



# **Technical Meeting on Severe Accident Analysis and Management for Non-Water Cooled Reactors**

**IAEA Headquarters  
Vienna, Austria**

**14 - 17 October 2024**

**Ref. No.: EVT2303766**

## **Information Sheet**

### **Introduction**

IAEA has published a Safety Report on “Applicability of IAEA Safety Standards to Non-Water Cooled Reactors and Small Modular Reactors” in 2023, which presented a high-level review of the applicability of IAEA safety standards to evolutionary and innovative designs (EIDs), (including SMRs). Specifically, the review considered whether current requirements and recommendations in the IAEA safety standards are still applicable to these technologies and to identify any gaps, i.e., triggered by the initial consideration of water cooled reactors during their original development . This report highlighted that some concepts such as ‘reactor core damage’ and ‘severe accident’ are interpreted in a different way for some EIDs, requiring further discussion of their definitions. In particular, in relation to the definition of severe accident in the IAEA Glossary, the meaning of ‘significant core degradation’ needs further exploration for non-water cooled reactors. The discussions during the technical meeting will also contribute to current efforts aimed at preparing future updates of the following IAEA safety standards, i.e.:

- IAEA Safety Standards Series No. SSR 2/1 (Rev.1), Safety of Nuclear Power Plants: Design
- IAEA Safety Standards Series No. SSG-2 (Rev. 1), Deterministic Safety Analysis for Nuclear Power Plants
- IAEA Safety Standards Series No. SSG-4, Development and Application of Level 2 Probabilistic Safety Assessment for Nuclear Power Plants
- IAEA Safety Standards Series No. SSG-54, Accident Management Programmes for Nuclear Power Plants

Hence, it is imperative to gather technical information concerning the analysis and management of severe accidents, particularly those that could lead to an early radioactive release or a large radioactive release in various non-water cooled reactor technologies. The emphasis should be on understanding relevant phenomena, conducting a thorough accident sequence analysis, and identifying effective accident management measures. This detailed information serves a dual purpose. Firstly, it plays a crucial role in advancing the work of the IAEA towards having, in due course safety standards comprising specifics to non-water cooled reactors. By addressing the identified gaps and areas of non-applicability, the standards can be refined and updated to ensure a robust framework for safety assessment. Secondly, the compiled technical insights contribute to the establishment of a global repository of knowledge on the safety of non-water cooled reactor technologies. This repository becomes instrumental in showcasing safety demonstrations of these innovative technologies. By sharing and disseminating this knowledge internationally, stakeholders can collectively benefit from a wealth of information, fostering continuous improvement and ensuring the high standards of safety across the spectrum of non-water cooled reactors.

Over the past two years, the IAEA Departments of Nuclear Safety and Security and Nuclear Energy have collaboratively dedicated efforts to studying severe accidents in liquid metal cooled fast reactors, specifically concentrating on severe accident analysis and modelling. While our progress has been important, the work is not yet completed. Also, there is still a substantial works to be done on severe accidents in high temperature gas-cooled reactors and molten salt reactors, and as well as on the management of severe accidents across the various non-water cooled reactor technologies.

With this in mind, the event will place emphasis on severe accidents in high temperature gas-cooled reactors and molten salt reactors, aiming to explore the distinctive challenges and advancements associated with these reactor technologies. This focused approach is designed to bridge the identified gaps and foster a deeper understanding of severe accident analysis and management for non-water cooled reactors.

## **Objectives**

The primary objective of this event is to facilitate the exchange of information among Member States concerning the analysis and management of severe accidents in non-water cooled reactors, with special emphasis on high temperature gas-cooled reactors and molten salt reactors. Key topics to be explored include relevant design approaches for the consideration of defence in depth in the design for the control of severe plant conditions; identification of severe accident scenarios (postulated or resulting from a sequence of events); severe accident phenomena; computer codes for severe accident analyses; and identification of severe accident management measures.

During the event, participants will discuss experiences and technological challenges associated with design, safety analysis approaches, and licensing aspects concerning severe accidents of non-water cooled reactors.

This event serves as a platform for fostering collaboration and knowledge-sharing, contributing to the continuous improvement in the safety demonstration of non-water cooled reactors.

