



# **Webinar on IAEA Applicability of IAEA Safety Standards to the Design of Novel Advanced Reactors including SMRs**

**Organized by the  
The IAEA Division of Nuclear Installation Safety**

**8 December 2021**

**Scheduled for 13:00 CET**

**Duration 2 hours**

**Information Sheet**

## Introduction

The IAEA Department of Nuclear Safety and Security (with involvement from the IAEA Department of Nuclear Energy) has completed a high-level mapping of applicability of the IAEA safety standards to Novel Advanced Reactors (NARs) including Small Modular Reactors (SMRs), high temperature gas cooled reactors (HTGR), sodium fast reactors (SFR), lead fast reactors (LFR), molten salt reactors (MSR), marine based SMRs and micro reactors.

## Objectives

The objective of this effort is to inform interested stakeholders on the results of this review, focusing on the Design Safety Standards.

The purpose of this IAEA webinar is to:

- Provide an overview to interested stakeholders from industry and regulatory bodies of the outcomes of the review of applicability of IAEA Safety Standards to NARs, with focus on the design safety.
- Provide an overview of the activities that the IAEA has planned to address the findings of the review and produce additional guidance where needed.

## Target Audience

The webinar is open to officials and nuclear security professionals from regulatory bodies, designers, operating organizations, technical support and research organizations as well as consultants who are engaged in activities related to the safety of innovative reactor designs.

## Working Language(s)

The webinar will be conducted in English.

## Registration

Please register for the webinar using this link [register](#) not later than **7 December 2021**.

After the registration and acceptance of your participation, you will receive an electronic mail containing information on how to access the webinar by following a hyperlink to join the WebEx meeting or by calling in by phone.

You can test your ability to connect to a WebEx meeting at the following link: <https://www.webex.com/test-meeting.html#>. Please contact your IT department if the test fails.

For additional help regarding registration, please contact Mr Mike Duron, Safety Assessment Section (Email: [m.duron@iaea.org](mailto:m.duron@iaea.org))

## Webinar Program

The IAEA has an important role to support **Member States and Regulatory Bodies** to develop **nuclear safety and regulatory framework** that is applicable to Novel Advanced Reactors, including **Small Modular Reactors, high temperature gas cooled reactors (HTGR), sodium fast reactors (SFR), lead fast reactors (LFR), molten salt reactors (MSR), floating SMRs and microreactors**. The IAEA safety standards reflect an international consensus among Member States on what constitutes a high level of safety for protecting people and the environment from harmful effects of ionizing radiation. Although the IAEA safety standards are intended to be technology neutral, they may be unintentionally influenced by technology specific issues of water-cooled large reactors, as most of the experience and knowledge in the Member States contributing to them is focused predominantly on that technology.

The review was completed in October 2021 by the IAEA supported by a team of 150 international experts, from 30 member states and 40 organisations including regulatory bodies and technical safety organizations, and collaboration with the safety standards committees and commission and *the SMR Safety Strategic Group*.

The outcomes of this work have been captured in a safety report that provides a mapping of areas of the safety standards that are technology neutral and applicable to all types of NARs and identify gaps in applicability. In anticipation of the publication, this event aims to present the review outcomes to member states that are currently considering or planning to consider the applicability of their regulatory frameworks to innovative technologies as well as the developers of these technologies and the future operators. **This first webinar will focus on the design safety standards.**

The webinar will include:

- Opening Remarks (Anna Bradford, Director of Nuclear Installation Safety)
- Overview of Review of Applicability of IAEA Safety Standards to NARs (Paula Calle Vives, Chairman of WG on SMR Safety)
- Applicability of Safety Specific Requirements to NAR Design (Bernard Poulat, Senior Nuclear Safety expert)
- Applicability of Core Design Safety Standards to NAR (Stephen P. Schultz, Senior Nuclear Safety expert)
- Applicability of Reactor Coolant System Safety Standards to NAR (Bernard Poulat, Senior Nuclear Safety expert)

