



**IAEA**

International Atomic Energy Agency

*Atoms for Peace and Development*

## **Technical Meeting on the Safety of High Temperature Gas Cooled Reactors and Molten Salt Reactors**

**IAEA Headquarters, Vienna, Austria**  
and virtual participation via Cisco Webex

**9–13 May 2022**

**Ref. No.: EVT203061**

### **Information Sheet**

#### **Introduction**

The International Atomic Energy Agency (IAEA) and the Generation IV International Forum (GIF) have jointly committed to collaboration between their respective programmes, and to share information in selected areas of mutual interest. One of the key areas of emphasis in both the GIF and the IAEA programmes is the safety of non-water-cooled reactors. A particularly important area of mutual interest is the harmonization of safety approaches, safety requirements, and the applicability of the safety standards for the novel advanced reactors under development worldwide. This event will represent the second joint meeting on the safety of High Temperature Gas Cooled Reactors (HTGRs). The meeting will also cover Molten Salt Reactor (MSR) safety.

The focus of this Technical Meeting is on key areas of safety of HTGR and MSR highlighted as important during the review of applicability of the IAEA Safety Standards to novel advanced reactors undertaken by the IAEA and international experts in 2020-2021. This review concluded that although many of the Safety Standards are applicable to these technologies, it is essential to build detailed technical knowledge about the safety characteristics of different non-water-cooled reactor types, such as HTGRs and MSRs, including SMRs of these types. Experts from GIF Member States can support the development of an international repository of knowledge to enhance the global understanding of the safety related issues and the safety demonstration of these technologies and to support the future development of the IAEA safety standards.

This is the first of a series of Technical Meetings dedicated to the collection of specific examples and case studies associated to the safety of non-water-cooled reactor technologies. This meeting specifically focuses on the safety approach in the design and the safety demonstration of HTGR and MSR designs.

## **Objectives**

The objective of the event is to provide the participants with an opportunity to share experiences and discuss challenges related to the safety approach in the design and the safety analysis of HTGRs and MSRs. Special emphasis will be placed on the collection of technology-specific examples of experience on the design, safety analysis, and regulation of HTGRs and MSRs.

## **Target Audience**

The event is targeted at professionals from organizations involved in the design of nuclear power plants (NPPs), operating organizations, nuclear regulatory authorities, technical support organizations, and research institutions that are engaged in activities related to or in support of the development or the regulation of HTGR and MSR designs. Experts that are or were involved in the operation or regulation of HTGR or MSR prototypes and experiments also are welcome. Particular areas are listed in the Topics section, below.

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

## **Working Language(s)**

English.

## **Expected Outputs**

Participants will gain sound knowledge and a better understanding related to key safety aspects of HTGRs and MSRs. The information exchanged will serve as a basis for a collection of case studies and examples dedicated to enhanced international knowledge on HTGR and MSR safety and capture the knowledge and experience gained from the design and operation of previous HTGR and MSR prototypes and experiments.

## Topics

The event will address examples of safety design aspects of HTGR and MSR designs, and their prototypes, aiming to develop a repository of knowledge, including:

- Identification and overview of specific safety functions that are necessary to fulfil the fundamental safety functions as defined in IAEA SSR-2/1 (Rev. 1), and how their fulfilment is ensured by design features, including inherent features.
- Overview of the design basis with due account taken of operational states, accident conditions, as well as conditions arising from effects of external and internal hazards.
- When relevant, examples of instances where specific plant event sequences that could result on high radiation doses or in a large radioactive release are claimed to be practically eliminated (IAEA SSR-2/1 Rev. 1) taking into account relevant uncertainties, particularly those due to limited knowledge of extreme physical phenomena.
- Scope and examples of analysis performed to justify and confirm the design basis for items important to safety, and to ensure that the overall concept design is capable of meeting the established acceptance criteria, in particular the dose limits and the authorized limits for radioactive releases associated with each state, and that the consequences of accidents are as low as reasonably achievable.
- Examples of set identification and grouping approach of postulated initiating events and accident scenarios for deterministic and probabilistic analyses.
- Examples of approach and justification of systems selection (and if applicable including manual operator actions) credited in the safety analysis to provide for safety functions in deterministic safety analysis. Examples could also cover claims of systems performance and justification.
- Examples of deterministic and probabilistic analyses of HTGRs and MSRs.
- Outcomes and experiences of the regulatory review of HTGRs and MSRs.

## 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 **11 February 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 the above deadline.

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

## Papers and Presentations

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

Participants who wish to submit a paper and provide 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 two pages (including figures and tables), and should not exceed 1500 words. It should be sent electronically to Ms Paula Calle Vives, the Scientific Secretary of the event (see contact details below), not later than **11 February 2022**. Authors will be notified of the acceptance of their proposed presentations by **18 March 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 **11 February 2022**.

Relevant meeting information and updates will be posted to the following website in due time:

<https://www.iaea.org/events/evt2003061>

## IAEA Contacts

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