



Subsea and Seabed Warfare Overview and Local Implementation

Naval Undersea Warfare Center Division, Keyport

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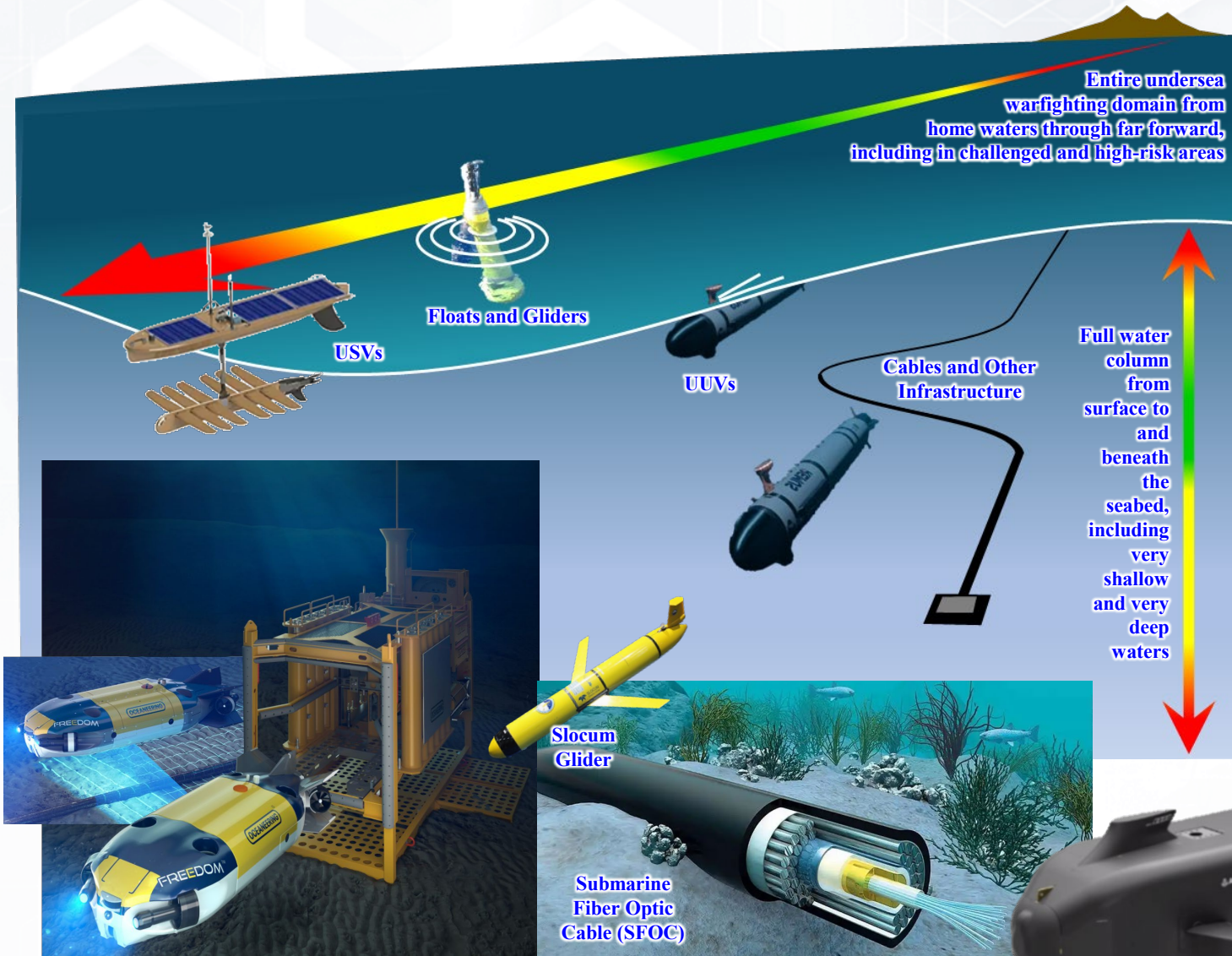
Commanding Officer
Captain Brandon Monaghan

