IAEA
International Atomic Energy Agency
Atoms for Peace and Development

Regional Training Course on Safety Assessment of Engineering Aspects Important to Safety: Passive Safety Systems

Hosted by

The Government of Armenia

through the

Armenian Nuclear Regulatory Authority (ANRA)

Yerevan, Armenia

22 to 26 February 2027

Ref. No.: TN-RER9166-2600247

Information Sheet

Purpose

The purpose of the event is to train the participants on the safety assessment of engineering aspects important to safety in advanced nuclear power plants (NPPs), including small modular reactors (SMRs) and other innovative reactor technologies.

Working Language(s)

The working language(s) of the event will be English.

Deadline for Nominations

Nominations received after **18 November2026** will not be considered.

Project Background

The regional project RER9166 – Enhancing Safety Assessment of Advanced Safety Features of Nuclear Power Plants Including Small Modular Reactors aims to strengthen the technical and regulatory capabilities of Member States in Europe and Central Asia to assess, review, and oversee advanced nuclear power plant (NPP) designs, including small modular reactors (SMRs) and innovative safety features. The project responds directly to growing regional interest in deploying advanced reactor technologies and the need for robust, well-supported safety demonstrations that are aligned with the IAEA Safety Standards.

The experience gained through previous regional and interregional projects, notably RER9160 and INT2024, revealed that while some progress has been made in applying harmonized, risk-informed approaches to severe accident management and safety analysis, Member States still require targeted support in developing comprehensive safety demonstrations for advanced NPPs. Many regulatory authorities and technical support organizations report challenges related to managing design uncertainties, applying advanced deterministic and probabilistic methodologies, and reviewing safety cases in the absence of sufficient operating experience. These challenges underscore the need for a structured, regional effort to expand technical competence and establish common approaches.

The regional dimension of RER9166 is critical. Member States are facing similar technical and regulatory challenges, including:

- New safety concepts and reactor configurations that differ from existing practices;
- Limited experience with risk-informed applications of DSA and PSA for advanced features;
- Fragmented national approaches without harmonized methodologies;
- The need for improved access to shared knowledge, practical guidance, and peer dialogue.

By addressing these issues through coordinated regional activities, RER9166 will support Member States in developing the competencies necessary to prepare, review, and assess safety cases for advanced NPPs. The project will provide a platform for exchanging national experiences, identifying common solutions, and fostering technical harmonization. It will also strengthen the application of relevant IAEA Safety Standards—particularly GSR Part 4 and SSR-2/1 (Rev.1)—which emphasize the need for robust safety demonstrations when introducing unproven or innovative design features.

Through regional workshops, training courses, expert missions, and technical exchanges, the project will enhance national and regional capabilities, facilitate mutual learning, and support the safe and effective deployment of advanced reactor technologies across Europe and Central Asia.

Scope and Nature

The training course will provide in-depth technical training on the safety assessment of engineering aspects important to safety in advanced nuclear power plants (NPPs), including small modular reactors (SMRs) and other innovative technologies.

The course will address engineering approaches for assessing the reliability of passive systems, including heat exchangers, natural circulation loops, piping arrangements, pools and reservoirs forming part of passive heat removal systems.

Participants will also gain insight into the engineering basis for modelling passive systems and into the evaluation of experimental programmes and test facilities used to validate system performance claims.

The training will include:

- Presentations by experts on passive safety systems implemented in advanced reactor technologies and their role in the fulfilment of safety functions;
- Technical sessions on the reliability assessment of passive systems, including passive heat removal systems, heat exchangers, piping layouts, natural circulation systems, and water pools employed for decay heat removal;
- Discussions on engineering factors affecting passive system performance, including system configuration, operating conditions, ageing mechanisms and design margins;
- Sessions addressing the validation of passive safety systems through experimental programmes, separate-effect tests, integral test facilities, scaling methodologies, and operational experience where available;
- Discussions on the selection of postulated initiating events (PIEs) and the engineering considerations that influence system design, safety provisions, and defence in depth;
- Case studies and practical exercises illustrating the assessment of passive system behaviour, reliability, uncertainty, and supporting evidence used in safety demonstrations;
- Exchange of national experience related to the assessment, review and licensing of innovative engineering features and passive safety systems;
- Identification of technical issues, lessons learned, and areas for future cooperation under Project RER9166 related to engineering aspects important to safety.

The course will emphasize engineering assessment of SSCs and passive safety features. Detailed methodologies associated with deterministic safety analysis (DSA), accident analyses, uncertainty quantification techniques and probabilistic safety assessment (PSA) modelling approaches will be addressed separately in other dedicated regional training courses planned under Project RER9166.

