



Atoms for Peace and Development

الوكالة الدولية للطاقة الذرية

国际原子能机构

International Atomic Energy Agency

Agence internationale de l'énergie atomique

Международное агентство по атомной энергии

Organismo Internacional de Energía Atómica

Vienna International Centre, PO Box 100, 1400 Vienna, Austria

Phone: (+43 1) 2600 • Fax: (+43 1) 26007

Email: Official.Mail@iaea.org • Internet: <https://www.iaea.org>

In reply please refer to: **EVT2103596**

Dial directly to extension: (+43 1) 2600-22882

The Secretariat of the International Atomic Energy Agency (IAEA) presents its compliments to the IAEA's Member States and has the honour to draw their attention to the **Technical Meeting on Ex-Vessel Molten Corium Behaviour and Coolability** (hereinafter referred to as "event") to be held virtually via Cisco Webex from **14 to 17 June 2022**.

The purpose of the event is to exchange information on recent advances in understanding of ex-vessel behaviour of molten corium, including molten corium concrete interaction and cooling of molten corium and identify future research and development needs to improve the quality of modelling and simulation.

The attached Information Sheet provides further details of the event.

The event will be held in English.

Member States are invited to designate one or more participants to represent the Government at this event. Member States are strongly encouraged to identify suitable women participants.

Designations should be submitted to the IAEA through the competent national authority (Ministry of Foreign Affairs, Permanent Mission to the IAEA or National Atomic Energy Authority) not later than **20 May 2022** using the attached Participation Form (Form A). Completed and authorized Participation Forms should be sent either by email to: Official.Mail@iaea.org or by fax to: +43 1 26007 (no hard copies needed). Copies should be sent by email to the Scientific Secretaries of the event, Mr Alexei Miassoedov, Division of Nuclear Power, Department of Nuclear Energy (Email: A.Miassoedov@iaea.org) and Mr Simone Massara, Division of Nuclear Installation Safety, Department of Nuclear Safety and Security (Email: S.Massara@iaea.org), and to the Administrative Secretary, Ms Dorothy Kalocsai (Email: D.Kalocsai@iaea.org). The Scientific Secretaries of the event will liaise with the participants directly concerning further arrangements, as appropriate, once the official designations have been received.

The IAEA takes no responsibility for, and the provider of the virtual meeting services has represented and warranted that the Services shall not contain, and that no end user shall receive from the software used to hold the virtual meeting, any virus, worm, trap door, back door, timer, clock, counter or other limiting routine, instruction or design, or other malicious, illicit or similar unrequested code, including surveillance software or routines which may, or is designed to, permit access by any person, or on its own, to erase, or otherwise harm or modify any data or any system, server, facility or other infrastructure of any end user (collectively, a "Disabling Code").

The Secretariat of the International Atomic Energy Agency avails itself of this opportunity to renew to the IAEA's Member States the assurances of its highest consideration.



2022-03-31

Enclosures: Information Sheet

Participation Form (Form A)



IAEA

International Atomic Energy Agency

Atoms for Peace and Development

Technical Meeting on Ex-Vessel Molten Corium Behaviour and Coolability

Virtual Event

14–17 June 2022

Ref. No.: EVT2103596

Information Sheet

Introduction

Following the Accident at the Fukushima Daiichi Nuclear Power Plant, the IAEA has held various meetings to strengthen research and development strategies and priorities regarding severe accidents. The IAEA International Experts Meeting on Strengthening Research and Development Effectiveness in the Light of the Accident at the Fukushima Daiichi Nuclear Power Plant, held in Vienna in 2015, prepared a list of recommendations for research and development (R&D) activities to be promoted by the IAEA. This comprehensive list represents compiled experts' views on the needs for further R&D activities and international cooperative efforts. It was further refined at the Technical Meeting on Post-Fukushima Research and Development Strategies and Priorities held in December 2015.

During these meetings, ex-vessel molten corium behaviour and cooling (EVCC) was confirmed to be one of the highest research and development priority areas. Cooling the corium released from a failed Reactor Pressure Vessel (RPV) is a possible mitigative measure of the consequences of severe accidents at defence-in-depth level 4, which aims at collecting, spreading and cooling the corium outside the RPV.

Although there already are considerable experimental and numerical simulation efforts, IAEA meetings and state-of-the-art knowledge on ex-vessel molten corium behaviour and coolability conclude that there are still research gaps that require additional efforts and international cooperation and coordination of Member States activities. This includes e.g. the quality of numerical simulations and availability of experimental data needed for validating individual models and codes. Providing and sharing results of large-scale experiments and tests with prototypic materials within the international community will greatly facilitate modelling improvements decreasing the uncertainties of the predictions and significantly improving the validation of associated codes and models.

