



SCIENCE AND TECHNOLOGY ORGANIZATION  
APPLIED VEHICLE TECHNOLOGY PANEL



NATO Science & Technology Organization (STO)  
Collaboration Support Office (CSO)  
Applied Vehicle Technology Panel (AVT)

Preliminary Meeting Announcement and

## **Call for Papers**

AVT-394 Research Specialists' Meeting

on

## **Water sampling, monitoring and control/remediation for live-fire military ranges**

organised by the Members of the  
Applied Vehicle Technology Panel  
AVT-394 Programme Committee  
to be held in Koblenz, Germany

14 -16 October 2024

Contributions and participation are invited from NATO Nations,  
Enhanced Opportunity Partner (EOP)  
and Partnership for Peace (PfP) Nations

**Note: Final date for submission of abstracts is 1<sup>st</sup> March 2024**



## **AVT-394 RSM on Water sampling, monitoring and control/remediation for live-fire military ranges**

### **Framework of the Meeting**

The Applied Vehicle Technology Panel of the NATO Science and Technology Organization is organizing a Research Specialists' Meeting (RSM) on "Water sampling, monitoring and control/remediation for live-fire military ranges" under its Propulsion and Power Systems focus. The meeting is open to NATO Nations, EOP nations plus PfP Nations and is classified as "UU (Public Release)". A two-day meeting will be held in Koblenz, Germany, from 14-16 October 2024.

A RSM is an event with a maximum of 100 participants. The aim of the meeting is to promote the exchange of state-of-the-art knowledge to an audience of experts and specialists on an important scientific or applied topic. The RSM will include presentations, roundtable discussions and/or a poster session. The Technical Programme Committee is responsible for selecting and inviting speakers. Observers are welcome to participate in the roundtable discussions. RSM results will be summarized for a STO Meeting Proceedings Publication.

### **General Scope and Meeting Objectives**

This RSM will be held in conjunction with the 54<sup>th</sup> AVT Panel Business Meeting (PBM) with an objective to promote military live-fire range sustainability. Many NATO countries have documented soil contamination from munition constituents (heavy metals, explosive residues, propellants) migrating to surface water and groundwater in their respective training range areas. It is therefore high priority to understand how contaminants migrate through the environment to minimize any adverse effects, and to avoid potential range closures. AVT-197 presented an understanding of range contamination, including the fate and transport of toxic material resulting from live-fire training. AVT-291 and AVT-335 (RSM) addressed solutions to improve range sustainability and soil contamination from munition constituents. AVT-362 and AVT-394 (RSM) are investigating more thoroughly water treatment techniques and different mitigation methods while sharing tools for risk reduction and management.

A RSM will bring together experts in the field of water sampling and monitoring strategies and also specialists with experience in remediation or control techniques. This meeting will allow the transfer of information gained from AVT-362 to the broader defence



community i.e., implementing innovative monitoring, mitigation, and water remediation technologies on current ranges and incorporating new criteria into future range designs leading to more sustainable ranges for all countries. The primary objective of the RSM will be to exchange information and discuss current practices and research on the topics of water sampling, monitoring and remediation techniques concerning munition's constituents. Additionally, cold region challenges and climate resiliency, in the context of range contamination, will be discussed.

By taking a more technical approach to groundwater and surface water contamination and managing the risks from training activities, the increased size and tempo of NATO training as set out in the Connected Forces Initiative can be safely achieved. Implementing innovative monitoring, mitigation, and remediation technologies for water resources will lead to more sustainable ranges in the future for all countries and protect the health of surrounding communities.

Many countries have already initiated the development of various solutions such as filter technologies, treatment ponds, phytoremediation, and development of new range designs, all mitigating against water pollution. It will also be of interest to explore the long-term efficiency and vulnerability of various treatment and mitigating strategies. The RSM will provide participating nations the opportunity to share, evaluate and improve water sampling practices and remediation techniques. Knowledge transfer will support training and development and reduce the duplication of effort.

Roundtable discussions will focus on evaluating and improving range designs, and implementing and applying water remediation/mitigation technologies on current ranges for better solutions applicable to all countries. These discussions will help nations understand how to optimize resources and build consensus on best management practices while providing credibility for engagement with environmental authorities and the public. This RSM will be of interest to range managers, as well as munitions' manufacturers, procurement agencies and users, research/testing laboratories and environmental officers from Defence departments and law enforcement organisations. The expertise that will be shared will enhance our mutual understanding of range contamination and strongly support participating nation's range sustainability.

