



Science and Technology Organization
Collaboration Support Office

Neuilly-sur-Seine – France

Science & Technology Organization
Collaboration Support Office
Platforms Systems and Technology (PST)¹
Science and Technical Committee (STC)

AVT-422 Research Specialists Meeting (RSM)

on

Novel Technologies and Approaches to Naval Corrosion

Kemer (Antalya), Türkiye

02 - 04 November 2026

This Research Specialists' Meeting is open to NATO Nations and NATO STO's Science & Technology Enhanced Partnership Nations (Australia, Japan, Republic of Korea, Switzerland and Ukraine)

Theme - Meeting Objective:

This Research Specialists' Meeting will be held in conjunction with 1st PST STC Meeting Week with the objective to share progress, operational experience and emerging research in corrosion science and engineering as it relates to military platforms and infrastructure across air, land and maritime domains.

Corrosion remains a critical challenge impacting system readiness, lifecycle cost, and mission assurance. Addressing this challenge requires a multidisciplinary and integrated approach spanning materials science, electrochemistry, structural integrity, sensing technologies, coatings development, and digital engineering. The technical scope of the meeting includes advances in corrosion monitoring and inspection (e.g., non-destructive evaluation, acoustic emission, electrochemical techniques), predictive modeling and simulation (including physics-informed and data-driven approaches), and the development of advanced mitigation strategies such as novel coatings, cathodic protection systems, and environmentally sustainable solutions.

In addition to core scientific and engineering advancements, the meeting will address the increasing role of digitalization in corrosion management, including artificial intelligence, digital twins, and data-enabled decision-making frameworks for predictive maintenance and lifecycle optimization. Operational perspectives will be emphasized, including

¹ Previously known as the **Applied Vehicle Technology (AVT) Panel** before 01 July 2026.

corrosion risk management, sustainment strategies, and real-world implementation challenges across naval fleets, aerospace systems, and offshore structures.

The workshop will seek to engage a broad range of stakeholders, including researchers, system developers, operators, and policymakers, to ensure alignment between scientific innovation and operational needs within NATO.

Topics to be covered:

The team will place special interest in the following scientific topics:

- State-of-the-art corrosion testing techniques
- Microbiologically induced corrosion (MIC) management approaches and concerns
- Materials degradation of fully submerged underwater assets
- Active and Passive corrosion sensing
- Galvanic Corrosion
- Artificial intelligence and Machine learning in corrosion prediction and mitigation
- Nickel superalloy development for naval applications
- In-situ corrosion repair techniques

Background:

Corrosion continues to pose a significant challenge to the performance, reliability, and lifecycle of military systems. Over the past decade, the NATO Science and Technology Organization (STO) has advanced corrosion management through activities such as AVT-140 (2011), which established updated best practices, and subsequent workshops in 2014 and AVT-303 (2018), which highlighted both progress and gaps in implementation across NATO nations. More recently, AVT-373 (2023) explored emerging technologies for proactive maintenance, with a focus on sustainability and chromate-free solutions. However, these efforts have primarily emphasized land and aerospace systems.

The maritime domain presents a uniquely severe corrosion environment, driven by saltwater exposure, biofouling, and demanding operational conditions. Naval platforms are particularly vulnerable, yet remain comparatively underrepresented in prior STO activities, underscoring the need for a dedicated and integrated focus.

At the same time, advances in sensing technologies, materials science, and digital engineering, including artificial intelligence, physics-informed modeling, and digital twins are enabling a shift from reactive maintenance to predictive, data-driven corrosion management. While promising, challenges remain in integrating these technologies into operational frameworks and ensuring consistent adoption across NATO systems.



Given the strategic importance of maintaining mission-ready naval assets, there is a clear need to align research efforts, share operational experience, and accelerate the transition of emerging technologies into practice. This meeting builds on prior STO activities while addressing the maritime gap, bringing together the NATO community to advance corrosion control strategies that enhance durability, sustainability, and operational readiness.

Registration

Online registration for the AVT-422 RSM is mandatory for all meeting participants, programme committee members, authors, presenters and external guests. Participation is free of charge. Due to security restrictions, only duly registered and approved participants will have access to the General Information Package (GIP). Once your registration is approved by the PST Executive Office, you will receive a **confirmation email** along with the GIP, which includes detailed information on the conference location and logistics.

