autonomous approach which allows users to supervise tasks while delegating the cognitive load of control to the system, alleviating stress and fatigue associated with manual control operations.

1861186 – Advancing the Undersea Fight with Lethal Uncrewed Undersea Vehicles (Update on Extra Large Uncrewed Undersea Vehicle Capability and CONOPS)

Brian Quarles, Brian Grubel

Provide an update of the Orca Extra Large Unmanned Undersea Vehicle (XLUUV) program, completed operational test and evaluation, fleet introduction, Concept of Operations, and advanced payloads.

1876800 – TALON: Torpedo Tube Launch ROV

John Pfeifler, Matt DeLuca

TALON is a torpedo tube launch and recovery ROV. Developed for deep ocean environment's connected by fiber optic link providing real time feedback to the operator. This capability opens up opportunities to support many Subsea and Seabed Warfare Missions.

1875667 – Engaging the Seabed and Performing Careful Identification and Access To Critical Areas of Concern

John Zimmerman

Most ROV and AUV platforms are focused on torpedo shaped designs with one propulsor. While this provides advantages for endurance and simple survey/surveillance operations, it is not the ideal platform for engaging the seabed and performing careful identification and access to critical areas of concern. Multi-thruster ROVs/AUVs exist today in the commercial sector and can be multi-payload capable. Multi-thruster and payload vehicles provide more flexibility and capability to the mission planner to include finishing the kill chain.

1854227 – At-Sea Testing of a Blended Wing Glider

Scott Mahar

General Atomics Electromagnetic Systems (GA-EMS) is developing and testing a novel unmanned underwater vehicle (UUV): a large, blended wing glider, optimized for stealth with extended range and endurance. Results from the at-sea testing of a subscale vehicle in May and August of 2024, as well as the planned at-sea testing in November of 2024 will be discussed in this talk.

1866673 – DARPA's Ultra-Reliable Unmanned Surface Vessel: Defiant

Gregory Avicola

The DARPA No Manning Required Ship (NOMARS) program will demonstrate an ultra-reliable Unmanned Surface Vessel (USV), Defiant, in 2025. Defiant has been designed for reliability and long term operations with no human intervention. Key elements of Defiant include a distributed power architecture, elimination of high-failure systems, an autonomous "chief engineer" to optimize for long-term reliability, and a modular design that enables rapid construction and maintenance outside of traditional shipyards.

1853645 – Does Swarming Make Sense for Underwater Combat Power?

Peter Drewes

Undersea warfare poses unique challenges that necessitate innovative solutions for delivering decisive combat power. The idea of swarming technology for undersea systems has been discussed as potential solutions to address current world problems. This presentation provides a position on the use and boundary capabilities of using disposable based swarm technology vs reusable tactical underwater vehicles.

1875655 – Engaging the Commercial Industry to Shape Autonomy For Security Needs

Matthew Chapman

The commercial industry is progressing subsea autonomy based on commercial demands. To best take advantage of dual technologies, it is worth better understanding what is driving commercial technology investments to inform decision makers where to engage and encourage development that better suits national security needs.

1861764 – Environmentally Aware Intelligent Navigation for Unmanned Underwater Vehicles

Nathaniel Mack

The traditional approach to mission planning for unmanned underwater vehicles (UUVs) relies on fixed waypoints, limiting adaptability and robustness. The Environmentally Aware Intelligent Navigation (EAIN) algorithm, developed at the Applied Research Laboratory at Pennsylvania State University, offers a solution for longer-duration missions by optimizing routes based on environmental factors and security considerations. EAIN demonstrates efficient planning with minimal positional error and fast adaptation capabilities during mission execution, showing promise in both simulation and on-the-water testing, with ongoing efforts to enhance its capabilities and expand testing on different platforms.

1875698 – Harbor and Critical Infrastructure Protection is a Growing Concern Adversaries Ability to Apply Subsea Effects Will Grow

Matthew Chapman

Harbor and Critical Infrastructure protection is a growing concern. As subsea capabilities advance and proliferate, potential adversaries will grow and the ability to apply subsea effects will grow. Potential adversaries will look at this asymmetric advantage as a way to influence and project, not unlike hacking, subsea effects will be unattributable and threaten massive financial, energy and communication consequences unless solutions are developed now. It is worth this conferences time to better understand this growing threat so planners and operators can begin to account for it in our requirements.