Technical Director
John Kenney, SES

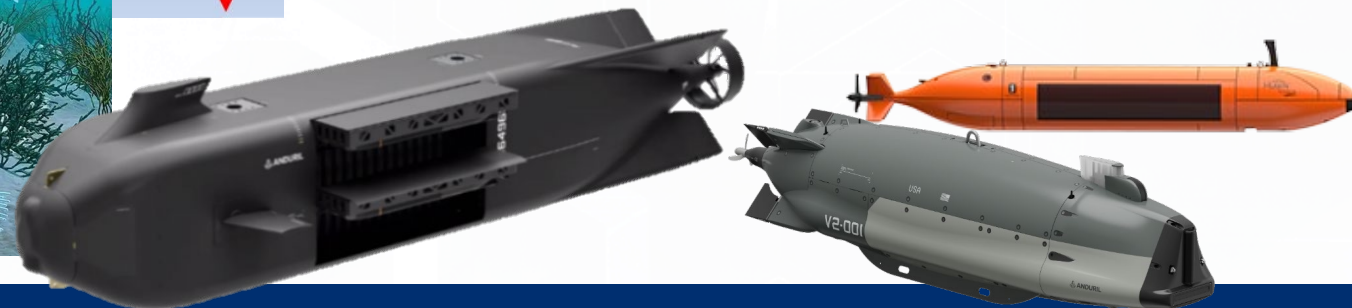
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What is SSW?



- **NWP 3-21 (and other authoritative sources such as the SSW ICD dated 31 March 2019 and the trilaterally-approved AUKUS definition)**
 - Geographic extent of maritime domain
 - From blue harbors through far forward
 - Bathymetric extent of the undersea
 - Very shallow through full ocean depth
 - Types of systems:
 - UUVs, ROVs, gliders, floats, buoys, anchored, and moored infrastructure
 - Includes mines – all undersea MIW/MCM is SSW
 - Does not include submarines, though submarines can deliver effects
 - SSW and C-SSW
 - “With, from, and against”
 - Any effect delivered from an SSW system (anything undersea except a submarine) is SSW
 - Any effect delivered against an SSW is C-SSW
 - **Abundant analysis, but little experience**
 - Analysis not widely read/understood
 - Common to mistake unrelated experience for an adequate substitute for understanding the analysis



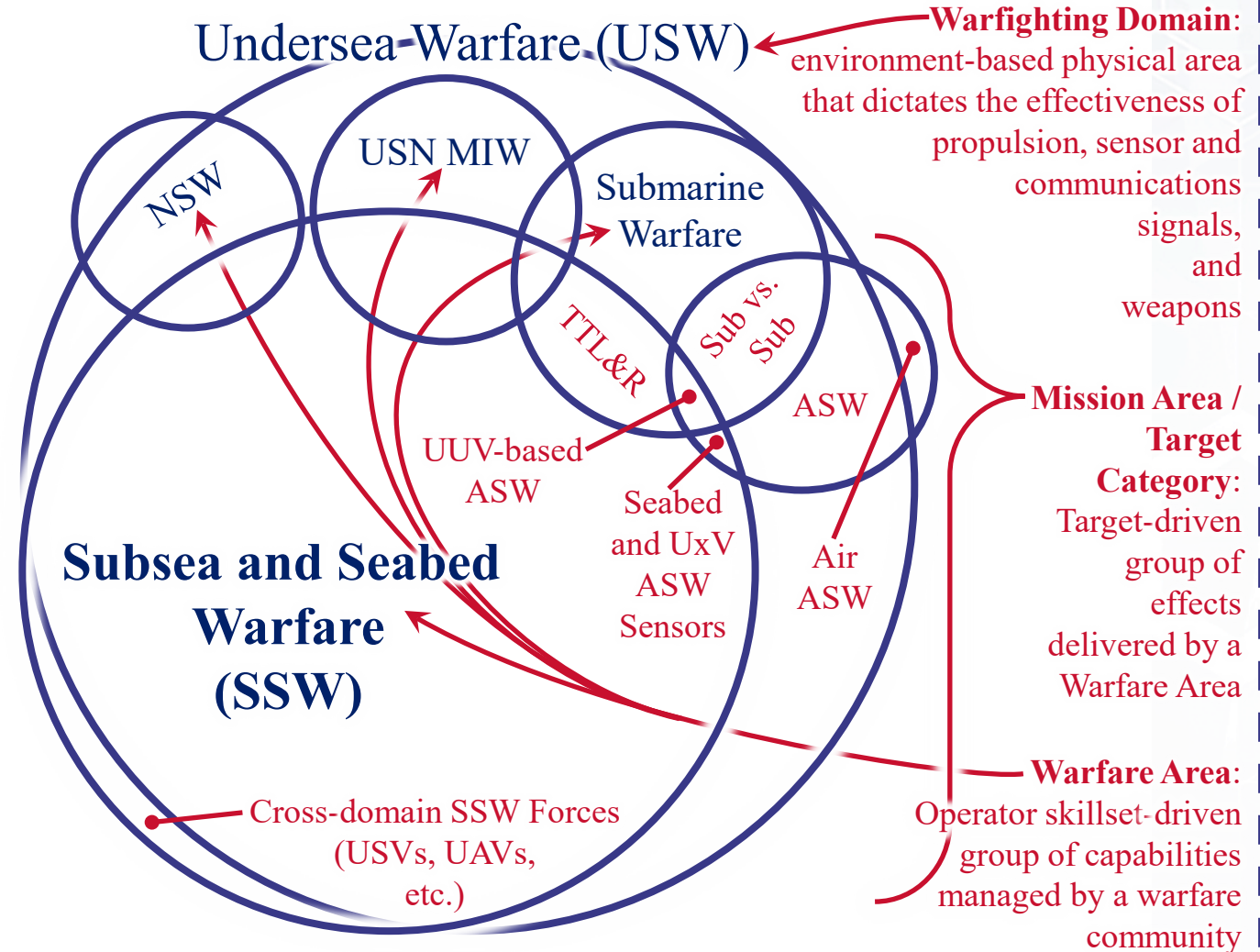
What is SSW?

