NDIA

2022
UNDERSEA WARFARE
FALL CONFERENCE

September 26 – 28, 2022 | Groton, CT | NDIA.org

NAVSEA
WARFARE CENTERS
NEWPORT

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NDIA

WHO WE ARE

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**

JOIN THE CONVERSATION

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@NDIAToday

SCHEDULE AT A GLANCE

MONDAY, SEPTEMBER 26

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

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

TUESDAY, SEPTEMBER 27

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 to attend this event and will be distributed during on-site registration

Networking Clambake Dinner
North Lake
7:00 – 9:30 pm
A ticket is required to attend this event and will be distributed during on-site registration

WEDNESDAY, SEPTEMBER 28

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

Technical Sessions
Various Base Locations
8:00 am – 5:00 pm

WELCOME TO 2022 UNDERSEA WARFARE CONFERENCE

Welcome to the National Defense Industrial Association's 2022 Undersea Warfare Division Fall Conference. NDIA's Undersea Warfare Division (USW) members are proud to again bring you this annual event.

This year, we're concentrating on the Navy's core mission of countering submarine and mine threats to the free and open flow of sea borne commerce and to the conduct of power projection from the sea. All Navy platforms and elements of the Navy force structure are involved in undersea warfare: submarines, surface combatants, fixed and rotary wing aircraft, surveillance units, and the Navy's command and control infrastructure. NDIA's USW Division has five active Technical Committees that focus on the Navy's mission areas: Sensor Systems, Mine Warfare Systems, Undersea Vehicles (including weapons), Aviation, and C4I and Combat Systems and Warfighter Performance. The technical sessions on the second day of the conference focus on recent events, advancements and challenges in each of these mission areas.

The mission of NDIA's Undersea Warfare Division is to focus on critical undersea warfare areas related to the development, production, testing and logistic support of underwater combat systems. This includes mines, torpedoes, manned and unmanned underwater vehicles, countermeasures, sensors, weapon control and handling equipment; and the integration of systems aboard aircraft, ships and submarines.

NDIA's USW Division fosters 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 group also supports both government and industry with advice on undersea warfare policies and acquisition planning.

Your feedback is highly encouraged to ensure we continue to meet your needs.

CAPT Robert Dunn, USN (Ret)
Chairman, Undersea Warfare Division Fall Conference
General Dynamics Mission Systems
Senior Strategy & Business Development Manager Navy Strategic, Hypersonic and NC3 Systems

GET INVOLVED
Learn more about NDIA's Divisions and how to join one at **NDIA.org/Divisions**

UNDERSEA WARFARE

WHO WE ARE

NDIA's Undersea Warfare Division fosters both the exchange between government and industry of technical information 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 AND COMMITTEES

Mike Cortese
Division Chairman

Dr. Alan Lytle
Division Deputy Chairman

Jim Shannon
Vice Chairman

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

Eric Irwin
Vice Chairman Undersea Warfare Division Fall Conference

Paul Rosbolt
Session Chair – Combat Systems Warfighter Performance & C4I

Kevin Hagan
Session Chair – Mine Warfare

Tom Ruzic
Session Chair – Undersea Vehicles

Glen Sharpe
Session Chair – Aviation Systems

Joe Cuschieri
Session Chair – Undersea Sensors

EVENT INFORMATION

LOCATION

Conference Venue
U.S. Navel 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

ATTIRE

Civilian: Business
Military: Uniform of the Day

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

Meredith Mangas
Associate
Director, Meetings
(703) 247-9467
mmangas@NDIA.org

Britt Sullivan
Senior Director, Divisions
(703) 247-2587
bsullivan@NDIA.org

Krystal Heard
Meeting Manager
(703) 247-2553
kheard@NDIA.org

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 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: Undersea Sensors
1. Building 84, Chaplin Center, Room 104:
   Undersea Sensors & Mine Warfare
2. Building 83, Room 317: Combat Systems &
   Warfighter Performance
2. Building 83, Room 318: Aviation Systems
2. Building 83, Room 319: C4I
3. Bledsoe Hall: Undersea Vehicles
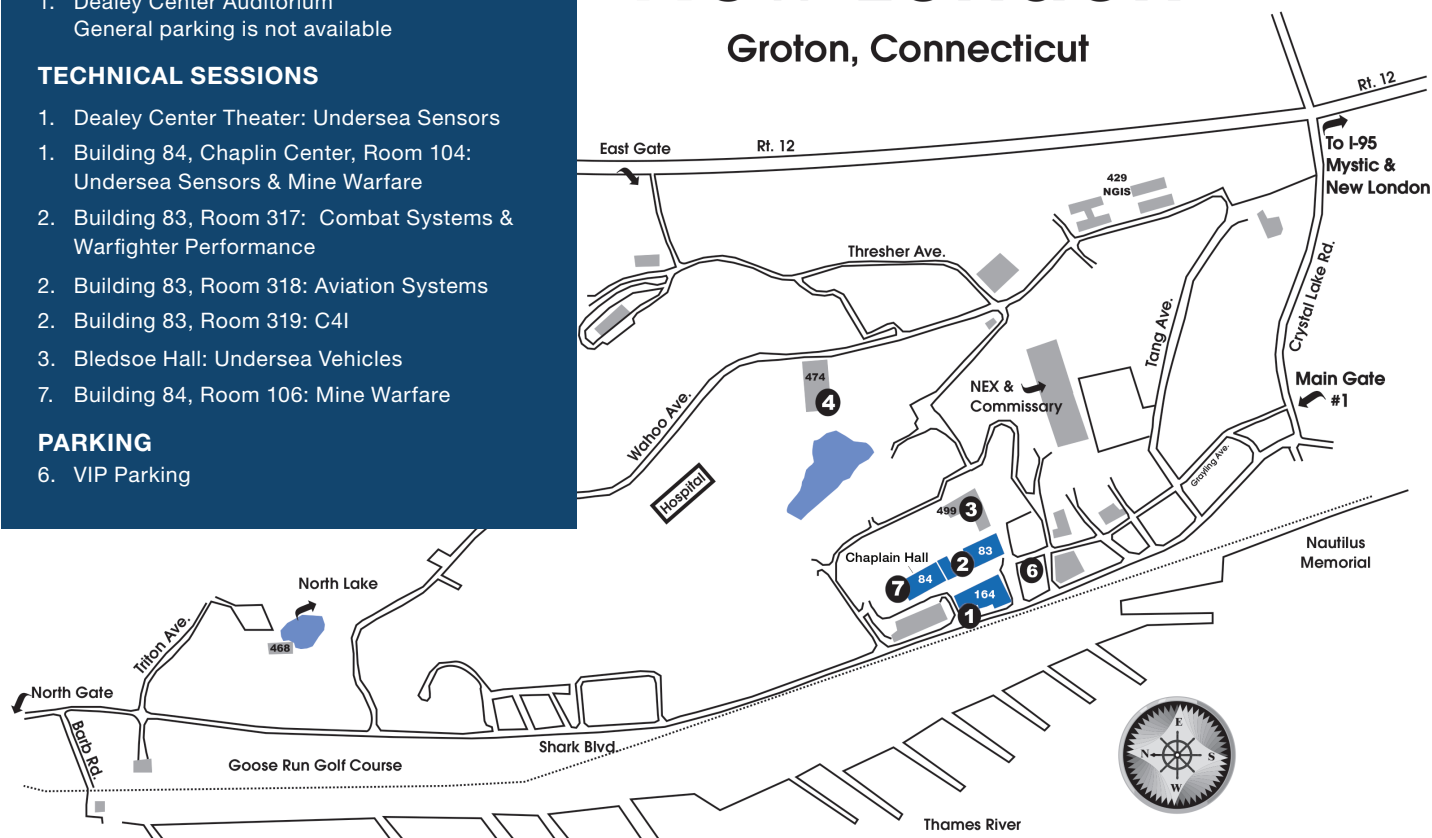7. Building 84, Room 106: Mine Warfare

PARKING
6. VIP Parking

## Naval Submarine Base
New London
Groton, Connecticut

NDIA

East Gate · Rt. 12 · To I-95 Mystic & New London · Rt. 12
429 NGIS
Thresher Ave.
Tang Ave.
Crystal Lake Rd.
474 ④
Wahoo Ave.
NEX & Commissary
Main Gate #1
Hospital
499 · 573 ③
Groton Ave.
Chaplain Hall · ② 83
⑦ 84 · ⑥
164 ①
Nautilus Memorial
North Lake
468
Triton Ave.
North Gate
Barb Rd.
Goose Run Golf Course
Shark Blvd.
Thames River

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HII

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Trusted for more than 20 years, the REMUS 6000 unmanned underwater vehicle is a deep-water workhorse that can reach 98% of the ocean. The latest generation incorporates modularity and open architecture with more than 60 hours of endurance, delivering the highest quality data to aid in national security operations. It's the collaboration you've come to expect from your true mission partner, HII.
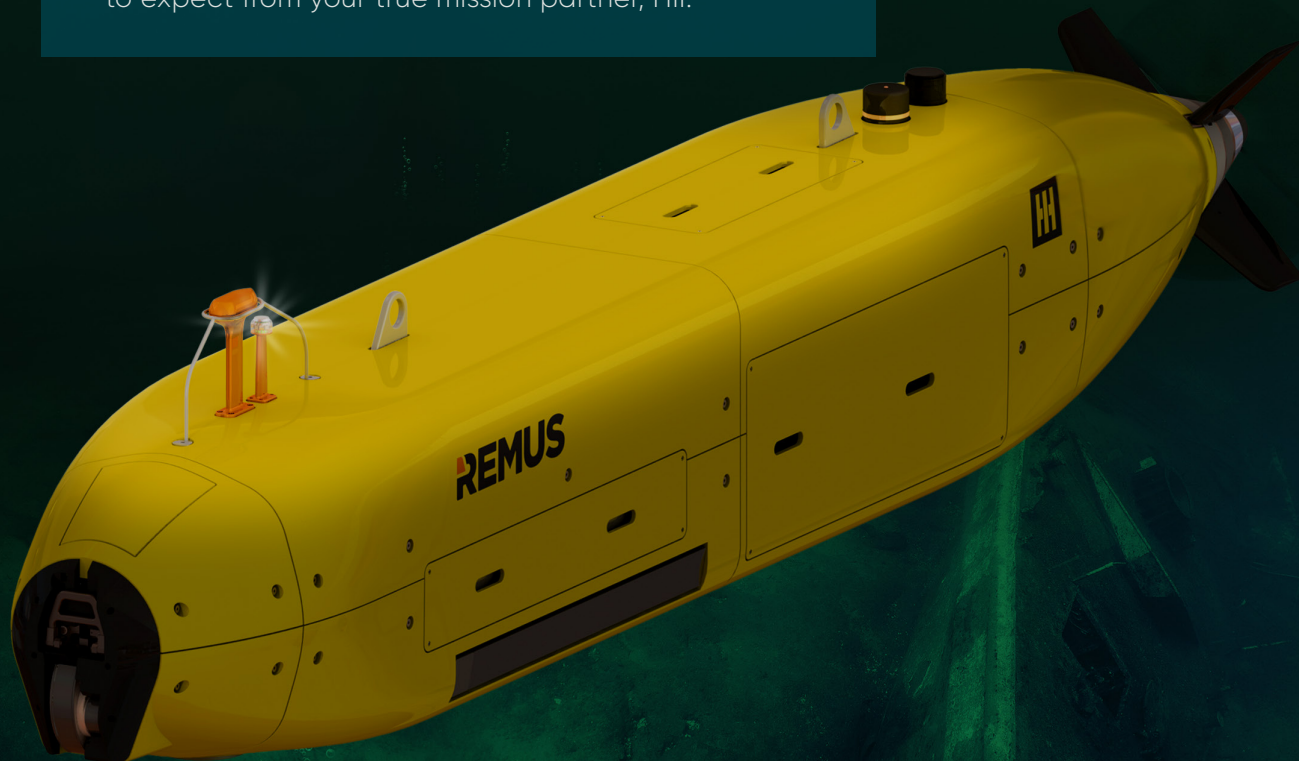
HII.COM

AGENDA

MONDAY, SEPTEMBER 26

3:00 – 6:30 pm **REGISTRATION**
MYSTIC MARRIOTT HOTEL & SPA

GENERAL DYNAMICS
Ordnance and Tactical Systems

5:00 – 6:30 pm **NETWORKING RECEPTION**
MYSTIC MARRIOTT HOTEL & SPA

TUESDAY, SEPTEMBER 27

7:00 am – 5:00 pm **REGISTRATION**
DEALEY CENTER AUDITORIUM

GENERAL DYNAMICS
Ordnance and Tactical Systems

7:00 – 8:00 am **NETWORKING BREAKFAST**
OUTSIDE PLAZA

L3HARRIS™

8:00 – 8:15 am **CALL TO ORDER & INTRODUCTION**
DEALEY CENTER AUDITORIUM

Mike Cortese
Chairman, Undersea Warfare Division, NDIA
Senior Manager, Washington Operations, General Dynamics Electric Boat

MG James Boozer, USA (Ret)
Executive Vice President, NDIA

CAPT Robert Dunn, USN (Ret)
Chairman, Undersea Warfare Division Fall Conference
General Dynamics Mission Systems
Senior Strategy & Business Development Manager Navy Strategic, Hypersonic and NC3 Systems

8:15 – 8:45 am **PRESENTATION**
DEALEY CENTER AUDITORIUM

VADM Bill Houston, USN
Commander, Naval Submarine Forces, Commander, Submarine Force, U.S. Atlantic Fleet Commander,
Allied Submarine Command