## Target Audience

Participation is targeted at professionals from reactor research and design organizations, licensee organizations, national regulatory bodies, and technical support organizations who have specialized knowledge of, or experience in design and safety assessment, analysis, and modelling of severe accidents for non-water-cooled reactors.

The event is open to representatives of all Member States with an active nuclear power programme, including those from embarking countries in Phase 3 of their nuclear programme.

The event is in principle open to all officially designated persons. The IAEA, however, reserves the right to restrict participation due to limitations imposed by the available meeting facilities. It is, therefore, recommended that interest persons take the necessary steps for the official designation as early as possible.

## Working Language(s)

The working language of the event will be English. No simultaneous interpretation will be provided.

## Topics

The scope of this event will be focused on severe accident analysis and management of non-water cooled reactors, in particular high temperature gas-cooled reactors and molten salt reactors, and is intended to cover the following topics:

- Consideration of defence in depth in the design for the control of severe plant conditions, including containment philosophy.
- The concept of 'severe accident' as applied to the various non-water cooled reactor technologies, including definition of 'core degradation'.
- Understanding of severe accident related phenomena.
- Accident progression: severe accident sequences/scenarios, computer codes used for severe accident analyses for those reactor technologies, and evaluation of source terms.
- Design and safety assessment of safety features for the management of severe accidents including:
  - severe accident management strategies,
  - inherent safety features,
  - engineered safety features, including equipment survivability,
  - severe accident management guidelines, including radiation protection aspects.
- Regulators' perspective, including regulatory approaches and guidance for, and insights from, assessments of severe accident submissions for non-water cooled reactors.

## Participation and Registration

All persons wishing to participate in the event have to be designated by an IAEA Member State or should be members of organizations that have been invited to attend.

In order to be designated by an IAEA Member State, participants are requested to send the **Participation Form (Form A)** to their competent national authority (e.g., Ministry of Foreign Affairs, Permanent Mission to the IAEA or National Atomic Energy Authority) for onward transmission to the IAEA by **26 July 2024**. Participants who are members of an organization invited to attend are requested to send the **Participation Form (Form A)** through their organization to the IAEA by above deadline.

Selected participants will be informed in due course on the procedures to be followed with regard to administrative and financial matters.

Participants are hereby informed that the personal data they submit will be processed in line with the [Agency's Personal Data and Privacy Policy](#) and is collected solely for the purpose(s) of reviewing and assessing the application and to complete logistical arrangements where required. The IAEA may also use the contact details of Applicants to inform them of the IAEA's scientific and technical publications, or the latest employment opportunities and current open vacancies at the IAEA. These secondary purposes are consistent with the IAEA's mandate.

## Papers and Presentations

The IAEA encourages participants to give presentations on the work of their respective institutions that falls under the topics listed above.

Participants who wish to give presentations are requested to submit an abstract of their work. The abstract will be reviewed as part of the selection process for presentations. The abstract should be in A4 page format, should extend to no more than 2 pages (including figures and tables) and should not exceed 500 words. It should be sent electronically to the Scientific Secretary of the event, Ms Man Liu (Email: [M.Liu@iaea.org](mailto:M.Liu@iaea.org)), not later than **26 July 2024**.

Authors will be notified of the acceptance of their proposed presentations by **26 August 2024**. They will then be requested to prepare and submit their presentations in Microsoft PowerPoint or as a PDF file by email to the Scientific Secretary of the event, Ms Man Liu (Email: [M.Liu@iaea.org](mailto:M.Liu@iaea.org)) by **13 September 2024**.

In addition, participants have to submit the abstract together with the **Participation Form (Form A)** to their competent national authority (e.g., Ministry of Foreign Affairs, Permanent Mission to the IAEA or National Atomic Energy Authority) or their organization for onward transmission to the IAEA not later than **26 July 2024**.

## Expenditures and Grants

No registration fee is charged to participants.

The IAEA is generally not in a position to bear the travel and other costs of participants in the event. The IAEA has, however, limited funds at its disposal to help meet the cost of attendance of certain participants. Upon specific request, such assistance may be offered to normally one participant per country, provided that, in the IAEA's view, the participant will make an important contribution to the event.

The application for financial support should be made using the **Grant Application Form (Form C)** which has to be stamped, signed, and submitted by the competent national authority to the IAEA together with the **Participation Form (Form A)** by **26 July 2024**.