Objectives

The overall purpose of this event is to obtain a state-of-the-art knowledge on understanding of ex-vessel molten corium behaviour and cooling phenomena in Water Cooled Reactors (WCRs). The event will serve as a forum for Member States to exchange knowledge on technological aspects (e.g. current and new code developments and methodologies, design solutions) as well as safety related aspects, identify gaps for future improvements, and gather information for collaboration on all these aspects.

The event will have the following specific objectives:

- Exchange information on codes dedicated to analysis of ex-vessel molten corium behaviour, their capabilities, benchmarking activities, modelling uncertainties and validation status;
- Discuss and provide recommendations for performing more realistic plant simulation (non-uniform core debris distribution, realistic containment features such as deep sumps, sump drains, and cable penetrations);
- Exchange results on experiments addressing ex-vessel molten corium behaviour, discussing long-duration transients;
- Discuss gaps in the experiment database related to EVCC concerning high metal content in the melt, steel reinforcement in the concrete, non-uniform melt accumulations, crust formation/failure mechanisms and their effect on corium coolability;
- Discuss additional engineered features that might be needed to ensure molten corium coolability in some plants;
- Discuss the advances in measurement and visualisation techniques (e.g., infrared thermometry, thermal sensors, etc.);
- Review progress on safety-related topics, including practices by the licensees in demonstrating the effectiveness and justifying the robustness of EVCC in applications for licensing of WCRs and experience by national regulators and technical support organizations (TSO) in reviewing safety analysis reports.

The event will include discussion sessions to enable participants to contribute to the summary and highlights of the event, and to discuss and provide recommendations to the IAEA for future R&D dedicated to ex-vessel molten corium behaviour and cooling.

Contributions to the event in the form of presentations, summaries and session discussions will result in the preparation of an IAEA publication. This publication is intended to represent the reference information for interested organizations, including code developers and code users, licensees, technology developers, national regulators and TSOs. It will also provide the public with a harmonized overview of efforts in these areas.

Target Audience

The event is open to representatives of nuclear power organizations from Member States considering planning or expanding a nuclear power programme, including government organizations (policy makers, analysts, national regulators, TSOs and R&D organizations), and industry (vendors, engineering companies, plant operators and technology developers).

Working Language(s)

English

Expected Outputs

The expected outputs of this event are as follows:

- Detailed screening and overview of up-to-date status from Member States on the analysis of ex-vessel molten corium behaviour and coolability in water cooled reactors;
- Exchange of information on ongoing activities in code development and validation, and identification of needs for future experimental R&D required to more accurately assess the capabilities of the codes dedicated to ex-vessel molten corium behaviour and coolability;
- Review of practices by licensees, national regulators and TSOs pertaining to the safety demonstration of EVCC;
- Report summarizing the discussions held and the results presented for subsequent development of an IAEA publication.

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 **20 May 2022**. 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 technical 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.

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 1 page (including figures and tables) and should not exceed 1000 words. It should be sent electronically to Mr Alexei Miassoedov and Mr Simone Massara, the Scientific Secretaries of the event (see contact details below), not later than **20 May 2022**. Authors will be notified of the acceptance of their proposed presentations by **31 May 2022**.

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 **20 May 2022**.

IAEA Contacts

Scientific Secretaries

Mr Alexei Miassoedov

Division of Nuclear Power
Department of Nuclear Energy
International Atomic Energy Agency
Vienna International Centre
PO Box 100
1400 VIENNA
AUSTRIA

Tel.: +43 1 2600 22882

Fax: +43 1 26007

Email: A.Miassoedov@iaea.org

Mr Simone Massara

Division of Nuclear Installation Safety
Department of Nuclear Safety and Security
International Atomic Energy Agency
Vienna International Centre
PO Box 100
1400 VIENNA
AUSTRIA

Tel.: +43 1 2600 22680

Email: S.Massara@iaea.org

Administrative Secretary

Ms Dorothy Kalocsai

Division of Nuclear Power
Department of Nuclear Energy
International Atomic Energy Agency
Vienna International Centre
PO Box 100
1400 VIENNA
AUSTRIA

Tel.: +43 1 2600 25795

Fax: +43 1 26007

Email: D.Kalocsai@iaea.org

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

Participation Form

Technical Meeting on Ex-Vessel Molten Corium Behaviour and Coolability

Virtual Event

14–17 June 2022

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 or by fax to: +43 1 26007 (no hard copies needed). Please also send a copy by email to the Scientific Secretaries A.Miassoedov@iaea.org and S.Massara@iaea.org, and to the Administrative Secretary D.Kalocsai@iaea.org.

Deadline for receipt by IAEA through official channels: 20 May 2022

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 <input type="checkbox"/> No <input type="checkbox"/> Would you prefer to present your paper as a poster? Yes <input type="checkbox"/> No <input type="checkbox"/> Title:		

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.