Following the RSM the Technical Programme Committee will disseminate the results in a final summary report detailing the current state-of-the-art information with recommendations for modifications to current procedures or new approaches discussed.

## RSM Topics

Interested speakers are invited to submit papers on the following topics:

- Water sampling and monitoring techniques
- Surface water treatment and management
- Groundwater and active source zone remediation and management
- Hydraulic control measures to avoid off-site migration of contaminants
- Emerging munitions constituents as contaminants in water
- Cold region challenges and climate resiliency for range contamination

The RSM scope will include water contamination related to munitions constituents (e.g., live-fire ranges, shooting ranges). Other types of water contamination (e.g., PFAS, hydrocarbons, solvents, landfill leachate etc.) are not included in the scope of the RSM.

## Background and Justification - Relevance to NATO

Live fire range sustainability is an important issue for NATO. The Connected Forces Initiative is a major NATO thrust that will require larger, more intensive use of training ranges. There is concern that this increased tempo of training will adversely impact our ranges and potentially water resources. Range contamination has led to groundwater contamination, range closures, severe restrictions in range use, large monetary penalties, and significant clean-up costs. If not managed correctly, live-fire training can have considerable impacts on human health and the environment, which can jeopardize the existence of these military assets. Pollution of water may migrate off-range which can trigger a limitation of usage or range closure, liability issues and high cost to remediate. A RSM will bring together experts in the field of water sampling and monitoring strategies and specialists with experience in remediation or control techniques. The meeting will allow the transfer of information gained from AVT-362. Implementing innovative monitoring, mitigation, and water remediation technologies on current ranges and incorporating new criteria into future range designs will lead to more sustainable ranges for all countries. By taking a more technical approach to the management of groundwater and surface water contamination and controlling the risks from training activities, the increased size and tempo of NATO training as set out in the Connected Forces Initiative can be safely implemented. Implementing innovative monitoring, mitigation, and remediation technologies for water bodies will lead to more sustainable ranges for all countries and protect the health of the military users and the surrounding population.



## AVT-394 Technical Programme Committee

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## Deadlines and Preliminary Schedule

- |                    |   |
|--------------------|---|
| <b>1 Nov 2023</b>  | <b>Distribution of Call for Papers</b><br>To solicit abstracts from NATO nations and all other included Nations<br>After: authors to send their abstracts to the Programme Committee  |
| <b>1 Feb 2024</b>  | <b>Abstract Submission Deadline U.S. participants</b>   |
| <b>1 Mar 2024</b>  | <b>Abstract Submission Deadline</b><br>After: Programme Committee to select abstracts and to create the Meeting Programme from selected abstracts   |
| <b>1 Apr 2024</b>  | <b>Authors Informed of Selection Decision</b><br>Programme Committee to inform selected as well as rejected authors<br>AVT to dispatch authors' information package to selected authors<br>After: selected authors to prepare their papers, presentation and clearances |
| <b>15 Apr 2024</b> | <b>Final Agenda Approved by the Programme Committee</b><br>Programme Committee to finalize the Programme<br>After: AVT to prepare and publish the official Meeting Announcement   |
| <b>1 Jul 2024</b>  | <b>Submission of Advance Copy of US Papers to US National Coordinator</b><br>Deadline for US authors to submit a copy of their advance paper to the US National Coordinator (special instructions to be issued with authors' information package)                       |
| <b>22 Jul 2024</b> | <b>Electronic Advance Copy of Paper due at AVT</b><br>Deadline for all other authors to send an advance copy of their full scientific   |



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Paper to AVT  
After: Technical Evaluator to review all submitted papers

- 9 Sep 2024**      **Submission of Final Version of all Papers to AVT**  
Deadline for all authors to send final cleared papers to AVT  
After: AVT to pre-release all papers on the STO website making them accessible to all registered participants of the RSM
- 14-16 Oct 2024**    **Specialists' Meeting to be held in Koblenz, Germany**
- 14 Nov 2024**      **Submission of Corrected Manuscripts**  
Deadline for all papers to be included in the Meeting Proceedings  
After: AVT to edit, prepare, produce Meeting Proceedings, which will be made accessible through the STO website





## Procedures

### Invitation and Abstract Submission

The initial abstract should describe in 1000-1500 words the aim, results and conclusions of the work. Inclusion of 1 to 2 figures and/or photographs to support the abstract is recommended. Authors' names, complete email addresses and other pertinent information must be included with the abstracts. For this purpose, please use the Abstract Submittal Form (Annex 1) and keep the size of files less than 2 MB.

