IAEA
International Atomic Energy Agency
Atoms for Peace and Development

Technical Meeting on Design Safety Standards for Nuclear Power Plants with a Specific Focus on the Specific Safety Guide Nos. 30, 53 and 56

IAEA Headquarters, Vienna, Austria

and virtual participation via Microsoft Teams

12-16 October 2026

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Information Sheet

Introduction

A growing number of Member States are considering nuclear power as a viable and safe low-carbon energy source that can play a role in national energy strategies, both for countries introducing nuclear power and for those seeking to enhance existing programmes. In parallel, significant progress has been made on advanced nuclear reactors, including non-water-cooled reactors (NWCRs), moving toward broader deployment. These advanced nuclear reactors differ from traditional, large, land based water-cooled reactors (WCRs), incorporating innovative design features and enabling a wide range of applications, including both electricity generation and non-electrical uses. Key distinguishing features of these advanced reactors include different neutron spectra, different ranges of operating temperatures, alternative coolants, novel fuel types and modular configurations.

Recent technological advances have also led to a notable increase in the use of passive features. These features rely on physical phenomena, such as gravity, natural circulation, and pressure differentials, to perform safety functions without the need for active controls or external power sources. The extended use of passive features introduces new considerations as their reliability and performance characteristics differ from those of active systems.

In light of the ongoing revision of SSR-2/1 (Rev. 1) under DS562, which aims to ensure that its requirements are applicable to all nuclear power reactor technologies, including advanced reactor concepts, it is both timely and appropriate to revise the associated safety guides.

Objectives

The purpose of this event is to provide a forum to compile knowledge, information and experience to support the revision of nuclear power plant design safety standards, focusing on Specific Safety Guides SSG-30 "Safety Classification of Structures, Systems and Components in Nuclear Power Plants", SSG-53 "Design of the Reactor Containment and Associated Systems for Nuclear Power Plants" and SSG-56 "Design of the Reactor Coolant System and Associated Systems for Nuclear Power Plants".

Target Audience

The event is open to representatives of nuclear power organizations from Member States with an active nuclear power programme, including those from embarking countries in Phase 3 of their nuclear programme, and Member States with large expertise in the topics covered by the event. It includes government organizations (policy makers, analysts, regulatory bodies, technical support organizations and R&D agencies), and industry (vendors, engineering companies, plant operators and technology developers).

Working Language(s)

English.

Expected Outputs

This event will provide Member States with an overview of the key recommendations in SSG-30, SSG-53, and SSG-56, with a particular focus on their scope of application and the main areas identified for revision.

The discussions will help participants understand how the current recommendations in these safety guides are applied by experienced stakeholders. The insights shared will also support the identification of key areas in the safety guides requiring modifications, further development, or expanded narratives to enhance clarity.

The collection and consolidation of knowledge, information and experience from Member States will support the upcoming revision of SSG-30, SSG-53 and SSG-56.

Topics

The event will comprise three parallel tracks addressing the specifics of each safety guide, together with joint sessions to promote consistency across their revision, ensure alignment with other IAEA publications, and support discussions on areas where interfaces between the guides need to be maintained. Considerations related to transportable nuclear reactors in the design safety standards will also be discussed in both the parallel tracks and the joint sessions.

Joint Sessions:

The opening and closing sessions will be joint sessions, providing an overview of the ongoing revision of the IAEA Safety Standards related to design safety and safety assessment, as well as the interfaces between the upcoming revisions of the three safety guides.

In addition, a dedicated joint session is planned to discuss practical examples of the application of safety classification to the reactor coolant system and associated systems, as well as to the containment and associated systems for nuclear power plants. The purpose of this session is to foster practical, experience-based discussions, supported by real-world examples, on approaches to safety classification for those systems, including application for NWCR designs.

Topical sessions:

The topics specifically addressed by each safety guide are presented below.

Track 1: Safety Classification of Structures, Systems and Components (SSCs) in Nuclear Power Plants (SSG-30)

The primary objective of Track 1 is to discuss the safety classification for all nuclear power plants (NPPs) used for civil purposes. This includes both water-cooled reactors (including advanced designs) and non-water-cooled reactor technologies, such as High Temperature Gas-cooled Reactors (HTGRs), Liquid Metal Fast Reactors (LMFRs) and Molten Salt Reactors (MSRs).

Track 1 will also focus on the application and interpretation of IAEA Safety Guide SSG-30 to the different reactor technologies. The specific objectives of Track 1 are:

- To discuss applied classification processes in Member States and lessons learned from the implementation of SSG-30 guidance;
- To discuss the use of the classification results in the selection of engineering codes and standards;
- To discuss safety classification approaches and associated criteria (design, manufacturing, qualification, inspection…) considered in the frame of innovative technology designs such as NWCRs, small modular or micro reactors;
- To discuss alternative ways for classification of SSCs that can be demonstrated to achieve adequate reliability and availability in fulfilling the associated safety functions, including the role of deterministic and risk-informed approaches;
- To discuss the use of commercial-grade components in safety significant applications;
- To provide insights regarding the future revision of SSG-30.

Track 2: Design of the Reactor Containment and Associated Systems for Nuclear Power Plants (SSG-53)

The primary objective of Track 2 is to discuss the specific design characteristics of the containment and associated systems for all NPPs used for civil purposes. These considerations include the definition of the design bases, in particular related to the structural design, the reliability and the independence of structures system and

components, and other related aspects outlined in SSG-53. The track will also provide clarification on the various strategies employed across different reactor technologies for the confinement of radioactive materials.