In addition to your online registration, you will need to visit the registration desk on-site prior to the meeting to collect your badge. Please note that AVT-422 will begin at 08:45 on 02 November 2026. It is highly recommended that participants arrive early at the meeting venue to collect their badge at the registration desk.

The registration desk location and hours for all the days of the event will be available in the provided GIP.

To register for the event, please head here: [Homepage - NATO STO 1st PST STC Meeting Week](#)

The registration deadline is on **04 October 2026**. Due to logistical constraints, late registrations will not be accepted.

Eligibility and Participation

Participants are reminded to verify their eligibility based on their nationality before registering for the event. The AVT-422 RSM is open to citizens from NATO Nations, Australia, Japan, Republic of Korea, Switzerland and Ukraine.



Contact Information

Questions on the administrative aspects of this RSM or requests for further information about STO activities should be addressed to the PST Executive Office at PST@csso.nato.int.

Any questions regarding the technical aspects of this scientific programme or on the contents of Specialists' Meeting should be addressed to the Programme Committee Co-Chairs and Members, listed below.

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MEETING AGENDA

DAY 1

Monday, 02 November 2026, 09:45 – 17:30

Session 1 Advanced Corrosion Monitoring & Sensing Technologies

Chair: Dr Armen KVRNAN, Naval Surface Warfare Center, United States

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| 09:45 | | Introduction |
| 10:00 | 1 | Coating Integrity Assessment and Corrosion Process Monitoring via AE, EIS and FBG
Dr. Yelitza Delgado González, NLR, ESP |
| 10:30 | | COFFEE BREAK |
| 11:00 | 2 | Electrochemical Characterization of Atomic Layer Deposition Corrosion Barriers on Additively Manufactured Stainless Steel 316L
Dr. Micheal F. Hurley, Boise State University, USA |
| 11:30 | 3 | Performance Evaluation of Eddy Current Testing for Accurate Wall-Thickness Measurement of Marine Heat Exchanger Tubes
Dr. Zhila Russel, Weir Minerals, CAN |
| 12:00 | 4 | Active Corrosion Protection and Real-Time Structural Integrity Monitoring via Intelligent Coating Systems
Dr. Mike Maguire, Copsys, CAN |
| 12:30 | | LUNCH |

Session 2 Alternative approaches to corrosion protection

Chair: Prof. Stamatios KALLIGEROS, Hellenic Naval Academy, Greece

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| 14:00 | 5 | Cold spray coatings as a viable alternative to thermal spray coating for naval corrosion protection and in-situ repair.
Mr. Victor Van Ginneken, Titomic, NLD |
| 14:30 | 6 | Environmentally Friendly Naval and Maritime Coatings
Dr. Dante Battocchi, Elinor Coatings, USA |
| | WITHDRAWN | A Novel Approach to Harness Hull Coating Research to Develop Ice-Resistant Topside Naval Coatings
Dr. Dean Webster, North Dakota State University, USA |

15:00	8	Assessment of the Impact of Alternative Chemicals for Component Cleaning on Corrosion Damage Development Dr. Armen Kvryan, NSWC PHD, USA
15:30		COFFEE BREAK
16:00	9	Bridging In-Service Degradation to Accelerated Corrosion Testing for Structural Aerospace Coatings Dr. ing Arjan Cornet, Delft, NLD,
16:30		DISCUSSION

DAY 2

Tuesday, 03 November 2026, 09:00 – 17:30

Session 3 Digitization, AI, and Predictive Corrosion

Chair: Dr Armen KVRyan, Naval Surface Warfare Center, United States

09:00	10	An Integrated AI-Enabled Digital Corrosion Inspection Approach for Royal Canadian Navy Halifax-Class Frigates Dr. Micheal Cohen, Aff, CAN
09:30	WITHD RAWN	Implementation of a Digital Twin for an Offshore Structure Mr. Esteban Amirante, Beasy Software, GBR
	WITHD RAWN	Evaluating an AI-Enabled Acoustic Emission System for Detecting Naval Corrosion Dr. Benjamin Grisso, NSWC Carderock, USA
10:00	13	Thermal Stress and Corrosion Mechanistic Study of an Aged Inconel 625 Component Under High-Temperature and High-Pressure Conditions Dr.Pimsiree Phromwong-Jockel, Department of National Defence, CAN
10:30		COFFEE BREAK