United States Code (U.S.C.) Title 10 - Warfighting

U.S.C. Title 50 -

Intelligence

- Could use the same equipment
- Different authorities and purposes
- Generally orders of magnitude (1,000 – 10,000%) more effects (targets held at risk or engaged, support effects available or delivered, etc.) needed to compel compliance or capitulation of an armed adversary than to collect intel



• Several extant warfare communities will be needed to execute SSW adequately

- Submarine Force – big resources, understand how to fight in/from most of the undersea
- Naval Special Warfare – agile, well resourced, and able to access shallow, far forward areas
- EOD/MCM – highly experienced operating MK 18 UUVs and MCM-capable ROVs
- Intel Community – need to understand the fast-developing threat, plus long undersea Title 50 experience
- IUSS – know fixed infrastructure, particularly cables
- NAVO – environment extremely limiting, plus long experience with UUVs, gliders, and floats
- Coast Guard – defensive authorities and capable defensive platforms




Department Mission and Vision

Mission: "Drive the product realization of systems, platforms, and operations throughout the Unmanned Enterprise and across the Theater Undersea Warfare spectrum."

Vision: "Enable Distributed Maritime Operations in the Undersea Domain."

SHAPING OUR ORGANIZATION



<p>COMMANDER'S INTENT 4.0 U.S. Submarine Force and Supporting Organizations</p>  <p>Warfighting, People, Safety</p> 	<p>COMMANDER'S INTENT Commander's Guidance to the Theater Undersea Warfare Commander</p> <p>Master Undersea Warfare (USW) As a TUSWC, your Joint Force Maritime Component Commander (JFMCC) or Fleet Commander has charged you with the responsibility to command an integrated, cross domain, full spectrum set of forces designed to operate in and through the undersea domain. In support of Combatant Commander objectives, you are to be ready to dominate the undersea domain by denying our adversaries freedom of maneuver, providing flexible deterrent options to expand the competitive battlespace, and, if deterrence fails, to deliver violence to our adversaries with lethal fires using the full suite of non-kinetic and kinetic capabilities at your disposal to decisively seize the initiative and win.</p> <p>Prepare for War Plan for conflict with the following factors in mind:</p> <ul style="list-style-type: none"> • Command and Control (C2) structures and methods must evolve as a conflict evolves • Understand, contribute, and seamlessly integrate into maritime and Joint Fires processes • Demand and utilize a reliable and persistent undersea Common Operational Picture (COP) that enables your decisions and improves situational awareness for all supporting/supporting Commanders • Posture and optimize your USW force laydown and flow that anticipates and flanks the expected adversary courses of action • Requires supporting intelligence collection plans and priorities to enhance your operational and tactical decision-making and battle rhythm events • Protect and sustain your force through efficient and risk managed logistics plans • Provide clear commander's intent designed to enable and leverage Mission Command • Operational excellence