8:45 – 9:15 am **PRESENTATION**
DEALEY CENTER AUDITORIUM

RADM Jeff Jablon, USN
Commander, Submarine Force, U.S. Pacific Fleet

9:15 – 9:45 am

PRESENTATION
DEALEY CENTER AUDITORIUM

VADM Jeff Trussler, USN
Deputy Chief of Naval Operations for Information Warfare, N2/N6, Office of the Chief of Naval Operations/Director of Naval Intelligence

9:45 – 10:15 am

NETWORKING BREAK
OUTSIDE PLAZA

10:15 – 10:45 am

PRESENTATION
DEALEY CENTER AUDITORIUM

Ron Vien, SES
Technical Director, NUWC

10:45 – 11:15 am

PRESENTATION
DEALEY CENTER AUDITORIUM

RADM Scott Pappano, USN
Program Executive Officer, Strategic Submarines

11:15 – 11:45 am

PRESENTATION
DEALEY CENTER AUDITORIUM

RDML Jon Rucker, USN
Program Executive Officer, Attack Submarines

11:45 am – 12:00 pm

AWARDS CEREMONY
DEALEY CENTER AUDITORIUM

Pierre Corriveau
Awards Chair, Undersea Warfare Division, NDIA

12:00 – 1:00 pm

NETWORKING LUNCH
BASE GYMNASIUM

TELEDYNE
MARINE
Everywhere**you**look™

1:00 – 1:30 pm

PRESENTATION
DEALEY CENTER AUDITORIUM

VADM Johnny Wolfe, USN
Director, Strategic Systems Programs

1:30 – 2:00 pm

PRESENTATION
DEALEY CENTER AUDITORIUM

RADM Lorin Selby, USN
Chief, Naval Research

2:00 – 2:30 pm

PRESENTATION
DEALEY CENTER AUDITORIUM

Michael McClatchey, SES
Program Executive Officer, Undersea Warfare Systems

2:30 – 3:00 pm

NETWORKING BREAK
OUTSIDE PLAZA

3:00 – 3:30 pm

PRESENTATION
DEALEY CENTER AUDITORIUM

Cristin Rider-Riojas
Chief Scientist, Office of Naval Intelligence

3:30 – 4:00 pm

PRESENTATION
DEALEY CENTER AUDITORIUM

RDML Casey Moton, USN
Program Executive Officer, Unmanned & Small Combatants

4:00 – 4:30 pm

PRESENTATION
DEALEY CENTER AUDITORIUM

Jen Hailes
Acting Technical Director Commander, Naval Meteorology & Oceanography Command

4:30 – 5:00 pm

PRESENTATION
DEALEY CENTER AUDITORIUM

RADM Doug Perry, USN
Director, Undersea Warfare Division, N97, Office of the Chief of Naval Operations

6:00 – 7:00 pm

NETWORKING RECEPTION
NORTH LAKE

Ticket Required

7:00 – 9:30 pm

NETWORKING CLAMBAKE DINNER
NORTH LAKE

Ticket Required

LEONARDO DRS

TECHNICAL SESSIONS

WEDNESDAY, SEPTEMBER 28

7:00 am	**REGISTRATION** DEALY CENTER AUDITORIUM	**GENERAL DYNAMICS** Ordnance and Tactical Systems	
	Aviation Systems Glen Sharpe, Chair	**C4I** Paul Rosbolt, Session Chair	**Combat Systems & Warfighter Performance** Dr. Robert Zarnich, Session Chair
	Building 83, Room 318	Building 83, Room 319	Building 83, Room 317
8:00 am	24976 NAVAIR PMA-264 ASW Programs **CDR Justin Wiesen, USN** NAVAIR PMA-264 Programs	24970 Evolving Undersea Communications **Jonathan Wrinn** PM770	24803 Submarine Combat System Innovative Payload Integration **Lynn Sikora** Progeny Systems **Jesse Herrmann** Progeny Systems
8:30 am	24976 NAVAIR PMA-264 ASW Programs (Continued) **CDR Justin Wiesen, USN** NAVAIR PMA-264 Programs	24883 Countering Undersea Surveillance **Dr. Katherine Woolfe** DARPA	24906 The Next Steps of System-of-System (SoS) Modeling from a TEAMSub Perspective **Dr. Robert Pallack** Naval Undersea Warfare Center (NUWC) - Newport
9:00 am	24977 Undersea Warfare SONAR and Environmental Modeling and Simulation **Dustin Overmiller** Advanced Acoustic Concepts, A Thales Company	24891 NPS C2 Capstone 2021: Establishing Aegis Ashore on Senkaku Islands **Dr. Donald Brutzman** Naval Postgraduate School	24971 ARCI DEVSECOPS Implementation – How It's Going So Far **Jeffrey Merritt** NUWC DIV NPT
9:30 am	24978 Artificial Intelligence (AI) Test Bed **Sara Groth** Advanced Acoustic Concepts, A Thales Company	24731 The Tyranny of COTS: Breaking the (Life) Cycle of Siloed Systems Development **Steve Carlson** Cadence	24915 Submerged Acoustic Navigation System (SANS) Capabilities: Present and Future **Dr. Steven Ceocker** MIKEL, Inc.
10:00 am	**NETWORKING BREAK** OUTSIDE PLAZA		
10:30 am	24890 P-8A Sonobuoy Positioning System (SPS) Roadmap R&D Efforts & Plans **Howard Ebersman** Ultra Electronics **Kyle Pattison** Ultra Electronics	24921 DARPA TIMEly Program Update **Aaron Kofford** DARPA	24754 IWS 5.0 Program Update **CAPT Leroy Mitchell, USN** PEO ISW 5.0

NETWORKING BREAKFAST
OUTSIDE PLAZA

L3HARRIS™

Mine Warfare Kevin Hagan, Session Chair	Undersea Sensors Shelby Sullivan, Session Chair	Undersea Sensors Joe Cuschieri, Session Chair	Undersea Vehicles Tom Ruzic, Session Chair
Building 84, Room 106	**Chaplain Center, Building 84, Room 104**	**Dealey Auditorium**	**Bledsoe Hall**
24980 Maritime Mine Countermeasures & Acoustic Modems **Dr. Kyle Woerner** DARPA	24901 Compact Towed Reelable Active Passive Sonar for Unmanned Anti-Submarine Warfare **Jeffrey Hoyle** Elbit Systems of America	24498 Accelerating ASW Proficiency and Performance through High-Fidelity ASW Trainers & Advanced Acoustic Reconstruction **CAPT Justin Long, USN** Surface Combat Systems Training Command San Diego	24987 Unmanned Systems Update **CAPT Scot Searles, USN** PMS406
24877 Mine Warfare Programs Portfolio Summary **Lee Agin** Mine Warfare Program Office (PMS-495)	24917 Low Power Passive Acoustic Sensor Suite **Gary Donoher** SEACORP, LLC	24772 APB Development & Advanced Sensor Related Development Efforts **Peter Scala** PEO, Integrated Warfare Systems	24964 Goblin: Enabling Complex Maritime Operations **Dr. Andrew Nuss** DARPA
24913 The Evolution of Mine Countermeasures Technologies from Short-duration, Unmanned to Persistent, Unattended Operations **Dr. Todd Holland** Naval Surface Warfare Center - Panama City Division	24830 PMS 485 Deployable Surveillance Systems Update **Susan Lashomb** PMS 485 Deployable Surveillance Systems	24918 Cooperative SONAR Engagement for Theater Under-Sea Warfare (C-SET) **Skevis Psaras** Marine Acoustics, Inc.	24946 DARPA Hunter Program Update **John Waterston** DARPA
24968 Data as a Competitive Advantage: Access, Ownership & Innovation **Dr. Daniel Cook** Georgia Tech Research Institute	24932 Navy Range Enterprise **Sean Perry** NUWC Division Newport	24975 Emerging and Disruptive Technology Updates ONI	24937 Large Displacement Unmanned Vehicle (LDUUV) Testing Updates & Enhanced Capability for Fleet Operations **Cheryl Mierzwa** NUWC Division Newport

NETWORKING BREAK
OUTSIDE PLAZA

24972 PEO Unmanned & Small Combatants Mine Warfare Update **Dr. Sam Taylor** PEO Unmanned & Small Combatants	24955 High Volume Cost Effective Commercial Production of Textured Piezoceramics for Naval and Commercial Applications **Safakcan Tuncdemir** QorTek, Inc.	24842 Acoustic Travel Time Assimilation Into An Ocean Circulation Model **Ivana Escobar** Applied Research Labs	24757 Foreign Unmanned Vehicle Capabilities **Andrew Adelsen** Newport News Shipbuilding

	Aviation Systems Glen Sharpe, Chair	C4I Paul Rosbolt, Session Chair	Combat Systems & Warfighter Performance Paul Rosbolt, Session Chair
	Building 83, Room 318	Building 83, Room 319	Building 83, Room 317
11:00 am	24995 Back to the Future: Digital Magnetic Anomaly Detection (DMAD) and ASW Aviation Opportunities **Dave Youngs** Lockheed Martin	24960 Platform PCIe: the Solution to Advance Combat and C4I System Capabilities, While Reducing System Complexity **Brian Kornish** Accipiter Systems, Inc.	24928 A Model-Based Systems Engineering Approach to Cyber-Resilience for USW Combat Systems **Dr. Benjamin Drozdenko** NUWCDIVNPT
11:30 am	24899 The World's Only Efficient Multi-domain (Marine, Ground, Air) Vehicle **Scott Kempshall** HyALTA Aeronautic, Inc.	24910 SIGINT-based Opportunistic Navigation in a GPS-Denied Environment **Dr. John Schwacke** Scientific Research Corporation	24974 USW Tactics Update ONI
12:00 pm	**NETWORKING LUNCH** BASE GYMNASIUM *LOCKHEED MARTIN*		
1:00 pm	24902 Digital Twinning for Aerospace & Defense Applications **Steve Carlson** Cadence Design Systems **James Chew** Cadence Design Systems	24933 Results and Lessons Learned from Final Testing in DARPA's Cross Domain Maritime Surveillance & Targeting (CDMaST) Program **Aaron Kofford** DARPA Strategic Technology Office (STO)	24927 Attributing Mission Performance to Submarine Subsystems **Jonathan Proule** Naval Undersea Warfare Center Division Newport
1:30 pm	24905 Working Towards Precise Positioning of Tethered Payloads with Fixed Wing UAVs Via Autonomous Aerobatic Maneuvering **Joshua Robbins** Penn State Applied Research Laboratory	24914 Asynchronous Communication: A Culture Change to Decrease the Time Variable in Development of JADC2/ Overmatch Applications and Systems **Jim Pietrocini** KBR	24967 Cloud Access to Tactical Systems: Improving Warfighter Performance and the Submarine Kill Chain **Joseph Piccinini** Innovative Defense Technologies
2:00 pm	24979 Scoping SSW ONI	24925 Undersea Project Overmatch: A SEC-ACQ-DEVOPS Effort **Stephen O'Grady** NUWCDIVNPT **Joseph Solar** NAVSEA Team Submarines	24930 Submarine Payload Storage Solutions **Benjamin Aldrich** Naval Undersea Warfare Center Division
2:30 pm	24996 Threats to PNT ONI	24919 Architecting Quantum Resistant Implementations for Undersea Maritime Systems (AQuaRIUMS) **Dr. JD Dulny** Booz Allen Hamilton **Taylor Hernandez** Booz Allen Hamilton	24938 Undersea Warfare (USW) Decision Superiority Innovative Naval Prototype (INP) **Kevin Pushee** Office of Naval Research **Scott Sideleau** NUWC Division Newport

Mine Warfare Kevin Hagan, Session Chair	Undersea Sensors Shelby Sullivan, Session Chair	Undersea Sensors Joe Cuschieri, Session Chair	Undersea Vehicles Tom Ruzic, Session Chair
Building 84, Room 106	Chaplain Center, Building 84, Room 104	Dealey Auditorium	Bledsoe Hall
24981 Mine Countermeasures Mission Modules Update **George Saroch** LCS Mission Modules Program Office (PMS-420)	24953 Electromagnetic Detection & Location of Submerged Targets **Geoff Cranch** Naval Research Laboratory	24879 Characterizing Sea Surface Conditions While Submerged and Underway **Dr. Adrian Doran** NUWC Newport	24963 Seafloor Service Node System Integration Laboratory (SIL) **Rick Cox** Leidos
24969 Multi-Shot Mine Neutralization - USV Based Mine Countermeasures Timeline Reduction **CAPT Elliott Donald, USN (Ret)** SAAB	24874 OMI for Explainable AI/ML in MF PAS **Michael Lubke** ARL:UT	24886 Improved Sonar Aiding of Inertial Navigation Systems in GPS-Denied Environments **Jerry Mullison** Teledyne RD Instruments	24926 Alternatives for Submarine Torpedo Tube Launch & Recovery (TTL&R) of UUVs **Jeffrey Smith** SAAB, Inc.