1880022 – Innovating in Submarine Construction and Maintenance

Kevin Sloan

A discussion of areas of interest related to submarine construction and maintenance.

1840135 – Insights into Autopilot Design for Undersea Vehicles Using Nonlinear Control Theory

Daniel Kustaborder

Control of Unmanned Underwater Vehicles (UUVs) is a challenging control problem that has seen extensive research and development over the past few decades. This work proposes a novel nonlinear controller for a slender body UUV that can successfully regulate its attitude (orientation) while the vehicle is in transit. Included in this presentation is an introduction to slender body UUV modeling and equations of motion, discussion and stability analysis of the proposed controller, as well as simulation results obtained from a six degree-of-freedom dynamic model of the commercially available REMUS 100 UUV.

1864193 – Insight: A Foundation for Undersea Vehicle Introspective Health Management (IHM)

Mark Shanks, Micah Eassa

A key enabler of systems that seek to maximize operational availability (AO) of undersea vehicles is the ability to accurately characterize the current and forecasted future states of platform health. This presentation provides an overview of Metron's Insight software, developed under a NAVSEA SBIR project for automated USV Condition Based Maintenance (CBM) analysis. This technology is currently being adapted for in situ use aboard UUV and USV platforms as part of Metron's Introspective Health Management (IHM) framework.

1854067 – Project Mazu- Applications of Subsea Pulsed Power

Nate Gonzales

We present a continuation of our research showing practical applications of high voltage discharge and plasma formation in the subsea domain. We discuss the various uses and deployments that subsea pulsed power and high voltage discharge could produce. This investigation of pulsed power, high voltage discharge, plasma formation focuses on its conceptual uses in the subsea domain and relevant non-kinetic effects.

1853375 –ROMULUS: Remote Operational Monitoring Unit Leveraging UUV Simulation

Thomas Stubbs, Josh Knight

ROMULUS enables long-duration undersea autonomy by applying 'digital twin' technology to the leading causes of UUV mission interruptions and surfacing requirements. ROMULUS provides operators with access to continuous situational awareness of vehicle performance during mission without increasing communications bandwidth, early warnings by detecting deviations in vehicle performance in real-time while underway, and a tool to generate full predictions of alternative mission plans with a faster-than-real-time digital twin. With ROMULUS, UUV squadrons will be able to monitor operations & forecast mission performance, understand and share environmental conditions among multiple UUVs, adapt a UUV's mission to conditions in the OPAREA, resolve or mitigate emerging issues in near-real-time, correct errors and optimize the UUV's mission plan for probability of success, and detect or diagnose faults and subsystem states at a 'granular' level.

1854187 – Submarine High Energy Laser Weapon System

Stuart Shoppell

In the age of rapid technological advancement within the battlefield, the submarine fleet is limited in capability against modern threats. These threats have been identified by COMSUBFOR and OPNAV N97 as high priority and the submarine community has shown a strong demand signal for high energy laser integration for mitigating those threats. In response to this demand signal, the directed energy community is working to develop laser weapons for submarine integration in support of the modern threats to maritime dominance.

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Biographies



RDML Douglas Adams, USN

Program Executive Officer, Undersea Warfare Systems

Rear Admiral Douglas J. Adams is a native of Valparaiso, IN. He enlisted in the Navy in 1987, attaining the Electrician's Mate First

Class prior to his commissioning at Officer Candidate School. He is a 1992 graduate of Auburn University with a BSc in Electrical Engineering. He obtained an MSc in Civil and Environmental Engineering from Marquette University in 1998.

At sea, Adams served onboard USS Tennessee (Blue) (SSBN 734) as a junior officer, on Destroyer Squadron Twenty-One as Submarine Operations Officer, USS Bremerton (SSN 698) as Engineer Officer, and USS Toledo (SSN 769) as Executive

Officer. He commanded USS Rhode Island (Blue) (SSBN 740) from October 2010 until March 2013. He has deployed in the Atlantic, Mediterranean, Western Pacific, U.S. Central Command area of responsibility and served on an Arctic Deployment onboard HMS Tireless.