requires practice <ul style="list-style-type: none"> o Conduct realistic mission rehearsals o Demand reality and friction in exercises o Validate sustainment and C3 assumptions o Include allies and partners o Assess USW doctrine and tactics and provide feedback 	<p>COMMANDER'S INTENT</p>  <p>Project Confidence Reliably execute your day-to-day missions to ensure that there is no doubt in our adversaries' minds that we have the credibility, capability, and capacity to dominate the undersea domain. Boldly employ your team and assigned forces to:</p> <ul style="list-style-type: none"> • Execute consistent, timely, and risk-informed USW operations • Study adversary forces to understand their patterns of life, capabilities, and tactics • Build synergy and proficiency between your team and supporting/supporting commanders to establish trust with relationships that can work effectively across seams in conflict • Expand and improve interoperability with USW capable allies and partners <p>Advance the Art of USW Wherever possible, seek opportunities to improve understanding of USW concepts across the Navy and the Joint Force. Advancing USW concepts will naturally generate competing priorities between immediate operational needs and more distant improvement goals. You must use your experience to choose the right times to take near term tactical risk in order to mitigate longer term operational or strategic risk. Focus on:</p> <ul style="list-style-type: none"> • Eliminate seams by leveraging and coordinating with peer Task Force/Group Commanders • Enhance capacity, expertise, and alignment of your Reserve Component • Develop the capability, expertise, and organizational understanding to improve mining doctrine, tactics, and procedures with Naval and Joint partners • Build concepts of operations and employment to utilize Unmanned Undersea Vehicles more effectively across the spectrum of conflict • Plug into, exploit, and contribute to all systems and networks designed to provide the undersea COP • Champion the TUSWC concept by leading the education and training of senior leaders in the Navy and Joint Force
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Organizational Structure/Emphasis Areas

UNMANNED AND TUSW SYSTEMS DEPARTMENT
(Code 50)

UNMANNED UNDERSEA SYSTEMS DIVISION
(Code 51)

LARGE & EXTRA LARGE UNMANNED
VEHICLES BRANCH

SMALL & MEDIUM UNMANNED VEHICLES
BRANCH

SPECIAL OPERATIONS FORCES SUPPORT
BRANCH

UNMANNED SYSTEMS INTEGRATED
PRODUCT SUPPORT BRANCH

FLEET USW READINESS & SURVEILLANCE SYSTEMS DIVISION
(Code 52)

USW AND SURVEILLANCE SYSTEMS BRANCH

USW SYSTEMS ENGINEERING SUSTAINMENT
BRANCH

USW SYSTEMS & FLEET SUPPORT BRANCH

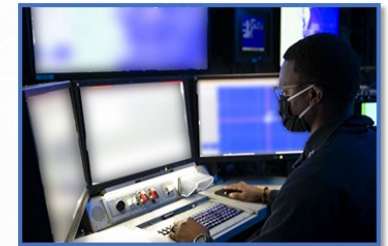
THEATER USW C5I SYSTEMS DIVISION
(Code 53)

SOFTWARE ENGINEERING BRANCH

INFORMATION TECHNOLOGY BRANCH

FLEET SUPPORT BRANCH

SYSTEMS ENGINEERING & INTEGRATED
PRODUCT SUPPORT BRANCH



Unique Facilities and Partnerships



Payload Development /
Integration Facility
17,000 Square Feet High Bay
Off-Gassing Capability



Special Operations Forces /
SOCOM



Fleet Integration and
Engagement

Organizational Authorities Allow
Cooperative Research and Development Agreements
Work for Private Parties