NETWORKING LUNCH
BASE GYMNASIUM — LOCKHEED MARTIN

Mine Warfare Kevin Hagan, Session Chair	Mine Warfare Elliott Donald, Session Chair	Undersea Sensors Joe Cuschieri, Session Chair	Undersea Vehicles Tom Ruzic, Session Chair
24983 Airborne Mine Countermeasures **CDR Michael Lanzillo, USN** Helicopter Mine Countermeasures Squadron 15	24951 SMD System **Joy St. Amant** Naval Surface Warfare Center Panama City Division	24922 DARPA Kraken Program Update **John Waterston** DARPA	24952 Fighting into the Bastions: Overcoming Undersea Anti-Access Networks **Bryan Clark** Hudson Institute
24984 Naval Surface & Mine Warfighting Development Center Update **Wesley Cooper** Naval Surface & Mine Warfighting Development Center	24941 Compact Encapsulated Effector (CENCAP) – Future Naval Mine **John Van Kirk** Naval Surface Warfare Center Indian Head Division	24904 Textured Ceramic's Based 3-inch SONAR Countermeasure **Jonathan Zook** QorTek, Inc.	24944 The DIVE-LD: A Transformational LDUUV for Advanced Subsea Applications **Pat Taylor** Anduril Industries
24885 Mine Countermeasures Machine Learning Research for Unmanned Underwater Systems **Dr. Tory Cobb** Office of Naval Research	24892 NPS C2 Capstone 2022: C2 Preparations for Theater Mine Warfare **Donald Brutzman** Naval Postgraduate School	24943 Understanding the Impact of AC Poling on the Mechanical and Electrical Stability of Relaxor PIN-PMN-PT Single Crystals **Adam Heitmann** Naval Undersea Warfare Center Division Newport	24936 Advanced Ordnance Package Development for Next Generation Torpedoes **Eric Volkmann** Northrop Grumman
24986 Maritime Terrain Shaping Area Denial **Maj Matt Massman, USMC** Marine Corps Combat Development Command **Col Mark Reid, USMC** Marine Corps Combat Development Command	24881 Supercavitating Small Caliber Ammunition as A Means to Defeat Underwater Threats **CDR Tucker Campion, USN (Ret)** DSG Tech USA	24887 Demonstration of Textured Ceramic Model 30 Flextensional Projector **Jason Osborn** BAE Systems	24931 UUV Communications **Matthew Atwood** NUWCNPT/PMS406/PMW770

	Aviation Systems Glen Sharpe, Chair	C4I Paul Rosbolt, Session Chair	Combat Systems & Warfighter Performance Paul Rosbolt, Session Chair
	Building 83, Room 318	Building 83, Room 319	Building 83, Room 317
3:00 pm	**NETWORKING BREAK** OUTSIDE PLAZA		
3:30 pm	24912 Dynamics of Water Entry **Dr. Nathan Speirs** Naval Undersea Warfare Center, Newport	24942 Deep Learning for Cybersecurity: An AI/ML Approach to USW Network Traffic Analysis **Makia Powell** NUWCDIVNPT	24871 Own Ship Electromagnetic Signature Monitoring **Dr. Srikanth Raghavan** Naval Surface Warfare Center, Carderock Division
4:00 pm	24997 Potential Adversary Submarine Patrols ONI	24929 Simplifying the Transfer & Use of TPCP Software Bloat Mitigation Tools **Matthew Halligan** Naval Undersea Warfare Center Div Newport	24909 Prioritization of Test & Evaluation (T&E) ensures Fleet Readiness & Overmatch in the Undersea Domain **Edwin Rahme** VIRGINIA Class Submarine Program Office (PMS450) **Mark Zielinski** CGI Federal
4:30 pm	24998 Potential Adversary ASW Developments ONI	24934 Terahertz Imaging Results from a Large-Scale Data Collection Field Test in 2022 **Dr. Patric Lockhart** NUWC Division Newport	24916 Medical Research & Development Approaches for Supporting Future Psychological Readiness of the U.S. Navy Submarine Force Via Supportive Technologies & Assessments **Dr. Ben Lawson** Naval Submarine Medical Research Laboratory
5:00 pm	**CONFERENCE ADJOURNS**		

Mine Warfare Kevin Hagan, Session Chair	Mine Warfare Elliott Donald, Session Chair	Undersea Sensors Joe Cuschieri, Session Chair	Undersea Vehicles Tom Ruzic, Session Chair
Building 84, Room 106	Chaplain Center, Building 84, Room 104	Dealey Auditorium	Bledsoe Hall
NETWORKING BREAK OUTSIDE PLAZA			
24878 Operational Gaps in Navy Mining Capabilities **Tracey Williams** Mine Warfare Program Office (PMS-495) **Andrew Fuller** Mine Warfare Program Office (PMS-495)	21908 Volumetric Low Frequency Broadband Synthetic Aperture Sonar for Deeply Buried Mines & Seabed Infrastructure **Dr. David Raudales** U.S. Naval Research Laboratory	24965 Acoustic Vector Sensors **Dr. Alex Sell** Leidos	24973 Undersea Weapons Update ONI
24884 Mine Warfare **CDR Brad Penley, USN** Navy Special Warfare Command	24939 Advanced Concepts in Applications of Superconductivity **Joseph Nalbach** Advanced Concepts in Applications of Superconductivity	24945 The Multi-Tone Sinusoidal Frequency Modulated Waveform for Active Sonar Systems **Dr. David Hague** Naval Undersea Warfare Center Div. Newport	24907 Underwater Vehicle Radiated Noise Reduction **Dr. Scott Hassan** NUWCDIVNPT
24897 FY 23 Mining Research Projects at NPS **Don Brutzman** Naval Postgraduate School	24966 SVP Sonde – Improving Mine Countermeasure Missions Through Targeted Oceanographic Data Within the Mine Threat Area **David Shane** Boston Engineering Corporation	24924 Real-Time Lidar for Undersea Applications **Dr. Layne Churchill** Georgia Tech Research Institute	24893 Designing for Target Strength Signatures **Dr. Thomas Bowling** Naval Surface Warfare Center Carderock Division
CONFERENCE ADJOURNS			

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 27

6:30 – 9:00 am

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

10:00 am – 4:00 pm

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

5:45 – 7:00 pm

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

8:00 – 9:30 pm

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

WEDNESDAY, SEPTEMBER 28

6:30 – 9:00 am

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

10:00 am – 4:00 pm

Bus departs the Dealey Center Auditorium for the hotels (Mystic Marriott and Hilton Garden 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 and Hilton Garden Inn). Drop-offs only.

TRACK INFORMATION

Aviation Systems
Glen Sharpe
Advanced Acoustic Concepts

This Aviation session focuses on the capability, integration and synergies that the airborne undersea community brings to the fight. Because of the wide range of "aviation platforms," from wide-body fixed-wing to rotary winged, as well as the gamut of unmanned systems, 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, littoral and large area search as well as the networking required to make all of this happen. The presentations cover a range of topics, including theoretical discussions by academic institutions and laboratories, reports on experimental systems and systems being developed for fleet introduction, and discussions of Navy programs of record.

C4I
Paul Rosbolt
Systems Planning and Analysis, Inc.

The C4I Technical session 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. A special focus for this year's conference will be Information Assurance/Cyber-Security as it relates to undersea warfare.

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, programmatic 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.
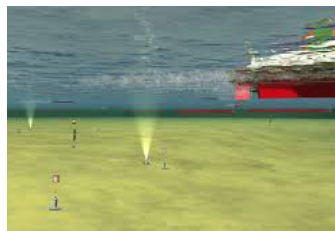
Undersea Sensors
Joe Cuschieri
Lockheed Martin Corporation

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
Tom Ruzic
HII – Newport News Shipbuilding

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, mechanical and electrical systems. The technical presentations range from theoretical discussions by academic institutions and laboratories, reports on experimental systems and systems being developed for Fleet introduction, to discussions of Navy programs of record.
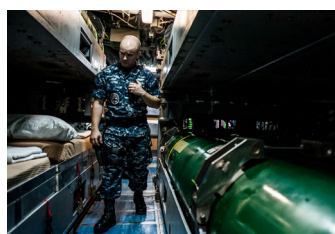
Warfighter Performance & Combat Systems
Paul Rosbolt
*Systems Planning and Analysis, Inc.*

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, etc.
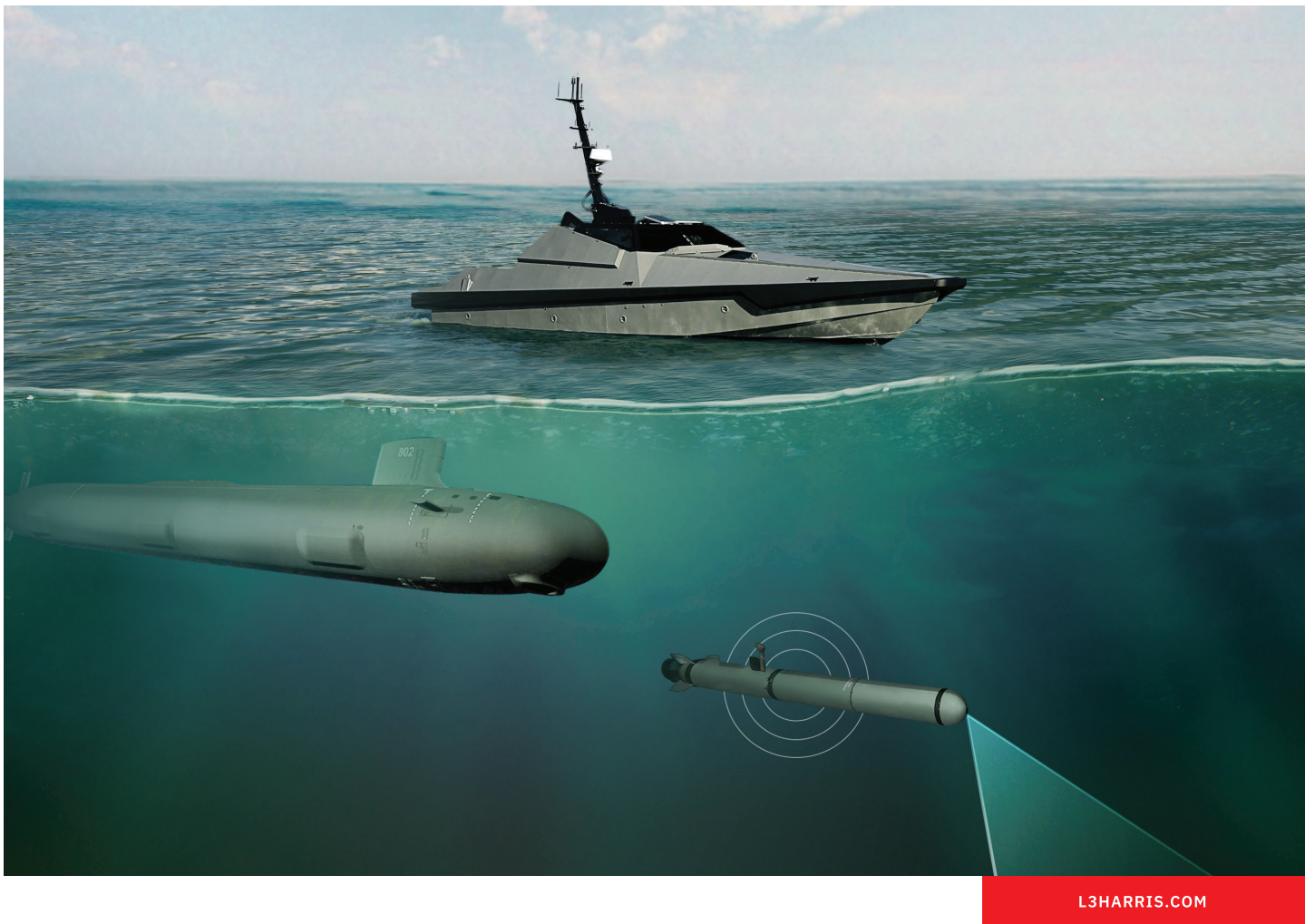
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ABSTRACT DESCRIPTIONS

AVIATION SYSTEMS

24890
P-8A Sonobuoy Positioning System (SPS) Roadmap R&D Efforts and Plans

Ebersman, H., Pattison, K.

Learn about research, development, and planning efforts relating to the Sonobuoy Position System (SPS) used for GPS independent position tracking of RF sources in the maritime environment.

24899
The World's Only Efficient Multi-domain (Marine, Ground, Air) Vehicle

Kempshall, S.

This transformational UAS design is capable of operating in the air, as both a VTOL and conventional airplane, on the land as a wheeled vehicle and in the water as a submersible. This simple and scalable design does this with a highly effective drives system with a minimum of parasitic components, maximizing speed and operational range.

24902
Digital Twinning for Aerospace & Defense Applications

Carlson, S.; Chew, J.

This presentation will illustrate how commercial electronics hardware companies use state of the practice design techniques to ensure that the hardware/software designs work as intended prior to fabrication, ensuring hardware that is built right

the first time, in an affordable, sustainable, and agilely modernizable fashion. We will effectively show solutions to the former SAF/AQ Dr. Will Roper who stated: "digital engineering can greatly reduce development timelines and possibly billions of dollars in maintenance and sustainment costs."

24905
Working Towards Precise Positioning of Tethered Payloads with Fixed Wing UAVs Via Autonomous Aerobatic Maneuvering

Robbins, J.

The use of fixed-wing UAVs for precise positioning of tethered payloads has potential applications in dipping sonar and undersea-to-air communications gateways with improvements in platform range when compared to rotorcraft. This research outlines preliminary work towards the goal of developing and testing autonomy and flight control algorithms for precise tethered payload positioning. Proof of concept flight test data are presented and compared to simulations of the tether dynamics.

24912
Dynamics of Water Entry

Speirs, N.

When a body enters the ocean, it experiences large pressures that can cavitate the liquid, high impact forces, and pulls air under the water as it enters, which affect vehicle performance and control. We study these phenomena and explain how they relate to undersea vehicles entering the ocean.

COMBAT SYSTEMS AND C4I

24754
IWS 5.0 Program Update

Mitchell, L.

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.

24803
Submarine Combat System Innovative Payload Integration

Sikora, J., Herrmann, J.

This session provides a description of the submarine Payload Control System (PCS) and how PCS was developed to rapidly integrate new payloads including the strategies to minimize crew burden and training requirements.

24883
Countering Undersea Surveillance

Woolfe, K.