Session 4 Corrosion Mechanisms & Material Degradation

Chair: Prof. Stamatios KALLIGEROS, Hellenic Naval Academy, Greece

11:00	14	Assessment and Prediction of Galvanic Corrosion Compatibility in Naval Service-Relevant Environments Dr. Doug Wall, Luna Labs, USA
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11:30 15 [The Influence of low conductivity coolants in the azimuth thruster operations](#)
Dr. Stamatios Kalligeros, Hellenic Naval Academy, GRC

12:00 LUNCH

Session 5 Operational Corrosion Applications

Chair: Dr Armen KVRAN, Naval Surface Warfare Center, United States

14:00 16 [Corrosion Inspection and Monitoring in Military Aircraft: CHM and NDT Applications in the Polish Air Force](#)
Mr. Patryk Cieřak, Air Force Institute of Technology, POL

14:30 17 [Multi-pronged approach to managing bilge space corrosion on Halifax Class Fleet](#)
Dr. Zhila Russel, Weir Minerals, CAN

15:00 18 [Design and implementation of a Corrosion Risk Management Program to sustain and extend fleet life](#)
Dr. Zoe Coull, Ice Dragon Corrosion, CAN

15:30 COFFEE BREAK

Session 6 Rapidly Deployable Asset Protection

Chair: Prof. Stamatios KALLIGEROS, Hellenic Naval Academy, Greece

16:00 19 [Temporary Coatings to Minimize Corrosion During Ship Construction, Modernization and Repair](#)
Dr. Dante Battocchi, Elinor Coatings, USA

16:30 20 [Anti-Corrosion Covers are Effective in Combatting Corrosion](#)
Dr. David Sharman, Transhield, USA

17:00 Discussion

DAY 3

Wednesday, 04 November 2026, 09:00 – 12:30

Session 7

Chair:

Alternative approaches to corrosion protection

Dr Armen KVRNAN, Naval Surface Warfare Center, United States

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| 09:00 | 21 | Comparative Field and Laboratory Evaluation of Antifouling Coatings Applied on Steel and Aluminium
Prof. Dr. Darko Landek, University of Zagreb, HRV |
| 09:30 | 22 | A Coupled Physics-Informed Numerical–Experimental Framework for Hydrodynamically Driven Cathodic Protection and Its Impact on Structural Integrity and Electromagnetic Signature of a Naval Vessel Hull
Mr. Charilaos Kokkinos, FEAC Engineering, GRC |
| 10:00 | | Discussion |
| 10:30 | | COFFEE BREAK |
| 11:00 | | Technical Evaluator Presentation & Best Paper Award |
| 12:15 | | RSM Conclusion |

Science and Technology Organization in NATO

In NATO, Science & Technology (S&T) is defined as the selective and rigorous generation and application of state-of-the-art, validated knowledge for defense and security purposes. S&T activities embrace scientific research, technology development, transition, application and field-testing, experimentation and a range of related scientific activities that include systems engineering, operational research and analysis, synthesis, integration and validation of knowledge derived through the scientific method.

In NATO, S&T is addressed using different business models:

- The Collaborative business model where NATO provides a forum where NATO Nations and partner Nations elect to use their national resources to define, conduct and promote cooperative research and information exchange.
- The In-House delivery business model where S&T activities are conducted in a NATO dedicated executive body, having its own personnel, capabilities and infrastructure.

The Science and Technology Organization - STO

The mission of the NATO STO is to help position the Nations' and NATO's S&T investments as a strategic enabler of the knowledge and technology advantage for the defence and security posture of NATO Nations and partner Nations, by:

- Conducting and promoting S&T activities that augment and leverage the capabilities and programmes of the Alliance, of the NATO Nations and the partner Nations, in support of NATO's objectives;
- Contributing to NATO's ability to enable and influence security - and defence-related capability development and threat mitigation in NATO Nations and partner Nations, in accordance with NATO policies;
- Supporting decision-making in the NATO Nations and NATO.

AVT- 422- Research Specialists' Meeting (RSM)

Acknowledgement

The Platform Systems and Technology STC expresses its thanks to Türkiye for the invitation to hold this meeting in Kemer and for the facilities and personnel, which make this meeting possible.