Ashore, Adams served as a NROTC instructor at Marquette University, as an exchange officer with the Royal Navy at the Maritime Warfare Centre in Portsmouth, England, as the Force Nuclear Power Officer for Commander, Submarine Forces and as Assistant Inspector General for Fleet Support – Submarines, and Executive Assistant to the Inspector General at the Office of the Naval Inspector General.

An acquisition professional, Rear Admiral Adams served in the Virginia Class Submarine Program Office (PMS 450), as the Major Program Manager for Undersea Systems (IWS 5), as the Major Program Manager for Maritime Surveillance Systems (PMS 485), Deputy PEO for Undersea Warfare Systems, and Director, SSN AUKUS Support in the AUKUS Integration and Acquisition Office.

Adams is currently serving as Program Executive Officer, Undersea Warfare Systems, responsible for the acquisition, research, development, transition, and sustainment of all undersea weapons, countermeasures, combat systems, training, and sensor systems.



RADM Mark Behning, USN

Director, Undersea Warfare Division, Office of the Chief of Naval Operations, N97

Rear Admiral Mark Behning is a native of Phoenix, Arizona, and a 1990 graduate of the U.S. Naval Academy

with a BSc in Aerospace Engineering. He also holds an MA in National Security and Strategic Studies from the Naval War College and has completed the Massachusetts Institute of Technology Seminar XXI program.

His sea tours include division officer assignments aboard USS Philadelphia (SSN 690), as an Engineer Officer aboard USS Charlotte (SSN 766), Executive Officer aboard USS Alaska (SSBN 732). He commanded USS Nevada (SSBN 733) and USS Henry M Jackson (SSBN 730) in Bangor,

Washington and also served as Commodore of Submarine Squadron (SUBRON) 17 in Bangor, Washington.

His shore tours included duty as the Tomahawk Strike Officer for Commander, U.S. Naval Forces Europe; Assistant Force Nuclear Power Officer for Commander Submarine Forces Atlantic; Deputy Commander, Submarine Squadron 17; deputy for Strategic Forces, Nuclear Weapons, and Force Protection for Commander Submarine Force, U.S. Pacific Fleet; Sea-Based Strategic Deterrence Branch Head for the Director of Undersea Warfare (OPNAV N97), and Deputy Director and Chief of Staff for Strategic Systems Programs.

His flag assignments include duty as Deputy Director, Strategic Targeting and Nuclear Mission Planning, J5N, U.S. Strategic Command; Commander, Submarine Group 9 and commander Task Group 114.3, and he currently serves as Director, Undersea Warfare Division, Office of the Chief of Naval Operations (N97).

His personal decorations include the Defense Superior Service Medal, Legion of Merit, Meritorious Service Medal, Navy and Marine Corps Commendation Medal, Navy and Marine Corps Achievement Medal, as well as other unit and campaign awards.



Marie Bussiere, SES

Technical Director, Naval Undersea Warfare Center, Division Newport

Ms. Marie Bussiere is the Technical Director at the Naval Undersea Warfare Center

Division, Newport (NUWCDIVNPT). She is responsible for leading the Department of the Navy in full spectrum research, development, test and evaluation, engineering, and fleet support for submarines, autonomous underwater systems, and offensive and defensive weapon systems and countermeasures associated with Undersea Warfare. Bussiere was promoted to the Senior Executive Service in March 2024 with over 36 years of experience in the civil service.

Bussiere began her career at the Trident Command and Control Maintenance Activity and has held a variety of leadership

positions throughout her career, including an assignment at DASN RDT&E as the lead for the Enterprise Digital Battlespace and as a member of the Unmanned Task Force. Bussiere was a member of the AUKUS Pillar II Undersea Working Group as the U.S. country lead for Lethality and has served as the acting head of the Department of the Navy Modeling and Simulation Office. At NUWCDIVNPT, she served as head of the Undersea Warfare Combat Systems Department, head of the Undersea Weapons Acquisition and Life Cycle Engineering Division within the Torpedo Systems Department, head of the Logistics Product Development Branch within the Undersea Warfare Combat Systems Department, and as a Royal Australian Navy Replacement Combat System lead system engineer. She is Division Newport's logistics functional

area manager for the Naval Acquisition Development Program and NAVSEA's Live, Virtual, Constructive M&S Knowledge Point Champion.