DARPA Strategic Technologies Office program manager, Dr. Katherine Woolfe, will provide a secret level brief discussing new, DARPA-developed technologies to counter the growing undersea surveillance threat.

24891
1.NPS C2 Capstone 2021: Establishing Aegis Ashore on Senkaku Islands

Brutzman, D.

NPS graduate students in Information Sciences (IS) curricula perform an annual capstone project to study the fundamental role of C2 systems in military operations. The 2021 scenario examined USN/USMC placing Aegis Ashore on Senkaku Islands as expeditionary mission for supporting long-term fleet operations.

24731
The Tyranny of COTS: Breaking the (Life)Cycle of Siloed Systems Development

Carlson, S.

The system design and part selection process now has an explicit bias towards commercial off the shelf (COTS) parts. Underappreciated are the numerous issues associated with this bias. The expected lifetimes of undersea systems are incongruent with the lifetimes of COTS parts. This paper will outline the failings of COTS with regards to undersea and the larger national security needs. Key data from a preliminary analysis by DMEA of the obsolete part backlog for the DoD will be presented. Mitigation methodology from the broadly proven commercial best practices (including automotive, medical, industrial segments) will be explained.

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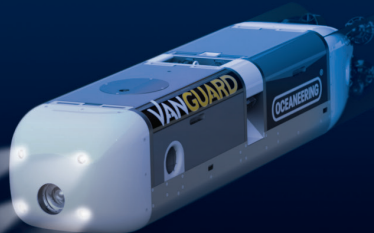
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24906

The Next Steps of System-of-System (SoS) Modeling from a TEAMSub Perspective

Pallack, R.

This presentation identifies modeling areas in which the TEAMSub community is exploring to extend the SWFTS model and notionally add additional models to address emergent needs from a SoS modeling perspective. The intent of this presentation is to provide awareness of these future model areas to facilitate the exchange of ideas across modeling communities, within and outside of TEAMSub, for consideration and potential future collaboration.

24910

SIGINT-based Opportunistic Navigation in a GPS-Denied Environment

Schwacke, J.

Readily accessible signals of opportunity, when associated with prior information about the signal source, can provide the basis for alternative positioning services in a GPS-denied environment and shipboard SIGINT systems can provide the hardware and software platform for implementing such services. We will discuss one example of a SIGINT-based Opportunistic Navigation Waveform that exploits LEO Satellite downlinks.

24914

Asynchronous Communication: A Culture Change to Decrease the Time Variable in Development of JADC2/Overmatch Applications and Systems

Pietrocini, J.

The research will investigate how the implementation of DEVSECOPS to key programs of records can enhance the program's overall capability, reduced timelines, inspire talent acquisition towards our community, and ensure our Navy stays ahead of the threat. Additional awareness to the importance of software development, open source based technologies, and tighter connection to the operational fleet will be discussed

24915

Submerged Acoustic Navigation System (SANS) Capabilities: Present and Future

Crocker, S.

The Submerged Acoustic Navigation System (SANS) consists of seafloor beacons that transmit acoustic ranging signals and receivers integrated into submarine combat systems that process received signals to provide accurate geodetic positions while submerged. The system is currently used to support submarine training and at-sea test events, including Virginia-class test and evaluation. SANS provides the Navy with a cost-effective, portable, deployable, recoverable and reusable system for accurate and precise navigation in submerged, GPS-denied environments.

24919

Architecting Quantum Resistant Implementations for Undersea Maritime Systems (AQuaRIUMS)

Dulny, J., Hernandez, T.

Several modern cryptographic protocols used to encrypt data-in-transit and data-at-rest are at risk of attack over the next decade with the advent of quantum computers. To mitigate this threat and meet the forthcoming NSA requirements, cybersecurity systems must be upgraded to use NIST post-quantum cryptography (PQC) algorithms. Booz Allen discusses their research on implementing PQC across different network architectures to inform optimal solutioning.

24921

DARPA TIMEly Program Update

Kofford, A.

The TIMEly program aims to develop concepts for a heterogeneous underwater network architecture that enables the vision of mosaic warfare by the contemporaneous composition of effect chains from available assets in any domain, but with an emphasis on the underwater domain in order to provide options for execution on the fly. This presentation will provide an update on recent testing efforts.

24925

Undersea Project Overmatch: A SEC-ACQ-DEVOPS Effort

O'Grady, S., Soler, J.

This brief will showcase the capabilities that the Undersea Enterprise is currently developing and plans to deliver in the next few years as part of Project Overmatch. It will also provide an overview of the underlying SEC-ACQ-DEVOPS approach that Undersea Domain is employing including the establishment of the Undersea Warfare Systems Program Integration Office (PIO) to manage interdependencies across programs of record (PoR).

24928

A Model-Based Systems Engineering Approach to Cyber-Resilience for USW Combat Systems

Drozdenko, B.

The complexity of Naval systems has increased in the past two decades, such that no one person has the ability to keep track of all the components of an undersea warfare (USW) combat system. In addition, cyber-resilience has emerged as a key need of modern Naval systems that must be addressed; Naval systems must be architected and designed to survive the fight in a Cyber-contested environment. In this presentation, a Model-Based Systems Engineering (MBSE) approach to designing USW combat systems for cyber-resilience is proposed.

24929

Simplifying the Transfer and Use of TPCP Software Bloat Mitigation Tools

Halligan, M.

Software bloat is a problem affecting all Navy platforms, and the Office of Naval Research (ONR) total platform cyber protection (TPCP) tool suite has been introduced as a mechanism for de-bloating and hardening Naval systems. However, each TPCP tool has been independently developed by different performers from academia and small businesses and requires a customized development environment to operate. Moreover, the ability to quantify the success of each tool has not been well publicized. In this presentation, we introduce the TPCP Portal, a centralized utility for packaging USW combat system inputs, de-bloating and hardening with TPCP tools, and collecting useful metrics to quantify the success of the transformation.

24933

Results and Lessons Learned from Final Testing in DARPA's Cross Domain Maritime Surveillance and Targeting (CDMaST) Program

Kofford, A.

The Cross-Domain Maritime Surveillance and Targeting (CDMaST) program seeks to identify and implement architectures consisting of novel combinations of manned and unmanned systems to deny ocean environments to adversaries as a means of projecting power. Mr. Kofford's presentation will cover results and lessons learned from final testing in this program.

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COMBAT SYSTEMS AND C4I (CONTINUED)

24934
Terahertz Imaging Results from a Large-Scale Data Collection Field Test in 2022
Lockhart, P.

Terahertz (THz) imaging is a nondestructive test and evaluation (NDT&E) technology which utilizes electromagnetic waves to "see" objects or structures inside of an imaged system. This brief will discuss results from the large-scale THz imaging data collection field test conducted on an in-service platform in drydock during 2022, by showcasing THz imaging's capability to detect debonds and other indications/structures of interest using the THz Imaging handheld prototype.

24942
Deep Learning for Cybersecurity: an AI/ML Approach to USW Network Traffic Analysis
Powell, M.

Industry and government have become increasingly reliant upon computer systems and network infrastructure, which are a target for malicious activity, driving an increased need for cybersecurity. One of the largest threats to Naval USW networks is the zero-day, a computer software vulnerability previously unknown to those who should be interested in its mitigation. Contractors who develop Naval systems cannot plan for zero-day attacks and the current software delivery pipeline cannot push out revisions quickly enough. In this presentation, an approach to detect previously unknown zero-day attacks with high probability is proposed.

24960
Platform PCIe: the Solution to Advance Combat and C4I System Capabilities, While Reducing System Complexity
Kornish, B.

Combat Systems and C4I systems need to collect and distribute increasing amounts of data, at faster data rates, with lower latency. Platform PCIe provides the interconnect needed to meet the ever-increasing demands. Platform PCIe expands the standard protocol used to connect computer components "outside the computer box", to enable new levels of system performance in heterogeneous compute architectures.

MINE WARFARE

24877
Mine Warfare Programs Portfolio Summary
Agin, L.

An overview of the existing Mine Warfare portfolio of mine countermeasure (MCM) systems and sea mines will be presented. This presentation will cover current airborne, surface, and underwater, sensors and weapons, along with related Mine Warfare command and control systems.

24878
Operational Gaps in Navy Mining Capabilities
Williams, T., Fuller, A.

A classified presentation of current operational gaps in U.S. Navy mining capabilities with a follow-on discussion on technical challenges and potential future systems opportunities for industry partnering will also be discussed.

24881
Supercavitating Small Caliber Ammunition as a Means to Defeat Underwater Threats
Campion, T.

The shape of the tungsten tips of these rounds are designed to initiate a cavitation bubble at its nose. This starts the reduction of friction and the supercavitating body extends and expands this bubble to cover the entire projectile. These rounds travel at supersonic speeds through tens of meters of water and offer exceptional armor piercing capability against multi-layer structures and structures of unique materials.

24885
Mine Countermeasures Machine Learning Research for Unmanned Underwater Systems
Cobb, T.

The Office of Naval Research (ONR) is currently developing advanced processing techniques and machine learning algorithms for unmanned underwater vehicle (UUV) sensors. This presentation will discuss current applied research thrusts and several recent successful ATR technology demonstrations using synthetic and real aperture sonar systems.

24892
NPS C2 Capstone 2022: C2 Preparations for Theater Mine Warfare
Brutzman, D.

NPS graduate students in Information Sciences (IS) curricula perform an annual capstone project to study the fundamental role of C2 systems in military operations. The 2021 scenario examined novel command and control concepts for theater-wide mine warfare, emphasizing AI/ML for sustained sensor-network improvements and combatant commander Decision Advantage.

24897
FY 23 Mining Research Projects at NPS
Williams, R.

Discussion of mining research projects at NPS by faculty and students planned for FY 2023. Discussion will include current collaborators and invitations for additional collaboration.

21908
Volumetric Low Frequency Broadband Synthetic Aperture Sonar for Deeply Buried Mines and Seabed Infrastructure
Raudales, D.

The prosecution of threat targets and seabed infrastructure buried very deeply within the seabed (e.g. many target diameters) benefits from a novel sonar morphology that is designed to operate above the critical-angle and exploits the coupling of dilatational acoustic waves. Using data collected at-sea with a new autonomous underwater vehicle (AUV) based downward looking volumetric synthetic aperture sonar we demonstrate the prosecution of very deeply buried targets with an area coverage rate commensurate with side-looking sonar systems.

MINE WARFARE (CONTINUED)

24913

The Evolution of Mine Countermeasures Technologies from Short-duration, Unmanned to Persistent, Unattended Operations

Holland, T.

Maritime forces are placing increased emphasis on carrying out military operations in contested environments and at depth. Given the long-term operational experience of the naval mine warfare community in sensing, finding and neutralizing seafloor threats, and fighting from the seabed, in the very near term, mine countermeasure technologies will profoundly influence first generation seabed warfare capabilities.

24922

DARPA Kraken Program Update

Waterston, J.

This presentation will provide an update on Kraken program testing.

24941

Compact Encapsulated Effector (CENCAP) - Future Naval Mine

Van Kirk, J.

This paper will cover the efforts conducted, as well as the future planned efforts for the Compact Encapsulated Effector (CENCAP) ONR Future Naval Capability program. This program, transitioning to PMS 495 in FY24, combines warhead enhancements and new approaches to fuze architecture to provide the US Navy with enhanced undersea mining capability.

24951

SMD System

St. Amant, J.

The SMD System is a prototype alternative mine delivery system.

24968

Data as a Competitive Advantage: Access, Ownership, and Innovation

Cook, D.

This presentation argues that undersea sensor data collected by the Navy is a precious resource that is underutilized relative to its potential. Technical and cultural barriers will be discussed, as will examples of other communities who have navigated similar problems successfully. MCM seafloor survey data will be the primary focus of this talk, but the principles apply more generally.

24969

Multi-Shot Mine Neutralization – USV Based Mine Countermeasures Timeline Reduction

Donald, E.

The periods between the distinct steps of Detection, Classification, Identification and Neutralization in the mine hunting detect to engage sequence can have significant impact on the overall mine countermeasures timeline. This is particularly true of the as the sequence proceeds from Classification through Identification to Neutralization. Saab's Double Eagle Multishot Mine Neutralization System (MUMNS) allows the combination of the Identification and Neutralization steps of the DTE without unnecessary expenditure of ordnance while reducing the mine countermeasures timeline.

UNDERSEA SENSORS

24498

Accelerating ASW Proficiency and Performance through High-Fidelity ASW Trainers & Advanced Acoustic Reconstruction

Long, J.

Our presentation will have three main areas of focus: New ASW training systems and their uses; changes and enhancements to ASW courses and curriculum taught at our schoolhouses; and future integration of SCSTC San Diego into a holistic fleet training concept. We will also share our "ASW 2035" vision of a modern ASW training facility that is connected to the Fleet through existing and future capabilities to provide real-time training, reach-back support, and just-in-time acoustic analysis to operational units, both inport and underway.

24772

APB Development and Advanced Sensor-Related Development Efforts

Scala, P.

Mr. Scala will provide an update for APB development and advanced sensor related development efforts.

24830

PMS 485 Deployable Surveillance Systems Update

Lashomb, S.

This brief details PMS485's Deployable Surveillance Systems (DSS) current activities and plans for rapid prototyping, production, and rapid fielding of surveillance systems under Middle Tier Acquisition (MTA) authority. DSS are focused on meeting gaps and emergent needs in the Integrated Undersea Surveillance Systems (IUSS) Program and support the concepts of Undersea Constellation and Full Spectrum Undersea Warfare. By utilizing MTA, the DSS team continues to transition innovative technologies rapidly to operations thereby maintaining overmatch in the undersea domain.

24842

Acoustic Travel Time Assimilation into an Ocean Circulation Model

Escobar, I.