## Venue

The event will be held at the Vienna International Centre (VIC) where the IAEA's Headquarters are located. Participants must make their own travel and accommodation arrangements.

General information on the VIC and other practical details, such as a list of hotels offering a reduced rate for IAEA participants, are listed on the following IAEA web page:

<https://www.iaea.org/events>.

Participants are advised to arrive at Checkpoint 1/Gate 1 of the VIC one hour before the start of the event on the first day in order to allow for timely registration. Participants will need to present an official photo identification document in order to be admitted to the VIC premises.

## Visas

Participants who require a visa to enter Austria should submit the necessary application to the nearest diplomatic or consular representative of Austria at least four weeks before they travel to Austria. Since Austria is a Schengen State, persons requiring a visa will have to apply for a Schengen visa. In States where Austria has no diplomatic mission, visas can be obtained from the consular authority of a Schengen Partner State representing Austria in the country in question.

## **IAEA Contacts**

### **Scientific Secretary**

#### **Ms Man Liu**

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### **Administrative Secretary**

#### **Ms Lila Ledia**

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Fax: +43 1 26007

Email: [L.Lila@iaea.org](mailto:L.Lila@iaea.org)

Subsequent correspondence on scientific matters should be sent to the Scientific Secretary/Secretaries and correspondence on other matters related to the event to the Administrative Secretary.

## **Event Web Page**

Please visit the following IAEA web page regularly for new information regarding this event:

<https://www.iaea.org/events/evt2303766>

# Participation Form

## Technical Meeting on Severe Accident Analysis and Management for Non-Water Cooled Reactors

**IAEA Headquarters, Vienna, Austria**

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To be completed by the participant and sent to the competent national authority (e.g. Ministry of Foreign Affairs, Permanent Mission to the IAEA, or National Atomic Energy Authority) of his/her country for subsequent transmission to the International Atomic Energy Agency (IAEA) either by email to: [Official.Mail@iaea.org](mailto:Official.Mail@iaea.org) or by fax to: +43 1 26007 (no hard copies needed). Please also send a copy by email to the Scientific Secretary, Ms Man Liu, Division of Nuclear Installation Safety, Department of Nuclear Safety and Security (Email: [M.Liu@iaea.org](mailto:M.Liu@iaea.org)) and to the Administrative Secretary, Ms Ledia Lila, (Email: [L.Lila@iaea.org](mailto:L.Lila@iaea.org)).

Participants who are members of an invited organization can submit this form to their organization for subsequent transmission to the IAEA.

**Deadline for receipt by IAEA through official channels: 26 July 2024**

Family name(s): (same as in passport)	First name(s): (same as in passport)	Mr/Ms
Institution:		
Full address:		
Tel. (Fax):		
Email:		
Nationality:	Representing following Member State/non-Member State/entity or invited organization:	
If/as applicable:		
Do you intend to submit a paper?	Yes	No
Would you prefer to present your paper as a poster?	Yes	No
Title:		
I plan to attend virtually:	Yes	No

Participants are hereby informed that the personal data they submit will be processed in line with the [Agency's Personal Data and Privacy Policy](#) and is collected solely for the purpose(s) of reviewing and assessing the application and to complete logistical arrangements where required.

# Grant Application Form

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**Deadline for receipt by IAEA through official channels: 26 July 2024**

Family name(s): (same as in passport)	First name(s): (same as in passport)	Mr/Ms:
Mailing address:	Tel.:	
	Fax:	
	Email:	
Date of birth (yyyy/mm/dd):	Nationality:	

### 1. Education (post-secondary):

Name and place of institution	Field of study	Diploma or Degree	Years attended	
			from	to

### 2. Recent employment record (starting with your present post):

Name and place of employer/organization	Title of your position	Type of work	Years attended	
			from	to




**3. Description of work performed over the last three years:**

**4. Institute's/Member State's programme in field of event:**

**Date:** \_\_\_\_\_ **Signature of applicant:** \_\_\_\_\_

**Date:** \_\_\_\_\_ **Name, signature and stamp of Ministry of Foreign Affairs,  
Permanent Mission to the IAEA or National Atomic Energy  
Authority**

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