Bussiere received a BSc degree in Electrical Engineering from the University of Rhode Island and an MBA from Salve Regina University. She has received a diploma from the Naval War College in the areas of Strategy and Policy, National Security Decision Making and Joint Maritime Operations, as well as a Joint Professional Military Education Phase I Certification and a Cybersecurity Fundamentals certificate from the Naval Postgraduate School in Monterey, CA. Bussiere is a recipient of the Department of the Navy Meritorious Civilian Service Award.



VADM Blake Converse, USN

Deputy Commander, U.S. Pacific Fleet

Blake Converse is a native of Pennsylvania and graduated from Penn State University in

1987 with a BSc in Mechanical Engineering. He also holds MSc degrees in Space Systems Engineering and Applied Physics from the Naval Post Graduate School.

His career as a nuclear submarine warfare officer includes assignments aboard USS Lapon (SSN 661), USS Olympia (SSN 717), and USS Minneapolis-St.-Paul (SSN 708) as the executive officer. Command assignments include commanding officer, USS Louisiana (SSBN 743) from February 2006 to February 2009 and commander,

Submarine Squadron 6 from October 2012 to August 2014. Ashore, he served as radiological controls officer on the staff of Commander, U.S. Pacific Fleet Submarine Force; special assistant to Commander, U.S. Joint Forces Command; deputy commander of Submarine Squadron 17; Prospective Commanding Officer Course instructor at Naval Reactors headquarters; and chief of staff to Commander, U.S. Submarine Force.

As a flag officer, he served as Director, Joint and Fleet Operations (N3), U.S. Fleet Forces Command and Commander, Submarine Group 9 in Silverdale, Washington, and Commander Submarine Force, U.S. Pacific Fleet, Pearl Harbor Hawaii.

Converse is currently the Deputy Commander, U.S. Pacific Fleet.

His personal decorations include the Defense Superior Service Medal, Legion of Merit (five awards), Defense Meritorious Service Medal, Meritorious Service Medal (four awards), Joint Commendation Medal, Joint Achievement Medal, Navy Commendation Medal, Navy Achievement Medal (three awards) and various unit awards. In 2008, he was awarded the Rear Admiral Jack N. Darby award for Inspirational Leadership and Excellence of Command.



LtGen Francis Donovan, USMC

Vice Commander, USSOCOM

Lieutenant General Frank Donovan currently serves as Vice Commander, U.S. Special Operations

Command. An infantry, reconnaissance, and special operations officer, Donovan has led marines and sailors in all three Marine Expeditionary Forces including the command of a Force Reconnaissance Platoon, Battalion Landing Team, Marine Expeditionary Unit, Marine Expeditionary Brigade, and a Marine Division. He also commanded a Naval Task Force in 5th Fleet (CTF 51) and 6th Fleet (CTF 61). He

has served in combat, contingency, and expeditionary operations at sea, from the sea, and ashore.

Other command assignments include a Marine Corps Security Forces Detachment in Crete, Greece; a Fleet Anti-Terrorism Security Team (FAST) platoon; and a Recruiting Station in Eastern Pennsylvania. He also was Officer in Charge of a Special Operations Training Group; Executive Officer for Marine Corps Special Operations Command, Detachment One; and Director of the Expeditionary Warfare School.

Joint tours include service as the J35, United States Special Operations Command; Branch Chief, Joint Staff, J-5 Trans-regional Threats Coordination Center (T2C2); and Assisting Commanding General, Joint Special Operations Command.

Lieutenant General Donovan holds a BA in Geography from Towson University, a Master of Military Studies from the Marine Corps Command and Staff College, and a Master of Strategic Studies from the U.S. Army War College. He completed the Advanced Management Program (AMP) at Harvard Business School. Donovan and his wife Kim, a former Navy officer, have two children who are both active-duty U.S. Marines.