An assimilation framework includes acoustic propagation observations into a general ocean circulation model to improve our understanding of the ocean interior. This presentation highlights efforts to create an adjoint data assimilation framework that uses acoustic travel times to study sensitivities of ocean hydrography due to acoustic observations.

24874

OMI for Explainable AI/ML in MF PAS

Lubke, M.

The automated signal and information processing chain for the US Navy mid-frequency (MF), pulsed active sonar (PAS) includes an artificial intelligence/machine learning (AI/ML) classifier. A recent operator machine interface (OMI) effort has focused on improving the extent to which human operators understand the AI/ML outputs using an interactive guided-analysis workflow that includes several graphical displays and natural language explanations.

24879

Characterizing Sea Surface Conditions While Submerged & Underway

Doran, A.

We demonstrate the ability to characterize sea surface conditions (wave height, wave period, wave direction) from a submerged platform while underway using an upward-looking transducer (top sounder). Rigorous descriptions of the wave spectra can be determined from depth and without relying on subjective visual classification.

24886
Improved Sonar Aiding of Inertial Navigation Systems in GPS-Denied Environments
Mullison, J.

Range-size tradeoffs associated with specifying a DVL to aid an INS are discussed, along with new technologies developed to increase the measurement range for a given aperture size. These technologies include a firmware upgrade for existing DVLs called XRT and a wholly new hardware called SAVS. SAVS extends the available bottom referenced INS-aiding to 19,500 feet.

24887
Demonstration of Textured Ceramic Model 30 Flextensional Projector
Osborn, J.

An ONR Code 32 program built and evaluated two new low-frequency Model 30 flextensional projectors, one Model 30 used Navy Type III piezoelectric ceramic and a second Model 30 using high strain, textured ceramic that enables higher source level and wider bandwidth options. Conclusions, follow-on evaluations and candidate related applications are discussed.

24901
Compact Towed Reelable Active Passive Sonar for Unmanned Anti-Submarine Warfare
Hoyle, J.

The Compact Towed Reelable Active Passive Sonar (TRAPS) system is a highly capable Anti-Submarine Warfare variable depth sensor that has been successfully tested on unmanned surface vehicles in the US and allied Navy order of battle, including Sea Hunter and the Common Unmanned Surface Vehicle (CUSV). While equipped with the Compact TRAPS system, these platforms have demonstrated repeatable remote launch and recovery of the sonar over multiple days in sea states 3-4, automatic operation of active and passive sonar, monitoring of the sonar (acoustic and non-acoustic data) by a remote operator, and target detection/tracking of in active and passive modes. This presentation will review the capabilities of the Compact TRAPS system, discuss testing conducted on unmanned surface vehicles and outline plans for their integration into upcoming Fleet exercises.

24904
Textured Ceramic's Based 3-inch SONAR Countermeasure
Zook, J.

QorTek will provide an update on technology development for a 3" SONAR Countermeasured based on advanced textured ceramic and the next generation of digitally controlled power amplifiers.

24917
Low Power Passive Acoustic Sensor Suite
Donoher, G.

Low power passive acoustic sensor nodes deployed autonomously on the seabed can improve the strategic situational awareness of the warfighter. This sensor suite includes a wideband planar array, a high frequency elevated array, a mid-frequency elevated array and a low frequency elevated array.

24918
Cooperative SONAR Engagement for Theater Under-Sea Warfare (C-SET)
Psaras, S.

Cooperative SONAR Engagement for Theater Under-Sea Warfare (C-SET) delivers a concept for full-spectrum Under-Sea Warfare (USW) capability that leverages both common architecture and processing across USW assets as a multi-static SONAR force multiplier. This capability includes Tactical Decision Aids and Mission Planning Tools developed for both in-situ multi-static coordination and larger USW planning; allowing USW Commanders to utilize covert modes of active prosecution while mitigating unnecessary active interference and maximizing acoustic efficiency.

24922
DARPA Kraken Program Update
Waterston, J.

This presentation will provide an update on Kraken program testing.

24924
Real-Time Lidar for Undersea Applications
Churchill, L.

This presentation covers results from several airborne lidar bathymetry (ALB) experiments conducted between 2019 and 2021. Specifically, newly developed automated exploitation algorithms that ingest and operate on lidar data are described.

24932
Navy Range Enterprise
Perry, S.

NRE ensures effective warfighting readiness assessments and the advancement of technology through collaboration among T&E and Training organizations and a focus on enabling cost effective, operationally realistic Range capabilities. NRE is focused on the development of a cross-domain holistic Navy Range plan to enable an integrated and optimized range environment – based on Demand (Range User / Program needs) and Supply (Enterprise capabilities).

24943
Understanding the Impact of AC Poling on the Mechanical and Electrical Stability of Relaxor PIN-PMN-PT Single Crystals
Heitmann, A.

High quality, dense [001]-oriented 26PIN-48PMN-26PT 4 x 4 x 12 mm single crystal bars were poled under optimal AC and DC poling conditions. Comparisons between AC and DC poled performance indicates approximately a 30% increase in dielectric and piezoelectric response. The AC poling enhancement was found to be stable in the presence of thermal, electrical and mechanical excitation, however, passing through a phase transformation can lead to a degradation in performance provided sufficient time is given for the metastable AC poled domain structure to relax into its desired low-energy configuration.

24945
The Multi-Tone Sinusoidal Frequency Modulated Waveform for Active Sonar Systems
Hague, D.

This briefing presents basic & applied research on the Multi-Tone Sinusoidal Frequency Modulated (MTSFM) waveform for active sonar applications. The MTSFM possesses a discrete set of parameters that are adjusted to synthesize a broad class of waveform types [Hague, 2020]. Theoretical and experimental results demonstrate that the MTSFM can readily be adapted to possess desired characteristics and that they retain these characteristics when transmitted on practical piezoelectric devices and propagate through the underwater acoustic medium.

24953
Electromagnetic Detection and Location of Submerged Targets
Cranch, G.

(U) A new underwater electromagnetic detection system is shown to be capable of detecting and locating targets with a high probability of detection, providing persistent surveillance and a wide coverage area.

24965
Acoustic Vector Sensors
Sell, A.

Acoustic vector sensor (AVS) arrays enable improved rejection of directional ambient noise versus their hydrophone-only counterparts; however, issues of cost, self-noise, and robustness make integration of AVS arrays in traditional Navy ASW systems challenging. The digital Leidos Acoustic Vector Sensor (LAVS) variants for deployable and fixed systems were designed with these issues specifically in mind.

UNDERSEA VEHICLES

24757
Foreign Unmanned Vehicle Capabilities
Adelsen, A.

Foreign Unmanned Underwater Vehicle (UUV) capabilities, employment, and concept of operations have and continue to be developed rapidly for use in foreign fleets. This paper conducts analysis of this emerging technology to better understand its future use in foreign fleets.

24893
Designing for Target Strength Signatures
Bowling, T.

The target strength characteristics of a submerged naval structure are an important signature feature in undersea warfare. This presentation will describe a recent study performed by NSWC Carderock Division to optimize target strength during the design of future submarines.

24907
Underwater Vehicle Radiated Noise Reduction
Hassan, S.

An overview of radiated noise from an undersea vehicle and a current program to address quieting will be presented. Predictive methods and models along with silencing technologies under development will be discussed.

24926
Alternatives for Submarine Torpedo Tube Launch & Recovery (TTL&R) of UUVs
Smith, J.

The Swedish Navy has demonstrated Submarine Torpedo Tube Launch & Recovery (TTL&R) of Torpedoes and UUVs utilizing a Remotely Operated Vehicle (ROV), called SUBROV. This presentation will review design benefits for 21" TTL&R UUVs as well as discuss design aspects of the SUBROV as an operational capability to recover UUVs and Test Torpedos back into a Host Submarine.

24931
UUV Communications
Atwood, M.

Particularly in far-forward operating environments, UUVs have a need for both commercial and military communications paths to enable robust command and control and data transfer. This talk will provide an overview of the methodology and results of the FY19 UUV Communications Assessment Study, and will then highlight the substantial technical gains made in the years since. Specific detail will be provided on the UUV Communications portfolio, which was stood up to advance the R&D of communications systems required on Navy UUVs, and to transition these technologies into Program of Record (PoR) UUVs.

24936
Advanced Ordnance Package Development for Next Generation Torpedoes
Volkmann, E.

This paper will present advanced ordnance package development information for the next generation of lightweight torpedoes. Here, "ordnance package" refers to the torpedo's high explosive warhead, fuzing system, and associated sensors/electronics."

24937
Large Displacement Unmanned Vehicle (LDUUV) Testing Updates and Enhanced Capability for Fleet Operations
Mierzwa, C.

Large Displacement Unmanned Vehicles (LDUUV) are critical technologies with an increased demand due to Navy requirements for vehicles that require persistence and enhanced capability. Recent work at the Naval Undersea Warfare Center Division Newport has proven Intelligence Preparation of the Environment (IPOE) autonomous vehicle operations in these key areas.

24944
The DIVE-LD: A Transformational LDUUV for Advanced Subsea Applications
Taylor, P.

Anduril's Maritime division has rapidly developed and fielded an advanced Large Displacement Unmanned Underwater Vehicle (LDUUV) based on a novel and highly adaptable architecture which can be scaled to a variety of mission requirements. Activities to be reviewed include a proof-of-concept effort for fully autonomous subsea asset inspection by a shore-launched autonomous underwater vehicle (AUV). Our capabilities focus on seabed survey, inspection, and data capture through mission autonomy which are pertinent to a wide range of government, military, and commercial applications.

24946
DARPA Hunter Program Update
Waterston, J.

DARPA Program Manager, Mr. John Waterston, will provide a classified briefing on the Hunter program. The presentation will include updates on Hunter program testing and the path towards demonstration of an XLUUV payload delivery concept. Additionally, the presentation will include an update on the program's efforts to develop and deploy open architecture software.

24952
Fighting into the Bastions: Overcoming Undersea Anti-Access Networks
Clark, B.

This paper proposes an approach for far-forward undersea operations that circumvents improving adversary anti-submarine sensors and weapons by embracing lessons from decades of efforts by air forces to overcome air defenses. This approach will assume opponents are mounting historically informed anti-submarine effort, including robust active and passive undersea sensor networks combined with engagement capabilities and tactics that exploit the inherent vulnerabilities of submarines, which are slower than aircraft or torpedoes and lack substantial self-defense. To avoid being marginalized during combat, submarines will need to employ jamming, deception, and destruction of enemy anti-submarine sensors and self-defense against weapons, not unlike the ways air forces counter air defenses.

24963
Seafloor Service Node System Integration Laboratory (SIL)
Lehtinen, R.

Future Navy operations in forward areas require increased cross-domain C4ISR infrastructure and capabilities for interoperability and support to a variety of subsea and surface assets, particularly unmanned underwater and surface vehicles (UUV/USV). To address these emergent requirements, Leidos is developing an in-water system integration laboratory (SIL) as a model and demonstrator that provides energy and communication services to subsea platforms.

24871

Own Ship Electromagnetic Signature Monitoring

Raghavan, S.

The Office of Naval Research (ONR) has established the Own Ship Electromagnetic Monitoring (OSEM) Technology Candidate (TC) project to develop and mature an improved magnetic sensor system and to enable the optimal location of magnetic sensors for enhanced magnetic signature awareness and control. In this paper, we will discuss the technical and programmatic background behind OSEM and progress made thus far. We will also discuss some of the broader applications of the technology underlying OSEM.

24909

Prioritization of Test and Evaluation (T&E) Ensures Fleet Readiness & Overmatch in the Undersea Domain

Rahme, E., Zielinski, M.

In order to provide the Fleet with reliable tools to maintain overmatch, Test and Evaluation (T&E) must be executed in close coordination with the Immediate Superior in Command (ISIC) and Type Commander (TYCOM). The VIRGINIA Class Submarine Program Office, Warfare Requirements and Test Directorate (PMS450W) has maintained an exemplary record throughout program history. By demonstrating to the Fleet the training value of T&E events, and by working to weave those events into schedule proposals which support Fleet readiness and training overall, warfighter performance is enhanced through test execution. Lessons learned apply to the Ship Acquisition Program Managers (SHAPMs) and Participating Managers (PARMs) as well as to standalone development programs.

24916

Medical Research & Development Approaches for Supporting Future Psychological Readiness of the US Navy Submarine Force via Supportive Technologies and Assessments

Lawson, B.

This presentation provides an overview of a few Naval Submarine Medical Research Laboratory efforts underway to foster submarine force readiness by developing technologies, decision aids, and interventions to support their cognitive and psychological performance. The efforts to be briefed are intended to support alertness, distressed submarine escape decisions, sonar auditory performance, psychological job fit, and leadership development.

24927

Attributing Mission Performance to Submarine Subsystems

Proule, J.

By employing statistical emulators in place of higher-fidelity models, the Mission Engineering & Analysis Department of the Naval Undersea Warfare Center Division Newport has been able to quickly assess the military utility of different submarine components. This process supports the efforts of naval architects as they develop different conceptual submarine designs and identify which components to include as part of those designs.

24930

Submarine Payload Storage Solutions

Aldrich, B.

The Naval Undersea Warfare Center Division Newport has developed a number of shock qualified storage solutions to help facilitate the integration of Unmanned systems and other payloads onto submarines. These solutions, and the tools utilized in developing them, will be presented highlighting the versions for different submarine classes and real-world examples.

24938

Undersea Warfare (USW) Decision Superiority Innovative Naval Prototype (INP)

Squire, P.; Sideleau, S.