Expected Output(s):

The expected outputs of the event are:

- Strengthened participants' competence in assessing engineering aspects important to safety in advanced NPP designs;
- Enhanced understanding of the reliability and performance assessment of passive safety systems and associated structures, systems and components;
- Improved capabilities for evaluating engineering design provisions supporting passive safety functions;
- Provided an overview of modelling approaches for passive systems and the engineering limitations and applicability of analytical tools used to support safety claims;
- Strengthened participants' ability to assess experimental evidence, qualification programmes, integral test facilities and validation activities used to demonstrate system performance;
- Improved understanding of the selection of postulated initiating events (PIEs) and the engineering decisions affecting system design and safety provisions;
- Promoted the exchange of experience among Member States regarding the assessment of innovative engineering features and passive safety concepts.

Radiation exposure may occur

No radiation exposure is expected during the event.

Participation

The regional meeting is open to one/two candidate per country from Member States participating in project RER9166 that operate nuclear power plants, and have established expertise in NPP safety assessment.

Participants’ Qualifications and Experience

Nominated candidates should be regulatory staff, TSO specialists, or utility experts with responsibilities in deterministic safety analysis, probabilistic safety assessment, or evaluation of advanced NPP designs and innovative safety features. Experience in safety reviews, application of IAEA Safety Standards, or development of safety demonstrations is desirable.

Application Procedure

Candidates wishing to apply for this event should follow the steps below:

1. Access the InTouch+ home page (https://intouchplus.iaea.org) using the candidate's existing Nucleus username and password. If the candidate is not a registered Nucleus user, she/he must create a Nucleus account (https://websso.iaea.org/IM/UserRegistrationPage.aspx) before proceeding with the event application process below.

2. On the InTouch + platform, the candidate must:
    a. Finalize or update her/his personal details, provide sufficient information to establish the required qualifications regarding education, language skills and work experience ('Profile' tab) and upload relevant supporting documents;
    b. Search for the relevant technical cooperation event (EVT2600247) under the 'My Eligible Events' tab, answer the mandatory questions and lastly submit the application to the required authority.

NOTE: Completed applications need to be approved by the relevant national authority, i.e. the National Liaison Office, and submitted to the IAEA through the established official channels by the provided designation deadline.

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

Should online application submission not be possible, candidates may download the nomination form for the meeting from the IAEA website.

NOTE: A medical certificate signed by a registered medical practitioner dated not more than four months prior to starting date of the event must be submitted by candidates when applying for a) events with a duration exceeding one month, and/or b) all candidates over the age of 65 regardless of the event duration.

Administrative and Financial Arrangements

Nominating authorities will be informed in due course of the names of the candidates who have been selected, and will at that time be informed of the procedure to be followed with regard to administrative and financial matters.

Selected participants will receive an allowance from the IAEA sufficient to cover their costs of lodging, daily subsistence and miscellaneous expenses. They will also receive either a round-trip air ticket based on the most direct and economical route between the airport nearest their residence and the airport nearest the duty station through the IAEA's travel agency American Express, or a travel grant, or they will be reimbursed travel by car/bus/train in accordance with IAEA rules for non-staff travel.

Disclaimer of Liability

The organizers of the event do not accept liability for the payment of any cost or compensation that may arise from damage to or loss of personal property, or from illness, injury, disability or death of a participant while he/she is travelling to and from or attending the course, and it is clearly understood that each Government, in approving his/her participation, undertakes responsibility for such coverage. Governments would be well advised to take out insurance against these risks.

Note for female participants

Any woman engaged by the IAEA for work or training should notify the IAEA on becoming aware that she is pregnant.

The Board of Governors of the IAEA approved new International Basic Safety Standards for Protection against Ionizing Radiation and for the Safety of Radiation Sources. The Standards deal specifically with the occupational exposure conditions of female workers by requiring, inter alia, that a female worker should, on becoming aware that she is pregnant, notify her employer in order that her working conditions may be modified, if necessary. This notification shall not be considered a reason to exclude her from work; however, her working conditions, with respect to occupational exposure shall be adapted with a view to ensuring that her embryo or foetus be afforded the same broad level of protection as required for members of the public.

IAEA Contacts

Programme Management Officer (responsible for substantive matters):

Ms Carmina Elizabeth JIMENEZ VELASCO
Division for Europe
Department of Technical Cooperation
International Atomic Energy Agency
Vienna International Centre
PO Box 100
1400 VIENNA
AUSTRIA
Tel.: +43 1 2600 22340
Fax: +43 1 26007
Email: C.Jimenez@iaea.org

Technical Officers (responsible for technical matters):

Mr Jorge LUIS HERNANDEZ
Senior Nuclear Safety Officer (NPP Design Safety)
Department of Nuclear Safety and Security
International Atomic Energy Agency
Vienna International Centre, PO Box 100, 1400 Vienna, Austria
Tel.: +43 1 2600 24568
Email: J.Luis-Hernandez@iaea.org

Administrative Contact (responsible for administrative matters):

Ms Ia Berger-Wiegele
Division for Europe
Department of Technical Cooperation
International Atomic Energy Agency
Vienna International Centre
PO Box 100
1400 VIENNA
AUSTRIA
Tel.: +43 1 2600 26099
Fax: +43 1 26007
Email: I.Beria@iaea.org