Dr. Tom Drake, SES

Department Head of Code 32, Ocean Battleship Sensing, Office of Naval Research

Dr. Tom Drake heads the Office of Naval Research (ONR) Ocean Battlespace Sensing Department

– one of six science and technology (S&T) departments at ONR. The Ocean Battlespace Sensing Department is responsible for Navy and Marine Corps S&T in ocean and meteorological science, undersea warfare, mine warfare, space technology and marine mammals. It comprises two divisions and 14 programs spanning sensing systems and geophysical processes and prediction. The department has also built and cares for six oceanographic research vessels. Drake is currently the U.S. national representative for the Maritime Systems Group of The Technical Cooperation Program (TTCP), coordinating technology among the U.S., U.K., Canada, Australia and New Zealand.

Since 2013, Drake has served as the director of ONR's Ocean, Atmosphere and Space Research Division. He is responsible for planning, execution and management of integrated basic research, applied research and advanced technology development of ONR S&T programs in physical oceanography, marine meteorology, ocean acoustics, Arctic and global prediction, littoral geosciences and optics, marine mammals and biology, and the space environment. The Ocean, Atmosphere and Space Research Division provides advanced, high-resolution environmental observations and prediction capabilities in support of anti-submarine warfare, mine warfare and naval special warfare missions.

Drake entered the Senior Executive Service in 2013. He joined the Federal Civilian Service in 2003 as program officer for the Coastal Dynamics program at ONR, directing work in

nearshore processes, sediment transport and wave dynamics. In 2006, he also assumed direction of the Marine Geosciences program, directing marine geophysics and geology research, in addition to elements of the ONR Sea Mine Burial program.

Prior to joining the Federal Civilian Service, Drake was a tenured professor at North Carolina State University, conducting research and teaching courses in terrestrial and coastal surficial processes from 1995 to 2003. From 1990 to 1995, he was a research oceanographer at Scripps Institution of Oceanography, University of California, San Diego, and studied nearshore and riverine sediment transport.

Drake holds a BSc from the Massachusetts Institute of Technology and a PhD from the University of California, Los Angeles. He is the author of numerous articles in technical journals and conference proceedings.



VADM Robert 'Rob' Gaucher, USN

Commander, Naval Submarine Forces; Commander, Submarine Force, U.S. Atlantic Fleet; Commander, Allied Submarine Command

Vice Adm. Gaucher is a native of Pittsfield, MA. He is a 1991 graduate of the U.S.

Naval Academy where he earned a BSc in Systems Engineering. He also holds an MSc in Engineering Management from the University of Central Florida.

Gaucher's operational assignments include service in both fast attack and ballistic missile submarines including service as division officer, USS Flying Fish (SSN 673), navigator/operations officer, USS Oklahoma City (SSN 723), executive officer, USS Maryland (SSBN 738) (BLUE), commanding officer, USS City of Corpus Christi (SSN 705), and Commodore, Submarine Development Squadron 5.

During these tours, he completed three strategic deterrent patrols as well as deployments to the Pacific, Arctic, Caribbean, North Atlantic, and Mediterranean.

Staff assignments include instructor duty at Naval Nuclear Power School; flag aide for the Commander Submarine Forces;

Maritime Operations Branch Head at U.S. Pacific Command; Director, Operational Support Branch, Chief of Naval Operations staff; Chief of Staff, Commander Submarine Force Atlantic.

During his command tour, USS City of Corpus Christi completed two Western Pacific mission cycles, and a homeport change to Pearl Harbor, Hawaii while earning two Meritorious Unit Commendations and the Submarine Squadron 15 Battle Efficiency 'E'. While serving in major command of Development Squadron Five he was responsible for the Seawolf class submarines, Unmanned Undersea Vehicle Squadron 1, and several special project ocean engineering and research and development detachments. DEVRON 5 earned the Navy Unit Commendation during his tour.