Undersea Proving Grounds

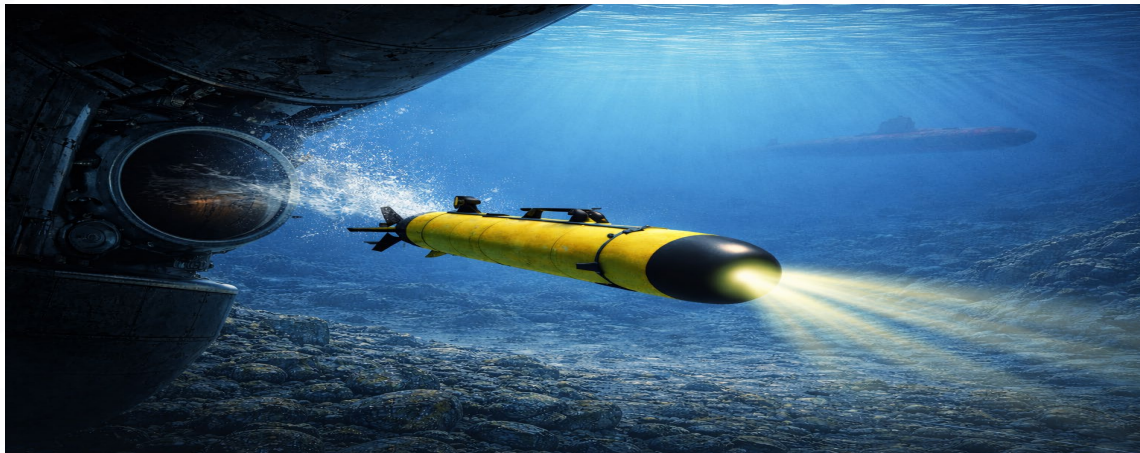


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Why an Undersea Proving Ground?

Problem Statement

There is a critical need for a standardized, data-driven, and repeatable framework to test, measure, and characterize the performance and readiness of underwater Robotic Autonomous Systems (RAS). Without this capability, it is difficult for government, industry, and academia to build confidence, accelerate innovation, reduce risk, and ensure deployed autonomous systems are trusted and combat-effective.

