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# Update on CRP on Development of Approaches, Methodologies and Criteria for Determining the Technical Basis for Emergency Planning Zone(s) for Small Modular Reactor Deployment

GNSSN Steering Committee Meeting  
Vienna, November 8th, 2018

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## **Outline:**

- 1. The CRP on SMR EPZ: background, objectives and expected outcomes**
- 2. Summary of 1<sup>st</sup> Research Coordination Meeting**
- 3. Future plans and expectations**

# Overall Expected Outcome and Results



## Development of Approaches, Methodologies and Criteria for Determining the Technical Basis for Emergency Planning Zone for Small Modular Reactor Deployment (CRP I3 1029)

- Overall Expected Outcome
  - Technically sound and consistent technical basis and information that could be used as an input into the new guidance on EPR arrangements, including EPZ/D, for SMR. This includes the identification of technology specific factors for different SMR that may influence: source term and timing of the release; possible sequences to be considered for emergency classification system
  - Definition of consistent approaches, methodologies and criteria for determining the need for off-site EPR, including EPZ/D size, for SMR deployment
- Expected associated outcome
  - IAEA TECDOC and/or other publication(s) that discuss specific design and safety aspects as well as technical basis and approaches/methodologies that would enable determining the size of EPZ for SMR

# CRP on EPZ for SMR deployment

- Countries Participating in the CRP:
  - Under Research Agreement: China, United Kingdom, Japan, Finland, Netherlands (representing EC through JRC-Petten), Pakistan, Saudi Arabia (with Republic of Korea), Canada, USA
  - Under Research Contract: Indonesia, Tunisia, Israel, China, Argentina





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# Summary of 1<sup>st</sup> Research Coordination Meeting



- RCM-1 held in Vienna between May 14 and 17, 2018
- Attended by representatives of all participating entities (17 in total)
- The meeting included
  - Presentations from IAEA on: CRP activities; EPR framework; Approach to the issue from Safety Standards perspective; and SMR Forum report on the topic
  - Individual presentations from each participating entity on the planned objective, scope and schedule for research.

# Summary of 1<sup>st</sup> Research Coordination Meeting



- A broad variety of SMR designs included in the research activities:
  - PWR
  - HTGR
  - FBR
  - Transportable SMR
- A range of different perspectives on the scope of research to be done:
  - PSA perspective
  - Severe accident phenomenology
  - Mechanistic source term estimate
  - Use of different codes for dose assessment
  - Consideration of security related events



# Summary of 1<sup>st</sup> Research Coordination Meeting



- The structure of the report to be produced about CRP was discussed
- Basic structure of the report will include:
  1. Introduction, objective and structure
  2. Main features of SNR technology. Different types of SMR considered
  3. Description of currently used approach for EPZ/D sizing
  4. Applicability to SMR and limitations of current methodology



# Summary of 1<sup>st</sup> Research Coordination Meeting



- Basic structure of the report will include (Cont.):
  5. Calculation of EPZ/D for SMR: severe accident progression and timeline of release; atmospheric transport and deposition; dose assessment; Protection Strategy to be implemented: Definition of Protective actions and zones and distances for its implementation; Consideration about uncertainties; Specific EPZ/D for SMR
  6. Conclusions: methodology and criteria and considerations about EPZ/D for SMR
  7. Recommendations on future activities and open issues
- Many specific topics raised by the participants to be taken in consideration for the report



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# Summary of 1<sup>st</sup> Research Coordination Meeting



- RCM-2 to be held in 2019 in Vienna, likely in the second half the year
- It's expected that participants will bring specific results to be shared and discussed
- Also future plans for completion and main issues will be shared and discussed
- Final CRP report to be discussed in RCM-3 in 2020
- With this materials, IEC plans to develop an EPR series Report on EPZ/D for SMR using CRP Results and EPR Safety Standards concepts and Methodology



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*Thank you!*