Gaucher's flag tours include director, Maritime Headquarters (N03), U.S. Pacific Fleet, Commander, Submarine Group 9/Task Group 114.3 where he commanded Pacific ballistic and guided missile submarines,

and Director, Strategic Integration (N2N6T) on the Navy staff. Most recently he was assigned as a Special Assistant at U.S. Fleet Forces Command.

Gaucher assumed his current duties in December 2023 as Commander, Submarine Forces. He is the undersea domain lead, and is responsible for the submarine force's strategic vision. As Commander, Submarine Force Atlantic, he leads all Atlantic-based U.S. submarines, their crews and supporting shore activities. These responsibilities also include duties as Commander, Task Force (CTF) 114, CTF 88, and CTF 46. As Commander, Allied Submarine Command, he is the principle undersea warfare advisor to all North Atlantic Treaty Organization strategic commanders.

Gaucher has earned various personal and unit awards and is particularly honored to be recognized as an Honorary Acoustic Intelligence (ACINT) Specialist.



ADM William Houston, USN

Director, Naval Nuclear Propulsion Program, Department of the Navy/Department of Energy

Admiral Houston is a native of Buffalo, NY and graduate of the University of Notre Dame with a degree in

Electrical Engineering. He was commissioned via the Navy Reserve Officer Training Corps (NROTC) program. He also holds an MBA degree from the College of William and Mary's Mason School of Business.

His sea tours include division officer assignments on USS Phoenix (SSN 702), Engineer Officer onboard USS Hampton (SSN 767), and Executive Officer onboard USS Tennessee (SSBN 734)(B). He commanded

USS Hampton (SSN 767) in San Diego and was Commodore of Submarine Squadron 20 in Kings Bay, Georgia.

His shore assignments include Flag Lieutenant for Commander Submarine Force, U.S. Atlantic Fleet; the Atlantic Fleet Nuclear Propulsion Examining Board; Special Assistant to the Director of Naval Reactors for Personnel and Policy; Deputy Commander for Submarine Squadron 20; the Principal Director for Nuclear Matters within the Office of the Secretary of Defense; the Submarine and Nuclear Community Manager, Military Personnel Plans and Policy (N133) and Division Director of Submarine and Nuclear Propulsion Distribution, Navy Personnel Command (PERS-42).

His Flag assignments include Deputy Director for Strategic Targeting and Nuclear Mission Planning (J5N) United States Strategic Command, Director of Operations, Naval Forces Europe-Africa Deputy Commander, U.S. 6th Fleet, and Commander, Submarine Group 8, Director, Undersea Warfare Division, Office of Chief of Naval Operations (N97), Commander, Naval Submarine Forces, Commander, Submarine Force, U.S. Atlantic Fleet, and Commander, Allied Submarine Command.

Houston assumed his duties as Director, Naval Nuclear Propulsion Program in January 2024.



Jose "Mario" Miranda, SES

Director, Technology Security and Technology Programs Directorate, Navy International Programs Office (NIPO)

Mr. Jose Miranda has worked for the U.S. Navy's Naval Sea Systems Command

– NAVSEA – for over thirty years.

With a fiscal year budget of nearly thirty billion, NAVSEA accounts for almost one quarter of the Navy's entire budget and is responsible for the design, construction, delivery, maintenance, and disposal of ships and associated systems.

In Miranda's current role as Senior Executive Service and Director of the Navy International Programs Office,

he is now responsible for advancing international interoperability by managing technology security policies and Security Cooperation Programs.

Miranda leads the Department of the Navy Security Cooperation Enterprise to build global relationships and safeguard the transfer of U.S. Technology, working with allied navies managing a \$14bn portfolio.

His office manages combat system development for five allied navies for 12 new construction ships, planning for

potentially 19 additional new construction ships for three nations and the munitions to outfit their Destroyers.

With a BSc in Industrial Engineering from Wichita State University and an MSc in Management and Contracts Management from Florida Institute of Technology, the Peruvian-born Miranda's continued involvement as a Hispanic Leader within the NAVSEA workforce has increased the Hispanic Employee Resource Group membership by thirty percent in the past year.