- Applicability of Containment Safety Standards to NAR (Kay Nünighoff, Senior Nuclear Safety expert)
- Applicability of Instrumentation and Control and Electrical Systems to NAR (Alexander Duchac, Nuclear Safety Expert, Safety Assessment Section)
- Applicability of Support Systems to NAR (Remy Bertrand, Senior Nuclear Safety expert)
- Next Steps (Paula Calle Vives, Chairman of WG on SMR Safety)
- Q&A

## Presenters

[Bernard Poulat](#) \*hyperlinked content is below

Mr Poulat is a senior nuclear safety expert in the field of design of mechanical systems and other systems of nuclear power plants. He has worked as a Licensing Safety Manager for Areva NP and has extensive knowledge of applying the IAEA safety standards in Member States. He has worked as a nuclear safety officer for the IAEA and was the Scientific Secretary for the revision of several IAEA Safety Standards such as SSR-2/1 Design requirements for NPPs, SSG-30 Safety classification of SSCs for NPPs, NS- G 1.9 Design of Reactor coolant and cooling systems for NPPs, NS- G 1.10 Design of Containment structure and systems for NPPs, TECDOC 1787 Application of Safety classification, TECDOC 179 Application of the Safety Requirements in the design of NPPs and contributed to the review and development of other IAEA documents.

[Stephen P. Schultz](#) \*hyperlinked content is below

Dr Schultz is a consultant to the Advisory Committee on Reactor Safeguards at the U.S. Nuclear Regulatory Commission and supports the ACRS Fukushima Subcommittee. His professional experience in the US nuclear industry includes senior positions at Yankee Atomic Electric Company and Duke Engineering Corporation. He has an extensive knowledge of the IAEA safety standards and its application, particularly with the existing Specific Safety Guide SSG-52 Design of the Reactor Core for Nuclear Power Plants. Other distinguished positions include ANS Board of Directors (2012-2015), member of EPRI and NEI Advisory Committees, to name a few. He holds a PhD on Nuclear Engineering from MIT, Massachusetts.

[Kay Nünighoff](#) \*hyperlinked content is below

Dr Nünighoff is the Head of Department Reactor Concepts and Regulations at Global Research for Safety (GRS) -Germany's central expert organisation in the field of nuclear safety and radioactive waste management. He has extensive experience on nuclear safety of nuclear power plants and research reactors and a large number of publications in the area of design extension, safety principles and DiD regulations, accident analysis of high temperature gas cooled reactors, and experimental research and data analysis.

[Alexander Duchac](#) \*hyperlinked content is below

Mr Duchac is a nuclear safety officer at the IAEA with vast experience in the review, development and implementation of the IAEA safety standards and related technical publications, particularly on the application of safety classification, design of electrical and I&C systems (digital), equipment qualification, qualification of smart devices, human factors engineering, ageing management and long-term operation of nuclear power plants. Before joining the IAEA, he was involved in research activities related to design and operational safety of nuclear power reactors, the analysis of operating experience within the European Network on Operational Experience Feedback for Nuclear Power Plants and was a reviewer in the European Union Stress Tests exercise.

[Remy Bertrand](#) \*hyperlinked content is below

Mr Bertrand professional experience includes performing the safety assessment for nuclear power plants, probabilistic safety assessment, external and internal hazards assessment; safety systems and auxiliary systems analysis; equipment classification and qualification; ageing management and maintenance optimization. He was Deputy Head of International Development Department at the IRSN and Secretary of the Permanent Advisory Committee for Nuclear Installations providing support to the French Regulatory Body on safety issues. Mr Bertrand is very familiar with IAEA's work and participated in several IAEA meetings, workshops and nuclear safety related peer review services.

#### **Moderator**

[Paula Calle Vives](#), IAEA \*hyperlinked content is below

Ms Calle Vives is the Chairperson of the IAEA SMR Safety Working Group and the lead Technical Officer for the development of a Technology Neutral Nuclear Safety and Regulatory Framework: Applicability of IAEA Safety Standards to SMRs. In her previous assignment, Ms Calle Vives was the lead of the Advanced Nuclear Technologies project in the Office for Nuclear Regulation in the UK, including water cooled, HTGR, SFR, LFRs and MSR SMRs.