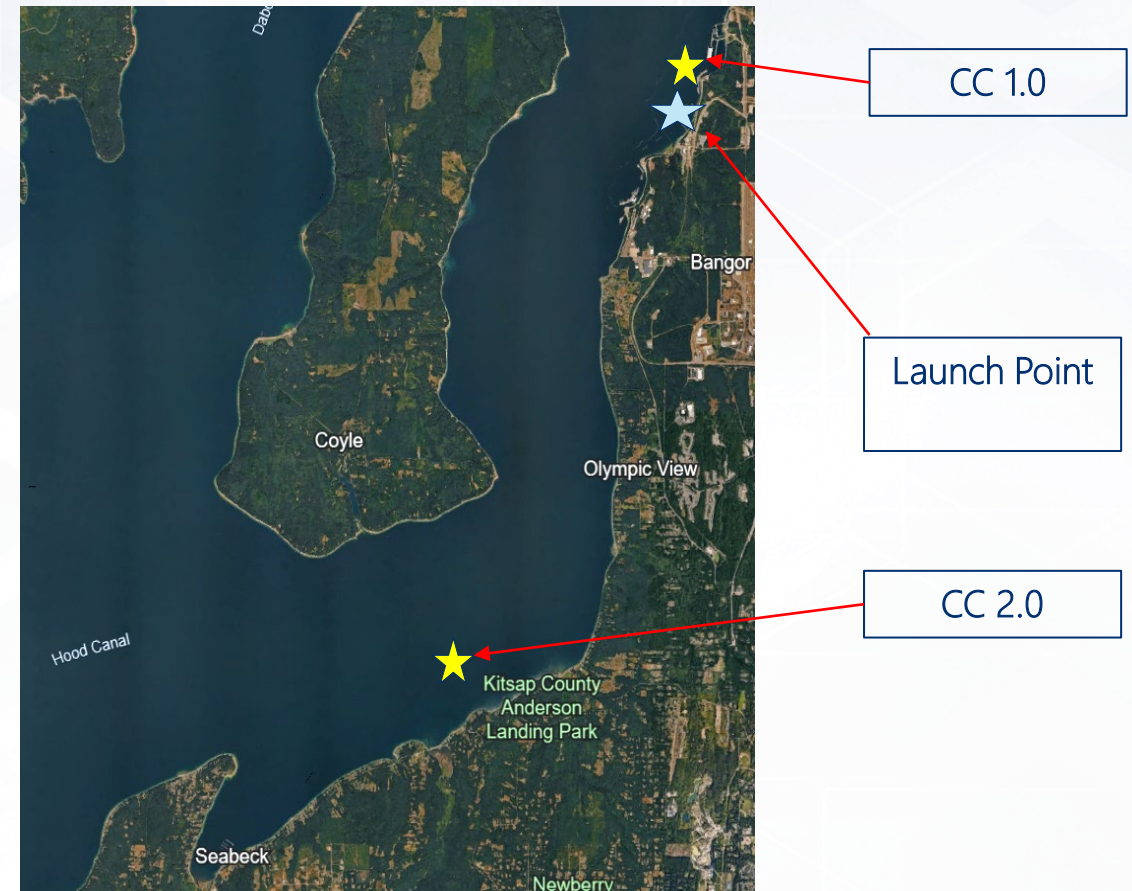


Vision

Establish the Undersea Proving Grounds as a definitive national capability that equips warfighters with the most capable and trusted undersea RAS in the world.

Background

- **Fleet Need Identified (Feb 2024)**
 - Adm. Gaucher identified a need for a CC
 - UUVGRU required a repeatable environment to build confidence before operational employment
- **Rapid Response needed to meet Fleet Need**
 - UUVGRU and Keyport partnered to find a near-term solution
 - EPG West provided an existing seeded range that could be leveraged quickly
- **Confidence Course 1.0 (April 2024)**
 - 450+ CC runs in 2025
 - Multiple different UUVs & engagements across Allies/Industry/Academia
- **Confidence Course 2.0 (Dec 2025)**
 - Expanded course environment with improved operational relevance
 - UUVGRU leveraged the course to support surge deployment certification for subordinate commands, providing a complex, operationally relevant environment built around specific seeded targets.



Wring out all the problems in advance... if we're not going to have a person in the loop, we need to have that confidence built."—ADM Gaucher

Confidence Course: Today → Proving Grounds: Tomorrow

Integrated Service Areas

Capability	Confidence Course	Proving Grounds
Infrastructure (Seeded Range)	Fixed (one Location)	Fixed (multiple) and mobile
Infrastructure Sustainment & Advancement Plan	Fleet focused	Tailorable
Business / Funding Model	Fleet-funded / IRAD-supported	Multiple funding avenues
Data Analysis Process	Vehicle data	Tailorable plan-vs-actual characterization report
Digital Twin	--	Fixed sites to support simulation
Range Support	Limited	Scalable
Test Planning	UUVGRU-led	Tailorable



Test Planning Services



Advanced Range Infrastructure



Expert Data Analysis

Tailorable capabilities designed to build confidence in the system, the operators, and mission effectiveness



