



IAEA

International Atomic Energy Agency

Agency's activities related to the safety and security of SMRs and transportable reactors

Shahid Mallick

Section Head

Programme and Strategy Coordination Section

Background



- About 50 SMR designs are in development;
- The number of Member States interested in SMRs has increased over the past few years;
- The Convention on Nuclear Safety applies to any civil land-based reactor, including SMRs;
- The transport of radioactive material by sea is covered by SOLAS and the IMO.

Agency activities



- Safety of nuclear installations;
- Emergency preparedness and response;
- Transport safety;
- Nuclear security.

Safety of nuclear installations



- Design

- *Considerations in the development of safety requirements for innovative reactors: Application to modular high temperature gas cooled reactors* (IAEA-TECDOC-1366) published in 2003;
- *Proposal for a Technology-Neutral Safety Approach for New Reactor Designs* (IAEA-TECDOC-1570) published in 2007;
- TSR on Generic Reactor Safety of the Chinese SMR ACP100:
 - Interest of other MSs in TSRs of SMRs;
- A study on the Applicability of *Safety of Nuclear Power Plants: Design* (SSR-2/1 (Rev. 1)) to SMRs:
 - TM on Challenges in the Application of the Design Safety Requirements for Nuclear Power Plants to Small and Medium Sized Reactors held in September 2017;
 - Project Report will be developed;
 - TECDOC on safety approach and Safety Report on safety assessment of SMRs will be prepared.

Safety of nuclear installations

– Regulatory issues



- SMR Regulators' Forum:
 - Pilot Phase (2015-2017) with 3 Working Groups: graded approach; defence in depth and emergency planning arrangements.
 - Phase 2 (2018-) with three new Working Groups: licensing; design safety and safety analysis; manufacturing, commissioning and operation.
- Several workshops held for embarking countries to share information and experience of nuclear regulation.

Emergency preparedness and response



- TM on Next Generation Reactors and Emergency Preparedness held in February 2017
 - Second TM on Next Generation Reactors and EPR is planned for 2019.
- CRP for Developing Approach, Methodologies and Criteria for SMR Emergency Planning Zones:
 - Currently ongoing in cooperation with 11 MS and EC;
 - EPR Series document will be developed based on the CRP.
- Presentations on the IAEA approach to EPR of floating reactors at different fora (e.g. Arctic Council's Emergency Prevention, Preparedness and Response WG).

Transport safety

- *Regulations for the Safe Transport of Radioactive Material, 2018 Edition (SSR-6 Rev. 1)* approved by BOG in March 2018:
 - applicable to nuclear reactor without reactor fuel loaded or loaded with unirradiated (fresh) nuclear fuel or with irradiated fuel when the reactor design meets Type B fissile package requirements;
- The Agency plans to prepare, in collaboration with the IMO, a strategic approach for:
 - the development of IAEA transport safety requirements and guidance documents; and
 - the support of the Agency to IMO for the revision of the IMO transport regulations associated with transportable reactors.

Nuclear security



- A preliminary internal review of existing guidance on nuclear security performed:
 - Conclusion: it remains valid and sufficient to address the known concerns for the protection of SMR and floating NPPs.
- A consultancy meeting with external experts is planned in 2018 to determine if existing physical protection is adequate for SMRs.



IAEA

International Atomic Energy Agency

Thank you!