Future competition and conflict will include multiple, concurrent missions with many sensors, payloads, human-machine and machine-machine teaming that will challenge decision quality, efficiency and timelines. This INP aims to provide the submarine control room of the future with superior decision-making capabilities through technologies to support tactical warfare and on-board training/rehearsal that accelerates learning and understanding, and ability to adapt faster than adversaries.

24967

Cloud Access to Tactical Systems: Improving Warfighter Performance and the Submarine Kill Chain

Piccinini, J., Monte, F.

Innovative Defense Technologies (IDT) designs and develops leading-edge solutions that are transforming the speed at which the DOD is delivering software-based warfare capabilities. IDT's technologies and methodologies dramatically accelerate the deployment of capabilities, improving quality while reducing time and cost.

BIOGRAPHIES

VADM BILL HOUSTON, USN

Commander, Naval Submarine Forces, Commander, Submarine Force, U.S. Atlantic Fleet Commander, Allied Submarine Command
Office of the Chief of Naval Operations

Vice Adm. Houston is a native of Buffalo, NY and a 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 a Master's of Business Administration 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, California and was commodore of Submarine Squadron 20 in Kings Bay, GA.

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, and director, Undersea Warfare Division, Office of Chief of Naval Operations (N97).

Houston assumed his current duties in September 2021 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 commands 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.

VADM JEFF TRUSSLER, USN

Deputy Chief of Naval Operations for Information Warfare, N2/N6, Office of the Chief of Naval Operations/Director of Naval Intelligence
Naval Intelligence

Vice Adm. Jeff Trussler is a native of Oklahoma and a member of the Cherokee Nation. He graduated from Miami High School ('81 Wardogs), Northeastern Oklahoma A&M Junior College, Oklahoma State University, and the University of Oklahoma. He was commissioned at the Officer Candidate School in Newport, RI, in 1985. He was also a 2011-2012 Fellow of the Massachusetts Institute of Technology Seminar XXI program in Foreign Politics, International Relations and the National Interest.

His previous shore and staff assignments include Submarine Force U.S. Pacific Fleet (COMSUBPAC), U.S. Pacific Fleet (CINCPACFLT) nuclear propulsion examining board (NPEB), two tours at the Navy Personnel Command (NPC), the Joint Staff, and the Navy Staff.

At sea and operational assignments, he served as a division officer on USS Honolulu (SSN 718), engineer officer on USS Tennessee (SSBN 734) and executive officer on USS Columbus (SSN 762). He commanded USS Maryland (SSBN 738) (Blue) and was the first commander of Task Force 69 for the U.S. 6th Fleet in Naples, Italy.

Trussler's flag assignments were as the first commander, Undersea Warfighting Development Center (UWDC) and as director, Future Plans on the Navy Staff.

Trussler was the recipient of the Naval Submarine League's Rear Adm. Jack Darby Award for Inspirational Leadership and Excellence in Command for 2006. He is most proud of all of his shipmates on Maryland that went on to senior leadership positions in the Chief's Quarters and the eight officers that have gone on to their own commands.

He assumed duties as deputy chief of Naval Operations for Information Warfare and the 68th director of Naval Intelligence in June 2020.

VADM JOHNNY WOLFE, USN

Director
Strategic Systems Programs

Vice Adm. Johnny Wolfe is a native of Somerset, Texas. He graduated from the U.S. Merchant Marine Academy, Kings Point, NY, in 1988 with a Bachelor of Science in Marine Systems Engineering. He earned a Master of Science in Applied Physics from the Naval Postgraduate School in 1994, where he was also selected for transfer to the engineering duty officer community.

At sea and on deployment, he served as the assistant weapons officer on USS Lewis and Clark (SSBN 644) from 1988 to 1992, and was part of a forward-based team that led the rebuilding of courthouses and prisons in Iraq in 2007. In 1994 he was assigned as the lead systems engineer on a Ballistic Missile Defense Office (BMDO) joint skunkworks project ran by the U.S. Air Force at Kirtland Air Force Base, NM.

From 1995 to 1996, he was assigned to Strategic Systems Programs (SSP) as the liaison to the Deputy Assistant Secretary of the Navy Command Control Communications Computers & Intelligence (C4I). From 1996 to 2000, he served as the assistant section head for fire control and guidance at SSP. In July 2000, Wolfe was assigned to the Program Management Office, Strategic Systems Programs (PMOSSP), Sunnyvale, CA, where he served as the technical division head. During this tour, he was assigned additional temporary duties as a technical investigator for the Columbia Accident Investigation Board where he served as a lead for foam loss testing and orbit impact analysis. From 2003 to 2014, Wolfe was assigned back to SSP Headquarters. While at SSP he served in several positions, including the deputy chief engineer, branch head for Fire Control and Guidance Branch, the nuclear weapons security coordinator and SSGN coordinator, and branch head for Missile Branch.

In 2012, Wolfe assumed duties as the technical director and deputy director reporting program manager for Strategic Systems Programs. Wolfe was promoted to Rear Admiral October 1, 2014, and assigned as the program executive for Aegis Ballistic Missile Defense, Missile Defense Agency.

Wolfe was promoted to Vice Admiral on May 4, 2018 and assumed the duties as director, Strategic Systems Programs.

Wolfe's awards include the Defense Superior Service Medal, Legion of Merit, Bronze Star, Meritorious Service Medal with gold star, Joint Services Commendation Medal, Navy Commendation Medal with gold star, Navy Achievement Medal with three gold stars, Air Force Achievement Medal and various other service awards.

RADM JEFF JABLON, USN

Commander
Submarine Force, U.S. Pacific Fleet

Rear Adm. Jeffrey Jablon is a native of Frostburg, MD. He graduated from Virginia Tech in 1987 with a degree in Mechanical Engineering. He also holds a Master of Business Administration from James Madison University.

His sea tours include a division officer assignment aboard USS L. Mendel Rivers (SSN 686), navigator and operations officer aboard USS Olympia (SSN 717) and executive officer aboard USS Key West (SSN 722). He commanded USS Philadelphia (SSN 690) in Groton, CT, and was commodore of Submarine Development Squadron (DEVRON) Five in Bangor, WA.

Jablon was recognized by the U.S. Naval Submarine League with the Jack Darby Award for Inspirational Leadership in 2007.

His staff assignments include: tours as assistant professor of naval science at Reserve Officer Training Corps Unit, University of Virginia; special projects officer on the Staff of the Commander, Submarine Force U.S. Pacific Fleet; naval warfare submarine strategist at U.S. Special Operations Command (USSOCOM); Commander, Submarine Development Squadron (COMSUBDEVRON) 12 deputy commander for training; Naval Submarine School prospective commanding officer instructor; division director of Submarine/ Nuclear Power Distribution (PERS-42).

As a flag officer, his tours include deputy director, plans and policies at U.S. Strategic Command (USSTRATCOM), commander, Submarine Group 10, director, military personnel plans and policy, OPNAV (N13) and is currently serving as commander, Submarine Force Pacific.

His awards include the Distinguished Service Medal, Defense Superior Service Medal, Legion of Merit, Joint Meritorious Service Medal, Meritorious Service Medal, Navy-Marine Corps Commendation Medal, Navy-Marine Corps Achievement Medal and various unit and service awards.

RADM SCOTT PAPPANO, USN

Program Executive Office
Strategic Submarines

Rear Adm. Scott Pappano is a native of Bethlehem, PA. He is a 1989 graduate of the U.S. Naval Academy with a Bachelor of Science in Marine Engineering and also holds a Master of Science in Nuclear Engineering from the Massachusetts Institute of Technology.

At sea, Pappano served onboard USS City of Corpus Christi (SSN 705), USS Albuquerque (SSN 706), USS Michigan (SSBN 727 Gold), and USS Ohio (SSGN 726). He commanded USS Buffalo (SSN 715) while forward-deployed in Guam.

Assignments ashore include duty with Commander, Submarine Development Squadron 12 Tactical Action Group; onboard X-Daniel Webster (MTS 626) at Naval Nuclear Power Training Unit Charleston, South Carolina military assistant to the Assistant Secretary of Defense for International Security Policy; and executive assistant to the Director, Programming Division (N80) on the Navy Staff.

After selection as an acquisition professional, Pappano served in the Special Operations Forces Mobility Program Office (PMS 399); as executive assistant to Commander, Naval Sea Systems Command; and as major program manager for the Strategic and Attack Submarine Program Office (PMS 392).

Pappano was assigned as program executive officer, Columbia in March 2019. His previous flag assignments include commander, Naval Undersea Warfare Center and Director, Comprehensive Test Facility.

Pappano served on teams that have been awarded the Joint Meritorious Unit Award, Navy Unit Commendation, Meritorious Unit Commendation, and the Navy "E" Ribbon.

RADM DOUG PERRY, USN

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

Rear Adm. Douglas Perry is a 1989 graduate of the U.S. Naval Academy. As a Flag Officer, Admiral Perry commanded Submarine Group Nine and Task Group 114.3, and served as director, Joint and Fleet Operations, U.S. Fleet Forces Command.

He served at sea as division officer and Navy diver aboard USS Pittsburgh (SSN 720); executive officer/operations officer aboard Submarine NR-1 and executive officer of USS Maine(SSBN 741). His deployment experiences span the Caribbean and Mediterranean, Gulf of Mexico, Atlantic and Pacific. As commanding officer of USS Pasadena (SSN 752), he led the ship on highly successful deployments to the Eastern and Western Pacific.

Perry served as commander, Submarine Development Squadron Five where he led Submarine Force development of unmanned systems tactics and employment, and commanded the Navy's squadron of Seawolf-Class Fast Attack submarines.

Ashore, he served as Submarine Force Atlantic chief of staff, a branch chief for Director Undersea Warfare, on the Joint Staff as combatant commander Joint Exercise Engagement division chief and subsequent chief of staff for the Director of Joint Force Development; executive assistant to Commander, Submarine Forces Pacific Fleet; deputy commander, Submarine Squadron 7; congressional liaison in the Navy Office of Legislative Affairs and Naval Reserve Officers Training Corps instructor at Marquette University.

Perry is currently serving as director, Undersea Warfare Division, Office of the Chief of Naval Operations (N97).

RADM LORIN SELBY, USN

Chief of Naval Research

Rear Adm. Lorin Selby is a native of Baltimore, MD and graduated from the University of Virginia with a Bachelor of Science in Nuclear Engineering and earned his commission through the Navy's Reserve Officers Training Corps program. He also holds a Master of Science in Nuclear Engineering and a Nuclear Engineer degree from the Massachusetts Institute of Technology.

His shipboard tours include USS Puffer (SSN 652), USS Pogy (SSN 647) and USS Connecticut (SSN 22). From July 2004 to May 2007, he commanded USS Greeneville (SSN 772) in Pearl Harbor, HI. During these assignments, Selby conducted several deployments to the Western Pacific, Northern Pacific, Northern Atlantic and Arctic Oceans.

Ashore, Selby's staff assignments include duty as a company officer and instructor at the U.S. Naval Academy, service as the deputy director of the Navy's liaison office to the U.S. House of Representatives and duty as the Submarine Platforms and Strategic Programs branch head in the Submarine Warfare Directorate on the Navy Staff. Following selection as an acquisition professional, he served as the program manager for both the Submarine Imaging and Electronic Warfare Systems Program Office (PMS 435) and the Advanced Undersea Systems Program Office (PMS 394).

As a flag officer, Selby served as commander, Naval Surface Warfare Centers (NSWC) from October 2014 to August 2016. In this position, he led more than 17,000 scientists, engineers, technicians and support personnel, both civilian and active duty, within eight NSWC divisions located across the country.

From June 2016 until May 2020, he served as the Navy's chief engineer and the Naval Sea Systems Command (NAVSEA) Deputy Commander for Ship Design, Integration and Naval Engineering (SEA 05), where he led the engineering and scientific expertise, knowledge and technical authority necessary to design, build, maintain, repair, modernize, certify and dispose of the Navy's ships, aircraft carriers, submarines and associated combat and weapons systems.

In May of 2020, he assumed command of the Office of Naval Research as the 26th Chief of Naval Research.

Selby is authorized to wear the Distinguished Service Medal, the Legion of Merit (three awards), Meritorious Service Medal (four awards), the Navy and Marine Corps Commendation Medal (six awards) and the Navy and Marine Corps Achievement Medal (three awards) in addition to various unit awards.

RDML CASEY MOTON, USN

Program Executive Office
Unmanned and Small Combatants

Rear Adm. Casey Moton is a native of Woodbridge, Virginia. In 1991 he received a commission and a Bachelor of Science in Naval Architecture from the U.S. Naval Academy. He is also a 1998 graduate of Massachusetts Institute of Technology with a degree in Naval Engineer and a Master of Science in Mechanical Engineering.

He qualified as a Surface Warfare Officer while serving onboard USS Monterey (CG 61) as main propulsion assistant and anti-submarine warfare officer from 1992 to 1995. In 2009, he deployed as an individual augmentee supporting Operation Enduring Freedom managing U.S. forces facilities construction in Kabul for Combined Security Transition Command-Afghanistan.

As an engineering duty officer (EDO), Moton has served across all phases of surface ship design and shipbuilding. As an exchange officer, he served in Ottawa in the Future Ship Concepts office for the Royal Canadian Navy. He served in the DDG 1000 Program Office (PMS 500) during preliminary and contract design for the class. He has served at private shipyards at Navy Supervisors of Shipbuilding (SUPSHIPs), initially qualifying as an EDO at SUPSHIP Pascagoula, Mississippi. He later led the SUPSHIP Detachment, Marinette, Wisconsin, as Littoral Combat Ship (LCS) program manager's representative. At the Pentagon, he twice served in the Office of the Deputy Assistant Secretary of the Navy (Ships), including as chief of staff.