Dr. Matthew Sermon, SES

Executive Director, Program Executive Office, Strategic Submarines

As of October 2021, Matthew Sermon is the Executive Director of Program Executive

Office Strategic Submarines. Previously, Sermon served as the Executive Director for Program Executive Office Columbia Class Submarine and as the Executive Director, Amphibious, Auxiliary and Sealift Office, Program Executive Office, Ships. In his current role, he provides executive leadership to the Columbia Class Submarine acquisition program and the in-service SSBN/SSGN program, while also being assigned responsibility for revitalization of the Submarine Industrial Base. In this portfolio, he provides enterprise leadership for more than 250 acquisition personnel and approximately \$130bn in acquisition and sustainment programs.

Sermon entered the Senior Executive Service in February 2019, and has been in federal service for more than 20 years. He has served in a variety of key leadership positions throughout his career, including Deputy Program Manager for the Columbia Class Submarine Program (2016-2019),

a \$100bn DoD Major Defense Acquisition Program. During his tenure, he led the program through detail design, construction readiness, and significant sustainment planning activities. Before leading the Columbia Class, he was the Deputy Program Manager for the Zumwalt Class Destroyer (2014- 2016) during test, trials, and delivery of the lead ship (DDG 1000). Prior to DDG 1000, he was the Deputy Program Manager for International Fleet Support in the Naval Sea Systems Command's Surface Warfare Directorate (2010- 2014), where he was responsible for the management of more than \$5bn in Foreign Military Sales cases for more than 40 partner nations.

Other previous assignments include Principal Assistant Program Manager in the Support Ships, Boats, and Craft Program Office (PMS 325) in PEO Ships (2007-2010), where he led the \$1.1 bn Egyptian Navy Missile Craft project while providing program management expertise for numerous other boat building projects.

Prior to starting in Navy civilian service, Sermon was a U.S. Navy Surface Warfare Officer (Nuclear). He received his Surface

Warfare Officer qualification aboard USS Ramage (DDG 61). Additionally, Sermon served as nuclear engineering officer aboard USS Dwight D. Eisenhower (CVN 69) before leaving the uniformed Navy in 2004. He is a veteran of Operations Enduring Freedom and Iraqi Freedom.

Sermon is a member of the Acquisition Professional Community and has a Level III Certification in Program Management. He holds Defense Acquisition Workforce Improvement Act certifications in Production, Quality, and Manufacturing and Test & Evaluation, and has completed certification as a Project Management Professional (PMP). He received a BSc degree in economics from the U.S. Naval Academy in 1999, and an MSc degree in engineering management from The Catholic University of America in 2006. He is a 2012 graduate of the Defense Systems Management College's Program Manager Course. During his distinguished federal service career, Sermon has received three Navy Civilian Meritorious Service Awards and one Navy Civilian Superior Service Award.



RDML Jonathan Rucker, USN

Program Executive Office, Attack Submarines

Rear Adm. Jonathan (Jon) Rucker is a native of Vienna, VA. He graduated Magna cum Laude from Duke University in 1994

earning a degree in electrical engineering.

After completing the nuclear pipeline, Rucker reported to his first submarine, USS Louisville (SSN 724) in October 1995, serving in several division officer positions. In December 1998, he proceeded to the NROTC Unit at Duke University where he served as an assistant professor and officer in charge. While attached there, he earned an MBA from Kenan-Flagler Business School at UNC, Chapel Hill.

In July 2001, Rucker reported to USS San Francisco (SSN 711) for duty as the Combat Systems Officer and Quality Assurance Officer. In December 2001, he was selected for the Navy's Engineering Duty Officer (EDO) program. In May 2002, he proceeded to the Massachusetts Institute of Technology graduating in June 2005, earning a Naval Engineer's degree and an MSc in Electrical Engineering (Power Systems).

Rucker then attended the EDO Basic Course and reported to the Supervisor of Shipbuilding, Groton. He served as the lead ship coordinator for both the USS Augusta (SSN 710) Interim Drydocking Availability and USS Virginia (SSN 774) Post Shakedown Availability, and as Virginia Waterfront Coordinator in charge of seven Virginia class submarines.

In July 2008, Rucker reported to PEO Submarines as part of the Virginia Program Office (PMS450). He served as assistant program manager (APM) for Post Delivery in support of five Virginia class submarines.