The full scientific paper (recommended limit of 12 pages) will be requested once the Programme Committee has selected the authors and developed the final agenda for the Meeting.

**Please submit your abstract along with the Abstract Submittal Form by no later than 1<sup>st</sup> March 2024 via email to the Programme Committee Co-Chairs:**

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### Security Level, Clearance and Paper Preparation

This RSM is classified as Public Release and open to EOP and PfP. For details please consult the attached section on NATO and Partner Nations Overview (Annex 2). It is the responsibility of each contributor to fulfil the publication release and clearance requirements of his/her organisation/company/affiliation and country to obtain clearance of abstracts and papers as needed. **An official clearance is mandatory in the US (see Annex 3)** and there may also be a requirement in other countries. If in doubt, authors should contact a Programme Committee Member.





Authors of papers selected for presentation and publication will be notified by the Programme Committee by no later than 1<sup>st</sup> April 2024. The AVT Executive Office will then send an Authors' Information Package containing templates, detailed instructions concerning the preparation of manuscripts, as well as, information about the clearance process to each lead author.

### **Travel and Logistics**

Authors of contributions selected for presentation will not be financially supported by NATO. Authors are responsible for their own hotel and travel reservations based on suggestions given in the General Information Package which will be provided typically 4 months ahead of time. Expenses for travel and per diem costs are the responsibility of each author's organisation and nation.

### **Contact Information**

Any questions about the technical aspects of the scientific programme or the contents of papers should be addressed to the Programme Committee Co-Chairs listed above.

Questions on the administrative aspects of this RSM or requests for further information about STO activities should be addressed to:

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***Thank you for your contributions  
which are very much appreciated by the NATO community.***



## The NATO Science & Technology Organization

The NATO Science & Technology Organization promotes and conducts co-operative scientific research and exchange of technical information amongst NATO nations and NATO partners. Being the largest such collaborative body in the world, the STO encompasses over 5000 scientists and engineers addressing the complete scope of defence technologies and operational domains. This effort is supported by the Collaboration Support Office, which facilitates the collaboration by organising a wide range of studies, workshops, symposia, and other fora in which researchers can meet and exchange knowledge.

For further information, please consult the STO web site: [www.sto.nato.int](http://www.sto.nato.int)

The STO website provides a wide variety of information and on-line services ranging from overview information on the organization's mission to news regarding upcoming events. You will find on-line access to more than 1800 scientific publications, as well as, information about current activities.

## Applied Vehicle Technology

The Applied Vehicle Technology Panel, comprising more than 1000 scientists and engineers, strives to improve the performance, reliability, affordability, and safety of vehicles through advancement of appropriate technologies. The Panel addresses platform technologies for vehicles operating in all domains (land, sea, air, and space), for both new and ageing systems.

The members of the AVT community exploit and focus their joint expertise in the following fields:

- Mechanical Systems, Structures, and Materials
- Performance, Stability and Control, Fluid Physics
- Propulsion and Power Systems

For further information please consult the [AVT web site](#).



**Annex 1**

**Abstract Submittal Form**

**AVT-394 RSM on “Water sampling, monitoring and control/remediation for live-fire military ranges”**

*Please attach a copy of this form to each abstract.*

**TITLE OF PAPER:** \_\_\_\_\_  
\_\_\_\_\_

<b>1. Author Title</b>	<b>Name</b>	<b>Nationality</b>
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\_\_\_\_\_

Affiliation: \_\_\_\_\_

\_\_\_\_\_

Full Mailing Address: \_\_\_\_\_

\_\_\_\_\_

Telephone / Email address: \_\_\_\_\_

<b>2. Author Title</b>	<b>Name</b>	<b>Nationality</b>
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Affiliation: \_\_\_\_\_

\_\_\_\_\_

Full Mailing Address: \_\_\_\_\_

\_\_\_\_\_

Telephone / Email address: \_\_\_\_\_



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**3. Author Title**

**Name**

**Nationality**

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Affiliation:

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Full Mailing Address:

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Telephone / Email address:

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**3. Author Title**

**Name**

**Nationality**

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Affiliation:

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Full Mailing Address:

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Telephone / Email address:

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***Please copy as required – recommended not more than 5 authors.***