He has led two major Defense Acquisition Programs. From 2014 to 2016 he served as major program manager (MPM), LCS Mission Modules (PMS 420), leading development and testing of mission packages for surface warfare, mine countermeasures, and anti-submarine warfare. From 2016 to 2019 he led as MPM of the DDG 51 Program. During his tour, PMS 400D delivered the first five ships after restart of DDG 51 production, and placed an additional 12 ships under contract, including the first Flight III Destroyers.

On May 3, 2019, he assumed command of Program Executive Office, Unmanned and Small Combatants (PEO USC). PEO USC is responsible for acquisition and sustainment of the Navy's expanding family of unmanned maritime systems, mine warfare systems, and small surface combatants.

Moton's awards include the Legion of Merit, Defense Meritorious Service Medal, Meritorious Service Medal, and various other personal, service, campaign, and unit awards.

RDML JON RUCKER, USN

Program Executive Officer
Attack Submarines

Rear Adm. Jonathan (Jon) Rucker is a native of Vienna, Virginia. He graduated Magna cum Laude from Duke University in May 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 a master's degree in Business Administration 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 a Master 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 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 the State of Virginia.

MICHAEL MCCLATCHEY, SES

Program Executive Office
Undersea Warfare Systems

Mr. Michael D. McClatchey serves as Program Executive Office Undersea Warfare Systems, responsible for the acquisition, research, development, transition, and sustainment of all undersea weapon, countermeasure, combat system, training, and sensor systems. He develops opportunities for undersea enterprise capabilities and cross-domain effects by guiding and integrating efforts across PEO UWS, Team Submarine and Undersea Domain portfolio.

Entering the Senior Executive Service in 2015, McClatchey served successively as Director, Advance Undersea Integration, NAVSEA SEA07D, as Executive Director, Undersea Integration, PEO SUB-C, and then as Executive Director for PEO UWS. Across each of these assignments, he led more than 200 personnel and over $1 billion annually in acquisition, certification and lifecycle support of submarine, submersible, surveillance, and advanced undersea systems in Team Submarine.

McClatchey began his federal service career with the U.S. Navy in 1990 in the Office of Naval Intelligence's (ONI) Undersea Warfare Directorate. Selected as ONI's first professional development assignment candidate in 1995, he attended the Naval Postgraduate School in Monterey, earning his Masters. In 2000, McClatchey transitioned to a joint program office assignment where he led development of the office's first strategic plan.

In April 2004, McClatchey transferred to the Naval Sea Systems Command (NAVSEA) in a field assignment to the SEAWOLF Program Office. From 2005-2008 he served in increasing system acquisition program management assignments within NAVSEA's Advanced Undersea Systems Program Office (PMS 394); across this period he oversaw the formulation, development, and production of multiple undersea research and development (R&D) capabilities. From 2009 through 2012 as PAPM for Submarine Escape and Rescue, McClatchey directed acquisition activities for the Navy's Submarine Rescue Diving Program, where

he spearheaded U.S. Navy efforts to promote and establish new, cooperative international submarine rescue agreements with multiple foreign navy partners. Prior to Executive Service selection, he served three years as Deputy Program Manager, PMS 394, directing the acquisition, certification and lifecycle support of more than $300 million annually in submarine, submersible and advanced undersea systems.

McClatchey holds a Bachelor of Science degree in Physics from the University of Maryland and Master of Science degree in Mechanical Engineering from the Naval Postgraduate School. He is a member of the Acquisition Professional Community and is DAWIA Level III certified in Program Management. His awards include Navy Outstanding and Meritorious Civilian Service Awards; two Secretary of the Navy, Navy Unit Commendations; and two Department of the Navy Meritorious Unit Commendations.

RON VIEN, SES

Technical Director
Naval Undersea Warfare Center

Ronald A. Vien, a member of the federal government's Senior Executive Service (SES) since April 2018, serves as the Technical Director of the Naval Undersea Warfare Center (NUWC) Division Newport. In this role, he is responsible for providing research, development, test and evaluation, engineering, analysis and assessment, as well as Fleet support capabilities for submarines, autonomous underwater systems, and offensive and defensive undersea weapon systems, and stewards existing and emerging technologies to advance the state of the art in undersea warfare.

Vien concurrently serves as the Director, Undersea Warfare Systems Engineering, where he is responsible for oversight of 12 technical warrant holders to ensure that the Navy maintains its position as the foremost technical authority over a broad portfolio of undersea warfare systems.

Prior to assuming his current position, Vien led the Sensors and SONAR Systems Department at NUWC Division Newport. As a senior scientific technical manager (SSTM) he led a diversified team of over 600 government and 250 contractor scientists, engineers, and technicians engaged in a broad spectrum of Naval research, development, engineering, and acquisition in pursuit of advancing the state-of-the-art in sensor and sonar system designs.

Vien began his career in 1987 while attending the University of Massachusetts as a part-time employee. In 1989 he accepted a permanent position in the Submarine Combat Systems Department where he produced hardware prototypes for both the Los Angeles- and Virginia-class submarines.

In 1997, Vien transferred to the Surface Undersea Warfare Department to become the operations manager of the AN/SQQ-89 surface ship sonar system Land Based Integration Test Site (LBITS). In this role, he supervised 25 engineers and technicians, and managed a 15,000 square-foot laboratory containing all fleet variants of the AN/SQQ-89 sonar system along with over 100 computer workstations.

From 1998 to 2004, Vien served as head of the Operational Systems Engineering Branch, where he managed dual teams in the development, integration, and deployment of surface ship sonar systems and the design and development of the SPARTAN unmanned surface vehicle.

From 2004 to 2014, Vien served as head of the Sensors and Arrays Division responsible for managing an annual budget of $90 million and supervised a collaborative team of 125 government and 150 contractor scientists, engineers and technicians in all phases of sonar system wet-end design. Under his direction, the Sensors and Arrays Division provided comprehensive lifecycle system engineering, featuring expertise in the roles of Systems Acquisition, Technical Direction Agent, and In-Service Engineering.

Vien attended the University of Massachusetts, Dartmouth where he earned a bachelor's degree in electrical engineering technology in 1988 and a second bachelor's degree in electrical engineering the following year. He received his Master of Business Administration degree from Bryant University in Smithfield, RI in 1996.

Vien is a 2003 graduate of the Office of the Secretary Defense's Executive Leadership Development Program and is certified at DAWIA Program Management Level III.

JENNIFER HAILES

Acting Technical Director
Naval Meteorology and Oceanography Command

Ms. Jennifer Hailes is the Acting Technical Director for the Commander, Naval Meteorology and Oceanography Command (COMNAVMETOCCOM)/Task Group 80.7 at Stennis Space Center in Mississippi. She serves as the primary technical contact for the command, with responsibility and oversight for a fleet of six survey ships, approximately 2,500 civilian and military personnel and a budget of over $300 Million.

Hailes received her B.S. from University of Maryland and her M.S. from Shippensburg University both in Mathematics. She was commissioned in the United States Air Force and served 6 years as a Scientific Analyst conducting Operations Research studies in the manpower, personnel and logistics fields. Following her release from active duty, Hailes worked as a defense contractor for 10 years for three different companies as both a software and database developer and later as a supervisor for multiple Information Technology (IT) projects. Hailes became a Department of the Navy civilian employee in 2006 when she accepted an appointment as the COMNAVMETOCCOM Database Administrator at Stennis Space Center.

In 2007, she took another DON civilian position as the Deputy Oceanographic Information System (OIS) Program Manager and Functional Data Manager for the Naval Oceanographic Office (NAVOCEANO). While in this role, she initiated and managed the NAVOCEANO Geospatial Data Services (NGDS) enterprise effort to provide over 100 Open Geospatial Compliant (OGC) Web Services to the fleet and tracked the execution of a $17m annual average IT budget. In 2012, Hailes assumed the position as Director of the Geospatial Analysis & Support Division in the Warfighting Support Center at NAVOCEANO. In this capacity, she supervised over 35 government, military and contractor personnel in diverse fields such as System Administrators, Geospatial Scientists, Imagery Analysts and Oceanographers managing all the dissemination, geospatial services and IT systems on three different classification networks.

In 2019, Hailes returned to COMNAVMETOCCOM as the Deputy Technical Director. She was responsible for investigating, governing and resourcing innovative Meteorology and Oceanography (METOC) initiatives for operational transition particularly in the areas of IT/Data Science, unmanned maritime systems (UMS) and Geospatial Information Systems (GIS).

Hailes received the DON Meritorious Civilian Service Award in 2011 and Superior Civilian Service Award in 2022.

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We are the only U.S. supplier of submarine electric propulsion equipment, a key supplier of power distribution and control equipment, and a leading supplier of high-performance, complex, cyber-protected, power dense computing.

As the prime contractor for the Technology Insertion Hardware (TIH), we design, test, produce, and install equipment on all U.S. submarines. We provide significant advanced technologies for the Columbia class submarine program and are focused on enabling future submarine platforms like SSN(X), with a range of affordable, groundbreaking power and propulsion technologies.

GENERAL DYNAMICS
Mission Systems

General Dynamics Mission Systems partners with the DoD to provide advanced, mission-critical technologies for sustained influence across the maritime domain. From the modernization of the strategic deterrent to leading innovation in cross-domain, multi-level command, control and communication (C3) capabilities using manned and unmanned assets, our team is innovating to make Platforms Smarter and help the nation achieve a truly integrated all-domain force that is lethal, distributed, and networked.

LOCKHEED MARTIN

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NORTHROP GRUMMAN

Northrop Grumman solves the toughest problems in space, aeronautics, defense and cyberspace to meet the ever evolving needs of our customers worldwide. Our 90,000 employees are Defining Possible every day using science, technology and engineering to create and deliver advanced systems, products and services.

Northrop Grumman's seabed-to-space advanced multi-domain maritime capabilities enable current and future maritime missions. With systems and sensors fielded on VIRGINIA Class submarines, Arleigh Burke Destroyers, E2D Hawkeye, Triton, space-based assets, and connected by cyber secure communications and networks, Northrop Grumman is positioned to fully operationalize the Navy's PROJECT OVERMATCH objectives

TELEDYNE MARINE
Everywhere you look™

Teledyne Marine is a world class Maritime Systems business that is part of Teledyne Technologies Incorporated. Teledyne Marine offers a full spectrum of services and technologies for defense and security applications. Our field-proven products and development capabilities have been meeting the needs of international militaries for decades in applications that include: Mine Countermeasures (MCM), Intelligence, Surveillance, and Reconnaissance (ISR), Anti-submarine Warfare (ASW), Explosive Ordnance Disposal (EOD), Submarine Systems, Rapid Environmental Assessment (REA), Terrain Mapping and Navigation

Teledyne's technology solutions include an array of compact subsea and surface vehicles, sensors, interconnect solutions, and visual and acoustic imaging tools for demanding applications.

L3HARRIS™

L3Harris Technologies is an agile global aerospace and defense technology innovator, delivering end-to-end solutions that meet customers' mission-critical needs. The company provides advanced defense and commercial technologies across air, land, sea, space and cyber domains.

MAROTTA®

Marotta Controls' technologies and systems have been relied on by the US Navy and naval platforms around the world for over 60 years. Today, every US Surface Combatant and Submarine goes to sea with Marotta valves and controls serving in mission-critical applications. Marotta Controls designs, develops, manufactures and qualifies high-performance motion and flow control solutions all on-site in our state of the art facility in northern New Jersey.

Components and systems meet stringent naval requirements and MIL standards for shock, vibration and low acoustic signature and use advanced materials to reduce the weight, life cycle cost, size and corrosion sensitivity.

OCEANEERING®

Oceaneering's Aerospace and Defense Technologies (ADTech) segment delivers solutions that enable humans to work safely and effectively in harsh environments—from underwater to the outer reaches of space. Our innovative solutions support the development and application of practical, cost-effective systems that meet our customers' challenges—from routine to extreme. Our experience and expertise across multiple industries uniquely positions us as a leader in the government, space, and maritime service markets. Our products and services meet the rigorous demands of the complex environments in which they operate, delivering results without compromising safety or reliability.

BRONZE MEDAL AWARD FOR TECHNICAL ACHIEVEMENT IN UNDERSEA WARFARE WINNERS

JON BERRY

Johns Hopkins University Applied Physics Laboratory

The National Defense Industrial Association is proud to present the Bronze Medal to Mr. Jon R. Berry for his personal dedication to and commitment in the area of undersea warfare.

Over a career spanning more than 30 years, Berry has advanced undersea warfare through the development, testing, and delivery of multiple active acoustic systems. He pioneered the first operationally effective false alarm control algorithm, spurring a change of course in the entire active classification development community. He ensured the successful reintroduction of the Low Frequency Active (LFA) system and introduction of Compact LFA. He ushered in a new era of managing and tracking quiet threat submarines in convergence zone environments with continuous active sonar. His in-depth technical knowledge of sonar sensor system development and active acoustics continues to drive the development of future capabilities across surveillance, surface ship, and submarine platforms. His tireless devotion to the defense of our nation continues to guide undersea technology.

Berry's specific contributions to the development, evaluation, and transition of submarine, surveillance, and surface ship active sonar capabilities contribute substantially to the technical advantages enjoyed by our fleet. His unwavering dedication and accomplishments have significantly contributed to the success of the Applied Physics Laboratory, the United States Navy, and the nation.

The Undersea Warfare Division welcomes the opportunity to recognize the contributions of Mr. Jon R. Berry by its award of the Bronze Medal.

DR. K. TODD HOLLAND

Naval Surface Warfare Center Division Panama City

The National Defense Industrial Association (NDIA) is proud to present the Bronze Medal to Dr. K. Todd Holland for his personal dedication and commitment in the area of Undersea Warfare.