This track will cover both WCRs (including advanced designs) and NWCR technologies, such as HTGRs, LMFRs and MSRs.

The discussions will focus on the application and interpretation of IAEA Safety Guide SSG-53 in the context of the following design characteristics, which are expected to provide valuable input for the upcoming revision of SSG-53:

- Integral and compact designs;
- Low pressure or non-pressurized reactor designs;
- Passive features for decay heat removal in accident conditions;
- Chemical properties, toxicity and design considerations specific to NWCRs due to the use of different coolants and fuel forms (e.g. liquid fuel in MSRs);
- Specific fuel and reactor designs aimed at preventing large releases of radioactive material in the reactor building (e.g. TRISO fuel in HTGRs);
- New technologies for containment design (e.g. steel-concrete structure in some sodium fast reactor designs).
- Novel aspects introduced by multi-unit and multi-module designs, including shared safety systems, and modularization.
- Other specific considerations for transportable nuclear reactors in the design of the containment and associated systems.

Track 3: Design of the Reactor Coolant System and Associated Systems for Nuclear Power Plants (SSG-56)

The primary objective of Track 3 is to discuss the design basis of the reactor coolant system, the ultimate heat sink, and specific considerations in the design of the reactor coolant system and associated systems for all NPPs used for civil purposes. These considerations include postulated initiating events, external and internal hazards, accident conditions, design limits and acceptance criteria, materials, and other related aspects outlined in SSG-56.

This session will cover both WCRs (including advanced designs) and NWCR technologies, such as HTGRs, LMFRs and MSRs.

The discussions will focus on the application and interpretation of IAEA Safety Guide SSG-56 in the context of the following design characteristics, which are expected to provide valuable input for the upcoming revision of SSG-56:

- Integral or compact design of the reactor coolant system;
- Natural circulation within the reactor coolant system;
- Low-pressure or non-pressurised reactor concepts;
- Passive features for residual heat removal in shutdown conditions;
- Passive features for core cooling and/or decay heat removal in accident conditions;
- Novel aspects introduced by multi-unit and multi-module designs, including shared safety systems, and modularization;
- Impact of reactivity feedback on the design of reactor coolant system and associated systems;

- Fuel limits considered for non-water-cooled reactors, particularly those using molten salt fuel or TRISO particle fuel, or accident tolerant fuel used in some advanced WCRs;
- Chemical properties, parameters, and design considerations specific to NWCRs;
- Design of the reactor coolant system and associated systems to enable co-generation;
- Design of associated systems for:
  - ✓ Gas-cooled reactors (e.g., helium purification systems);
  - ✓ LMFRs (e.g., intermediate systems, coolant solidification prevention, cover gas management, oxygen control and monitoring, temperature regulation);
  - ✓ MSRs (e.g., intermediate cooling systems, off-gas removal and cooling, fuel salt make-up and transfer, prevention of fuel salt freezing).
- Other specific considerations for transportable nuclear reactors in the design of reactor coolant system and associated systems.

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 or invited organization, participants are requested to submit their application via the InTouch+ platform (https://intouchplus.iaea.org) to the competent national authority (Ministry of Foreign Affairs, Permanent Mission to the IAEA or National Atomic Energy Authority) or organization for onward transmission to the IAEA by **12 June 2026**, following the registration procedure in InTouch+:

1. Access the InTouch+ platform (https://intouchplus.iaea.org):
   - Persons with an existing NUCLEUS account can sign in to the platform with their username and password;
   - Persons without an existing NUCLEUS account can register here.

2. Once signed in, prospective participants can use the InTouch+ platform to:
   - Complete or update their personal details under 'Complete Profile' and upload the relevant supporting documents;
   - Search for the relevant event under the 'My Eligible Events' tab;
   - Select the Member State or invited organization they want to represent from the drop-down menu entitled 'Designating Authority' (if an invited organization is not listed, please contact InTouchPlus.Contact-Point@iaea.org);
   - If applicable, indicate whether a paper is being submitted and complete the relevant information;
   - If applicable, indicate whether financial support is requested and complete the relevant information (this is not applicable to participants from invited organizations);
   - Based on the data input, the InTouch+ platform will automatically generate the Participation Form (Form A) and/or the Grant Application Form (Form C);
   - Submit their application.

Once submitted through the InTouch+ platform, the application, together with the auto-generated form(s), will be transmitted automatically to the required authority for approval. If approved, the application, together with the applicable form(s), will automatically be sent to the IAEA through the online platform.

NOTE: The application for financial support should be made, together with the submission of the application, by **12 June 2026**.

For additional information on how to apply for an event, please refer to the InTouch+ Help page. Any other issues or queries related to InTouch+ can be sent to InTouchPlus.Contact-Point@iaea.org.
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. 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.

Abstracts 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 is expected to be submitted through InTouch+, and a copy should be sent electronically to the Scientific Secretaries of the topical event (see contact details below), not later than **12 June 2026**. Authors will be notified of the acceptance of their proposed presentations by **31 August 2026**.

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 **12 June 2026**.

Submission of an abstract should be confirmed, together with the submission of the main application via the InTouch+ platform, by **12 June 2026**.

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 a limited number of 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, together with the submission of the application, by **12 June 2026**.

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:

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.

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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.

Event Web Page

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

www.iaea.org/events/EVT2503544