



Interregional Workshop on Safety, Security and Safeguards by Design in Small Modular Reactors

Hosted by

The Government of the United States of America

through the

Oak Ridge National Laboratory

Oak Ridge, TN, United States of America

4 to 8 November 2024

Ref. No.: ME-INT2023-2306208

Information Sheet

Purpose

The purpose of the event is to discuss and share experiences on safety, security and safeguards (3S) and their interfaces in the design process of SMRs, highlighting their consideration for different SMR technologies and discussing practical arrangements and specific examples of 3S.

Working Language

The working language of the event will be English.

Deadline for Nominations

Nominations received after **24 May 2024** will not be considered.

Project Background

To meet the growing demand for energy and to mitigate global climate challenge, the interest in Small Modular Reactors (SMRs) and Micro-Reactors (MRs) is growing, especially with regions inaccessible to large electricity grids and regions with smaller electricity grids that need technology options deployed incrementally to closely match increasing energy demand. SMRs and MRs are also viable options for users that need beyond electricity supply, e.g., district heating, desalination, industrial process heat, as well as hydrogen. The purpose of the “INT2023 Supporting member States’ Capacity Building on Small Modular Reactors and Micro-reactors and their Technology and Applications as a Contribution of Nuclear Power to the Mitigation of Climate Change” project is to provide broad support to Member States in the development and deployment of SMRs and MRs. The project provides a broad range of forum to enable effective capacity building through training and technology transfer activities on all aspects of SMR development. The project also covers the emerging MRs, the deployment of SMRs for electric and non-electric applications, and the coupling of such nuclear systems with renewables in integrated energy systems. The aim of the project is to enable national stakeholders to gain enhanced understanding on key characteristics of SMR and MR technologies and their applications, and to formulate, in line with international safety standards, countries’ specific legal and regulatory frameworks, and generic user requirements and criteria for SMR technologies.

Scope and Nature

The event is planned to foster the exchange of experiences on safety, security, and safeguards (3S) interfaces. It will facilitate the presentation and discussion of specific examples of 3S consideration for different SMR technologies (e.g., light water cooled SMR, high temperature gas SMR, sodium fast SMR, lead cooled fast SMR, molten salt SMR). The workshop is planned to focus on practical arrangements and examples related to 3S concept by design, particularly addressing the following topics:

- Existing approaches utilized by the designers to implement safety by design, security by design and safeguards by design for SMRs and NPPs in general.
- Specific challenges and corresponding solutions in consideration of 3S interfaces in the SMR design stage
- Lessons learned and practices on addressing potential negative implications from 3S measures and arrangements in the design stage
- Practical examples of consideration 3S interfaces of specific novelties in SMR technologies such as transportability, new fuel concepts, limited access and remote locations, non-electrical applications, highly integrated software systems
- Review of the 3S interfaces in the design stage, including the main aspects to be taken into consideration.
- Examples of potential synergies in terms of safety, security and safeguards for SMRs.

The workshop will address various SMR technologies, such as light water cooled SMRs, high temperature gas SMRs, sodium fast SMRs, lead cooled fast SMRs, and molten salt SMRs. In addition, transportable concepts will be considered, including both floating and land reactor concepts. It will include presentations from the participants providing their national experience on consideration of 3S interfaces for SMRs. Invited experts and IAEA staff will present and share their experiences, highlighting good practices, practical arrangements, and specific examples.

Expected outputs

The expected output of the workshop are:

- Participants will exchange experiences in practical consideration of the safety, security and safeguards by design in the context of different SMR technologies;
- Participants will discuss and gain insights of the lessons learned regarding the challenges and potential solutions of consideration of the interfaces between safety, security and safeguards and relevant implications for SMR designs;
- Participants will get an updated information on the details of the reviews of the 3S interfaces in the design stage and relevant coverage in IAEA Safety Standards.

Participation

The event is open up to 40 participants from the following Member States participating in the INT/2023 project which are operating nuclear power plants or are embarking countries with advanced nuclear programme with SMR developments:

Argentina, Brazil, China, Czech Republic, Egypt, Hungary, Pakistan, Poland, Mexico, Romania, Saudi Arabia, Slovenia, Slovakia, South Africa, Türkiye

At no cost to the IAEA, participants from following countries can also be considered: Belgium, Canada, Denmark, Finland, France, Italy, Japan, Republic of Korea, Spain, United Kingdom, United States of America.

Participants' Qualification and Experience

The target audience of this workshop are those individuals working in Member States' regulatory bodies, design organizations, operating organizations and research and development institutions who are engaged in safety analysis for nuclear power plants for SMRs. Practical experience with deterministic and/or probabilistic safety analysis is essential for detailed discussions and sharing national experiences during the workshop. Both participants from the previous workshop as well as new candidates are encouraged to apply for this workshop. Participation of both types of candidates is very important to ensure further information exchange, sharing the views and the effectiveness of the meeting.

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 (**EVT2306208**) 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. **All nominations must include a scan of the candidate's first page of passport with photo.**

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 training course 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.

Training on Basic Security in the Field (BSITF)

In order to comply with UN system-wide security measures, it is required that all training course participants complete the online security awareness training BSAFE (which replaces BSITF and ASITF), prior to traveling to locations where UN security phases are in effect. The aim of these course is to educate participants on how best to avoid or minimize potential dangers and threats, and to demonstrate what individuals can do if they find themselves in insecure situations. The course is available online (<https://training.dss.un.org/course/category/6>).

Once an individual has completed the training, he/she must go back to the main training page to receive the certificate. If the button to get the certificate is not immediately visible, please refresh the page. BSAFE is maintained by UNDSS; in case of problems with the system, please contact UNDSS through the "Contact Us" page on the training website (<https://dss.un.org/dssweb/contactus.aspx>).

This certificate is compulsory for any IAEA-supported activity and should be submitted, along with the Nomination Form, through the competent authority in your country (NLO). Copies of the certificate should be kept by the candidate for his/her records as the BSAFE certificate does not expire.

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.

NOTE: The event will be hosted by the United States, therefore nominated participants who require a visa to enter the **United States** should submit the necessary application to the nearest diplomatic or consular representative of the **United States** as soon as possible.

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.

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