Holland is the distinguished scientist for Mine Warfare Prototyping at the Naval Surface Warfare Center, Panama City Division. His pioneering work, publications and technical contributions in undersea environmental characterization, unmanned maritime systems, and subsea and seabed warfare combined with his leadership in developing, prototyping, and fielding state-of-the-art sensing systems into the fleet has led to international recognition as an authority in ocean and seafloor sensing technologies.

As a recognized technical and subject matter expert in operationally oriented capabilities relevant to the full spectrum of littoral and undersea warfare systems, he provides leadership to multiple commands in support of critical Navy and Marine Corps missions. Holland's accomplishments have significantly contributed to the success of the Naval Surface Warfare Center, the Naval Research Laboratory, the U.S. Navy, and the nation.

The Undersea Warfare Division welcomes the opportunity to recognize the contributions of K. Todd Holland by its award of the Bronze Medal.

DOUGLAS NOLL

Naval Surface Warfare Center Division Carderock

The National Defense Industrial Association is proud to present the Bronze Medal to Douglas A. Noll for his personal dedication and commitment in the area of Undersea Warfare.

Noll is highly esteemed in the propulsor and flow noise communities throughout the Navy. His unique combination of dedication and technical expertise, along with a focus on mentoring and maturing junior NAVSEA personnel has ensured that his skill set is transferred to the next generation. He has provided technical oversight and leadership for all Virginia Class and Columbia Class submarine propulsor and flow noise efforts, along with large-scale model testing. Noll's research into hydroacoustics and its application to submarine designs has permitted the Navy to achieve enhanced vehicle survivability through increased stealth while simultaneously reducing ship design and life-cycle costs.

Noll's contributions in signature control technology has directly contributed to the acoustic superiority enjoyed by operational US submarines and the future fleet. His success in integrating new technologies into ship and submarine designs has enabled great advances in acoustic performance. His unwavering dedication and accomplishments have significantly contributed to the success of the Naval Surface Warfare Center, the U.S. Navy, and the nation.

The Undersea Warfare Division welcomes the opportunity to recognize the contributions of Mr. Douglas A. Noll by its award of the Bronze Medal.

DR. DAVID RIVERA

Naval Undersea Warfare Center Division Newport

NDIA is proud to present the Bronze Medal to Dr. David Rivera for his personal dedication and commitment in the area of Undersea Warfare.

Over a career spanning 33 years, Rivera has distinguished himself as a technical leader in the field of electromagnetics as applied to miniaturized antennas and related systems, earning 18 patents and addressing problems such as stealth, efficiency of operation, and function. Rivera's work allowed solid antenna structures to have specific surface area regions removed while maintaining optimal operation, significantly reducing the size of the antenna and its variants. He has made significant advancements for the Navy by developing: efficient, low-silhouette towed antenna systems to replace previous systems requiring a mast that could reveal a ship's location; first-generation ultra-compact antennas for unmanned undersea vehicles enabling real-time data exchange; pressure-tolerant electromagnetic waveguide systems first used during Operation Desert Storm and in use on all Navy submarines for the relaying of tactical information from within the ship to outboard antennas; establishing the Undersea Warfare Electromagnetic Systems Department's dielectric materials metrology laboratory to develop necessary data without the need to pay outside vendors; and his current work in developing advanced antenna systems for Special Operations forces.

Rivera's unwavering dedication and accomplishments have significantly contributed to the success of the Naval Undersea Warfare Center, the United States Navy, and the nation.

The Undersea Warfare Division welcomes the opportunity to recognize the contributions of Dr. David Rivera by its award of the Bronze Medal.

JULIE WHITE

Naval Undersea Warfare Center Division Newport

NDIA is proud to present the Bronze Medal to Ms. Julie White in recognition of her personal dedication and commitment in the area of Undersea Warfare.

Over the course of her 33-year career with the Naval Undersea Warfare Division, Newport, White has established a reputation as a consummate professional and distinguished technical leader. She has accumulated a wealth of expertise in sonar arrays while holding various positions, including principal investigator, hull arrays technical direction agent, on-site technical representative, lead systems engineer, technical program manager, and chief engineer. She is a nationally recognized expert in all aspects of submarine sonar development and employment and has played an integral role in shaping the submarine sonar suites for the USS SEAWOLF (SSN21) Class, USS VIRGINIA (SSN774) Class, and USS COLUMBIA (SSBN826) Class submarine. The results of her technical efforts, including work on the Large Vertical Array and the Acoustic Superiority Programs, have contributed significantly to warfighter readiness.

White's unwavering dedication and accomplishments have significantly contributed to the success of the Naval Undersea Warfare Center, the U.S. Navy, and the nation.

The Undersea Warfare Division welcomes the opportunity to recognize the contributions of Ms. Julie C. White by its award of the Bronze Medal.

VADM CHARLES E. WEAKLEY AWARD

LISA BLODGETT

JHU/APL

The National Defense Industrial Association is proud to present the VADM Charles E. Weakley Award to Ms. Lisa A. Blodgett for her noteworthy contributions, dedication, and commitment to effective Government / Industry communication in the field of Undersea Warfare.

Blodgett has more than 30 years of experience in USW including submarine warfare, anti-submarine warfare, mine warfare, and the strategic deterrence mission of the SSBN force. She is JHU/APL's Force Projection Sector Head where she directs and leads JHU/APL's efforts to enhance the capabilities of the nation's submarine fleet and ensure the readiness of submarine-based ballistic missile systems. Prior, she

was JHU/APL's executive for USW providing strategic and technical direction to a team of several hundred scientists and engineers engaged in research, development, and operational support of undersea warfare (USW) systems and technologies. Blodgett began her career at JHU/APL focused on delivering improved passive sonar capability to the fleet. As digital signal processing and passive sonar expert, she helped develop the capability to evaluate operational sonar systems in the Navy's Advanced Processing Build/Acoustic Rapid COTS Insertion (ARCI) efforts. The ability to quantify proposed technology improvements proved foundational for the ARCI program, enabling the setting of priorities and sustainment of resource sponsor funding. Later, Ms. Blodgett and her team focused on the SQQ-89 USW system and evaluated the

effectiveness of proposed enhancements and provided the confidence required to develop and field the highly effective SQQ-89 A(V)15.

Blodgett has served in many leadership roles within the undersea warfare community to ensuring effective Government/Industry communications. Currently she is member of the NDIA Undersea Warfare Division Advisory, Co-Chair of the Submarine Technology Symposium, Naval Submarine League Board of Directors Member and Lead of the Nuclear Command, Control, and Communications (NC3) Task Force of the STRATCOM Advisory Group (SAG)

The Undersea Warfare Division of NDIA is proud to present the Vice Admiral Charles E. Weakley Award to Ms. Lisa A. Blodgett.

VADM CHARLES B. MARTELL–DAVID BUSHNELL AWARD

DR. KERRY COMMANDER

Naval Surface Warfare Center Panama City

NDIA is proud to present the Vice Admiral Charles B. Martell–David Bushnell Award to Dr. Kerry W. Commander. As the Chief Technology Officer at the Naval Surface Warfare Center Panama City Division, Dr. Commander has primary responsibility and accountability for research and development at Naval Surface Warfare Center Panama City Division. He has developed science and technology roadmaps, He has been the force behind strategic planning initiatives, and led numerous forward-looking technology development efforts that have significantly contributed to the Navy's undersea warfare capabilities.

Under his leadership, there were many notable contributions to the US Navy including the first fully autonomous UUV

based synthetic aperture sonar. With ONR, he developed and executed a new Offensive Mining Program. He oversaw major transitions of technology and provided technical guidance and technical supervision to the greater US community involved in acoustic and sonar research and development. Dr. Commander served as Program Officer with a portfolio of mine countermeasures and mine warfare sensing technology. His involvement in ASW and swimmer defense led to the development of modeling capabilities, and integration of novel sensors into unmanned underwater vehicles. His efforts provided key components to meet mission needs.

Commander advanced the growth of undersea warfare programs to improve capabilities for the United States Navy. His research findings have distinguished him as an international leader in the acoustics

community. His leadership significantly impacted the engineers and scientists he recruited and mentored with his extensive knowledge of Navy Research and Technology. Through these and many other notable and impactful contributions, Commander has ensured the advancement of the United States Navy Undersea Warfare Capabilities for many years to come.

In recognition of his numerous lifelong contributions to maintaining the U.S. Navy's superiority in undersea warfare, the Undersea Warfare Division of NDIA is proud to present the Vice Admiral Charles B. Martell/David Bushnell Award to Dr. Kerry W. Commander.

CAPTAIN GEORGE W. RINGENBERG AWARD

JOHN HOLMES

L3Harris

John Holmes has been an active member of the UWD NDIA executive board since 1998. During his 20+ years of leadership and service to NDIA, Holmes has provided unwavering support to help the UWD execute its mission of fostering the exchange of technical information between government and industry and expansion of research and development in areas related to undersea warfare.

Throughout his tenure on the UWD Executive Committee, Holmes provided outstanding leadership. He served as the Mine Warfare Technical Committee Chair and Deputy Chair of the Awards Committee and most recently served the UWD Executive Team as Chair and Deputy Chair of the Spring Conference Committee. He has freely shared his valuable insights and lessons learned with executive committee members to ensure consistent conference integration and messaging.

Holmes' guidance, dedication and leadership to the UWD are noteworthy. His support to NDIA's annual Spring Conference, exemplified his organizational and communication skills by securing the finest lineup of flag officers and program managers while aligning conference content and format to reflect the most prevalent and relevant issues facing the undersea warfare community. Holmes' unmatched skillset of advanced planning, innovation, flexibility and patience were exemplified throughout these challenging times.

The Undersea Warfare Division is proud to recognize John Holmes with the Captain George W. Ringenberg Award for his outstanding contributions and service to the U.S. Government, NDIA, and the Undersea Warfare Division.

RADM JACK JARABAK AWARD

LT BRIDGER SMITH, USN

Naval Post Graduate School

While attending the Naval Postgraduate School from January 2020 to December 2021, LT Smith distinguished himself through his outstanding academic performance in the Cyber Systems and Operations Curriculum. His exceptional research clearly demonstrates his intellectual ability, analytical skills, and mastery of undersea warfare. As a submarine officer with nuclear power school experience, he brought a unique perspective to the classroom as well as profound technical depth to his thesis. His thesis, "*A DevSecOps approach for developing and deploying cloud-based, containerized software on submarines*" led to a feasibility study for deploying hardened software containers on a scalable, submarine-compatible platform-as-a-service (PaaS) solution and helped the program team identify infrastructure gaps needed to realize DevSecOps in resource and connectivity constrained environments.

His work accelerated essential capability development for delivering modern software solutions to submarines.

The Undersea Warfare Division, in conjunction with the Naval Postgraduate School, takes great pleasure and welcomes the opportunity to recognize the personal commitment and academic excellence of LT Bridger Smith, USN, by its award of the 2020 RADM Jack Jarabak Bronze Medal Award and wishes him a continued productive and rewarding naval career. Congratulations and well done!

NDIA

LEADING THE WAY IN ENGAGEMENT, NETWORKING, AND NATIONAL DEFENSE

PLAN AHEAD FOR SUCCESS | 2022 – 23 FEATURED MEETINGS, CONFERENCES, AND EVENTS

FUTURE FORCE CAPABILITIES CONFERENCE & EXHIBITION
September 19 – 22, 2022 | Austin, TX

Autonomous Systems | GARM | Live Fire | Multi-Domain | Small Arms | EOD

25TH ANNUAL SYSTEMS & MISSION ENGINEERING CONFERENCE
November 1 – 3, 2022 | Orlando, FL

Program Management | Security Models | Test & Evaluation | Manufacturing

UNDERSEA WARFARE FALL CONFERENCE*
September 26 – 28, 2022 | Groton, CT

Aviation USW | C4I | Mine Warfare | Undersea Sensors & Vehicles | Warfighter Performance

AIRCRAFT SURVIVABILITY SYMPOSIUM
November 1 – 3, 2022 | Monterey, CA

Combat Survivability | Concealment and Deception | Countermeasures | Urban Warfare | Vulnerability Reduction

WOMEN IN DEFENSE NATIONAL CONFERENCE
September 27, 2022 | Arlington, VA

Pivots and Prospects: Success in the New Normal

33RD ANNUAL NDIA SO/LIC SYMPOSIUM
November 17 – 18, 2022 | Washington, DC

Special Operations Forces | Strategic Competition

PRECISION STRIKE TECHNOLOGY SYMPOSIUM (PSTS–22)* SECRET – NOFORN
October 18 – 20, 2022 | Laurel, MD

Precision Capability | Air & Missile Defense | Technology Advancements

I/ITSEC 2022
November 28 – December 2, 2022 | Orlando, FL

Simulation | Training | Virtual Reality

2022 INSENSITIVE MUNITIONS & ENERGETIC MATERIALS (IMEM) TECHNOLOGY SYMPOSIUM
October 18 – 20, 2022 | Indianapolis, IN

Energetic Materials | Insensitive Munitions | Munitions Technology

2023 TACTICAL WHEELED VEHICLES CONFERENCE
February 27 – March 1, 2023 | Columbus, OH

Autonomous Vehicles | Electric Drive | Modernization & Sustainment | Acquisition

2022 JOINT AIA/NDIA INDUSTRIAL SECURITY COMMITTEE CONFERENCE
OCTOBER 24 – 26 | Tucson, AZ

Security Clearance Reforms | Insider Threat Guidance | Cybersecurity Policy

2023 PACIFIC OPERATIONAL SCIENCE & TECHNOLOGY (POST) CONFERENCE
March 6 – 9**, 2023 | Honolulu, HI

Regional Security | Science & Engineering Technology | Technology Engagement

*All Classified | **Partially Classified

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