In September 2009, he deployed to Iraq as chief engineer in charge of jamming systems in support of Counter IED efforts.

In August 2010, Rucker transitioned to the Advanced Undersea Systems Program Office (PMS394) serving as the APM for New Acquisitions.

In May 2013, he was selected to be the Military Assistant for the Undersecretary for Defense for Acquisition, Technology, & Logistics (USD (AT&L)) serving in that job until July 2014. He then reported to PMS450 as APM for New Construction & Test and led construction and test efforts of 12 submarines.

In 2016, Rucker assumed command as program manager for Unmanned Maritime Systems (PMS406), responsible for unmanned maritime systems across both the Surface and Undersea domains. In summer 2018, he assumed command as Program Manager for the Columbia Class Submarine Program (PMS397), the Navy's number one acquisition program. During his tenure, the Columbia program office was awarded the David Packard Excellence in Acquisition Award for 2021 as the top program office in the DoD.

In May 2022, Rucker was promoted to Rear Admiral lower half and in June 2022 he became program executive officer for Attack Submarines (PEO SSN) leading seven programs, offices and directorates across all fast attack submarines and associated systems development, design, construction, testing, and life cycle sustainment.

His awards include the Defense Superior Service Medal, Legion of Merit (four awards), Navy Meritorious Service Medal (two awards), Navy Commendation Medal (three awards) and Navy Achievement Medal (five awards). He is a member of several Honors Societies and is a licensed Professional Engineer in Virginia.



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CDRE Marcus Rose, RN

Deputy Director of Underwater Battlespace, British Royal Navy, Executive Director, Program Executive Office, Strategic Submarines

As Deputy Director, UWB Capability within Navy Develop, Marcus Rose is the through-life capability sponsor

for the Navy's UWB capabilities. This includes geo-intelligence, Mine Warfare and EOD, Anti-Submarine Warfare, underwater weapons, submarine combat systems, Seabed Warfare, and Underwater Autonomous Systems. He also has an important role in cohering UWB capability planning across UK Defence, as the Chief of Staff to DCDS(MILCAP)'s 2-star UWB Capability Management Group. He is the UK lead for numerous non-nuclear UWB international programmes and initiatives. He is Senior Responsible Owner for VCDS' ASW Spearhead programme and early-stage Navy UWB programmes.

Rose read for a degree in Electrical Engineering at the University of Portsmouth and joined Britannia Royal Naval College in September 2004. His early career involved sea time on HMS Nottingham and HMS Albion prior to volunteering for the Submarine Service. He then went on to serve in HMS Trenchant and HMS Torbay as the Communications and Information Systems Engineer and Deputy Weapon Engineer, completing three deployments East of Suez and several periods of operations.

After several years on operational platforms Rose moved ashore and completed capability and acquisition assignments in Navy Command, followed by a short assignment to Defence Intelligence as the Torpedoes and Countermeasures Analyst. He returned to sea in 2014 as the Weapon Engineer Officer in HMS Triumph, completing periods of operations in the North Atlantic.

Professional Command at sea was followed by two roles in Flag Officer Sea Training, including OF4 Professional Command as head of Weapon Engineering training. In this role he also led the development of Offshore Patrol Vessel training design. A year undertaking Advanced Command and Staff Course followed and he was then seconded into the MoD's COVID Response and Recovery Team. During this period, he acted as Chief of Staff and led the rollout of COVID testing across the MoD.

After a short assignment as the project manager for the Royal Navy Submarine Training Centre he was promoted to Captain Royal Navy and assumed the role of Submarine Combat Systems Resource Sponsor. In April 2024 he was promoted to Commodore and took up his current assignment.

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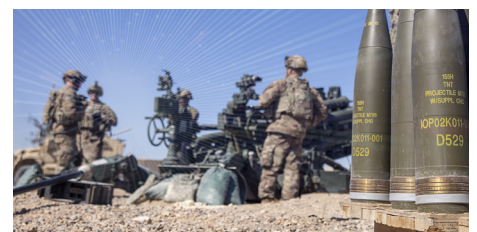
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