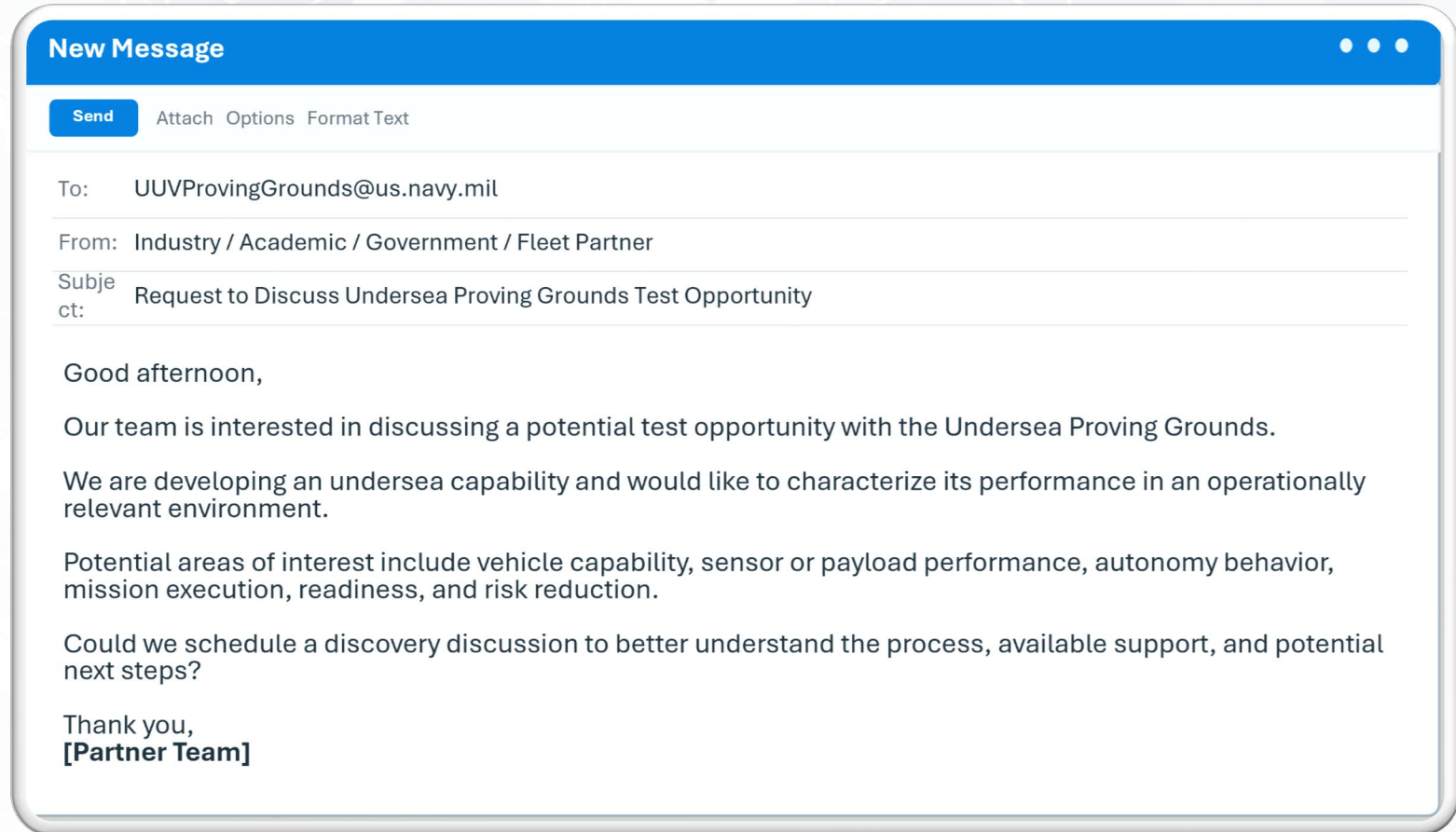
Mobile Proving Grounds: extend testing beyond a single site.



Deep Sea Proving Grounds

Proving Ground Inquiries

- *Email us at:*
- **UnderseaProvingGrounds@us.navy.mil**
- *The inquiry starts the conversation; the Proving Grounds team helps shape the test event and characterization path and associated funding requirements.*



The screenshot shows an email client interface for a 'New Message'. The header bar is blue with the text 'New Message' and three dots on the right. Below the header, there are buttons for 'Send', 'Attach', 'Options', and 'Format Text'. The email content is as follows:

To: UUVProvingGrounds@us.navy.mil

From: Industry / Academic / Government / Fleet Partner

Subject: Request to Discuss Undersea Proving Grounds Test Opportunity

Good afternoon,

Our team is interested in discussing a potential test opportunity with the Undersea Proving Grounds.

We are developing an undersea capability and would like to characterize its performance in an operationally relevant environment.

Potential areas of interest include vehicle capability, sensor or payload performance, autonomy behavior, mission execution, readiness, and risk reduction.

Could we schedule a discovery discussion to better understand the process, available support, and potential next steps?

Thank you,
[Partner Team]



Questions?

Kypt_pao@us.navy.mil

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