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Atoms for Peace and Development

Small Modular Reactor (SMR) Regulators' Forum

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Regulatory Activities Section

Division of Nuclear Installation Safety

Department of Nuclear Safety and Security

Outline of Presentation

- Forum structure and objectives
- Initial results of Forum discussions
- Next steps

Members

- Canada
- China
- Finland
- France
- Korea
- Russia
- Saudi Arabia
- United Kingdom
- United States



Objectives

- Share regulatory experience amongst forum members preparing to license SMRs and stakeholders;
- Identify and discuss common safety issues to recommend, if possible, common approaches for resolution;
- Capture good practices and methods; and
- Propose changes, if necessary, to national requirements and regulatory practices.

Structure of the Forum

- Steering Committee
- Task-specific Working Groups
- Scientific Secretary

Pilot Project – 2015/2017

- Task-specific Working Groups
 - Graded Approach
 - Defence-in-Depth
 - Emergency Planning Zone Size

Graded Approach WG

- Developed a detailed survey for Forum members on national approaches;
- Analysed survey results and discussed common positions; and
- Reviewed IAEA documents and considered recommendations.

Graded Approach WG

Main Findings



- Graded approach can enhance regulatory efficiency without compromising safety;
- Starting point for SMRs should be requirements for Nuclear Power Plants (NPPs);
- Need to determine what is necessary to demonstrate “proven-ness”; and
- IAEA should lead development of technical guidance on graded approach for NPPs.

Defence-In-Depth WG

- Identified key regulatory challenges with respect to DiD that may emerge in future SMR regulatory activities;
- Also developed a detailed survey on national approaches; and
- Analysed survey results and unique features of SMRs.

Defence-in-Depth WG

Main Findings



- Defence-in-depth (DiD) concept should be fundamental for design and safety demonstration of SMRs;
- SMRs raise questions regarding application of DiD in several areas; and
- Further guidance to help safety assessment of DiD applied to SMRs is needed.

EPZ Size WG

- Established an understanding of each member's regulatory views on EPZ size;
- Shared technical basis for EPZ size decision; and
- Discussed what evidence SMRs would need to present to regulators to justify smaller EPZs.

EPZ WG

Main Findings



- EPZ is required but may be scalable:
 - Novel features and technology
- IAEA safety requirements and methodology for EPZ size are applicable; and
- Same SMR design may result in different EPZ size in different countries:
 - Dose criteria;
 - Policy factors; and
 - Public acceptance.

Pilot Project Report

- Summarized accomplishments of the Forum:
 - Common positions
 - Working Group reports
 - Recommendations for future activities
- Published in January 2018

New Working Groups

- Licensing Issues:
 - Examine nature of evidence available and impacts on use of a graded approach;
 - Discuss the impacts on licensing and regulatory approaches to address uncertainties associated with outsourcing of activities considering the modular design approach.
- Design and Safety Analysis:
 - Follow-up on recommendations from DiD WG and support IAEA work on Graded Approach.
- Manufacturing, Commissioning and Operation:
 - Examine the implications that SMR characteristics present to manufacturing, construction, commissioning and operation.

Want to learn more?



<https://www.iaea.org/topics/small-modular-reactors/smr-regulators-forum>

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Small Modular Reactor (SMR) Regulators' Forum

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Small Modular Reactors (SMRs) are advanced reactors that produce electricity of up to 300 MW(e) per module, which is less than current power generation reactors. Many SMRs can be made in factories and transported by truck or rail.

The establishment of regulatory controls for this relatively new type of reactor requires focused and consistent attention. The SMR Regulators' Forum, created in March 2015, provides support by enabling discussions among Member States and other stakeholders to share SMR regulatory knowledge and experience.

The Forum enhances nuclear safety by identifying and resolving common safety issues that may challenge regulatory reviews associated with SMRs and by facilitating robust and thorough regulatory decisions.

Related resources

-  SMR Regulator's Forum Terms of Reference
-  SMR Regulator's Forum (Restricted Site)
-  Meeting Materials
-  SMR Database
-  Regulatory Activities Section



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Thank you for your attention!