**Note bene:**

*Authors should be listed in the order they will appear on the programme and in the final manuscript. Unless specified otherwise, the first listed author is presumed to be the lead author having the major responsibility regarding content of the paper.*

## Annex 2

### NATO and Partner Nations Overview with Geographical Abbreviations

NATO NATIONS			
ALBANIA	ALB	LITHUANIA	LTU
BELGIUM	BEL	LUXEMBOURG	LUX
BULGARIA	BGR	MONTENEGRO	MNE
CANADA	CAN	NORTH MACEDONIA	MKD
CROATIA	HRV	NORWAY	NOR
CZECH REPUBLIC	CZE	POLAND	POL
DENMARK	DNK	PORTUGAL	PRT
ESTONIA	EST	ROMANIA	ROU
FRANCE	FRA	SLOVAKIA	SVK
FINLAND	FIN	SLOVENIA	SVN
GERMANY	DEU	SPAIN	ESP
GREECE	GRC	THE NETHERLANDS	NLD
HUNGARY	HUN	TURKEY	TUR
ICELAND	ISL	UNITED KINGDOM	GBR
ITALY	ITA	UNITED STATES	USA
LATVIA	LVA		

EAPC/PARTNERSHIP for PEACE NATION (PfP)			
ARMENIA	ARM	MALTA	MLT
AUSTRIA	AUT	MOLDOVA	MDA
AZERBAIJAN	AZE	SERBIA	SRB
BELARUS	BLR	SWEDEN*	SWE
BOSNIA & HERZEGOVINA	BIH	SWITZERLAND	CHE
MACEDONIA	MKD	TAJIKISTAN	TJK
GEORGIA	GEO	TURKMENISTAN	TKM
IRELAND	IRL	UKRAINE	UKR
KAZAKHSTAN	KAZ	UZBEKISTAN	UZB
KYRGYZSTAN	KGZ		

MEDITERRANEAN DIALOGUE NATION (MD)			
ALGERIA	DZA	MAURITANIA	MRT
EGYPT	EGY	MOROCCO	MAR
ISRAEL	ISR	TUNISIA	TUN

JORDAN	JOR		
<b>ISTANBUL COOPERATION INITIATIVE (ICI) NATION LIST</b>			
BAHRAIN	BHR	SAUDI ARABIA	SAU
KUWAIT	KWT	UNITED ARAB EMIRATES	ARE
QATAR	QAT		

<b>GLOBAL PARTNERS (GP)</b>			
AFGHANISTAN	AFG	KOREA (Republic Of)	KOR
AUSTRALIA*	AUS	NEW ZEALAND	NZL
IRAQ	IRQ	PAKISTAN	PAK
JAPAN	JPN		

<b>OTHER NATIONS (including CONTACT COUNTRIES)</b>			
ARGENTINA	ARG	CHINA	CHN
BRAZIL	BRA	INDIA	IND
CHILE	CHL	SINGAPORE	SGP

\* Australia, Sweden and Japan are usually referred to as “Enhanced Opportunity Partner” (EOP).



## Annex 3

### Special Notice for U.S. Authors and non U.S. Authors Affiliated with U.S. Organizations

**Abstracts of Papers from the U.S. must be sent to the following P.O.C.  
4 weeks prior to the regular abstract submission deadline:**

**NATO S&T Organization US National Coordinator**  
OUSD(R&E)/IO&P,  
3030 Defense Pentagon, Room 5A1082  
Washington, DC  
20301-3030  
Tel: +1 (703) 614-2938  
Email: [osd.pentagon.ousd-atl.mbx.usnatcor@mail.mil](mailto:osd.pentagon.ousd-atl.mbx.usnatcor@mail.mil)

In addition to their abstract, all U.S. Authors must provide:

1. Certification (can be signed by the author) that there are no proprietary or copyright limitations;
2. Internal documentation from their local public affairs or foreign disclosure office (or equivalent) that clearly shows:
  - Title of the paper or presentation
  - Level of clearance (i.e., Approved for Public Release)
  - Name, title, and organisation of the approval authority
3. Full details of authors

Note that only complete packages (abstracts + items listed above) will be accepted by the U.S. PoC.

After review and approval, the U.S. PoC will forward all U.S. abstracts to the AVT Panel Office, who will send them to the Programme Committee.

U.S. authors are encouraged to address questions and concerns to the PoC as early as possible to the US Member of the Programme Committee. Delays in meeting deadlines will impact the timely submission of your abstract.