Contribution ID: **362** Type: **Oral**

Accelerating international cooperation on SMR safety research: the OECD Nuclear Energy Agency (NEA) working group on the analysis and management of accidents (WGAMA)

The Working Group on the Analysis and Management of Accidents (WGAMA) addresses OECD Nuclear Energy Agency (NEA) activities related to potential design-basis and beyond design-basis accidents in nuclear reactors and related technologies. The WGAMA addressed safety aspects of existing nuclear reactors and related technologies as well as emerging challenges of evolutionary and innovative reactor designs and nuclear technologies, including Small Modular Reactors (SMRs).
The group initiated the review of its past activities in the fields of thermal-hydraulics, computational fluid dynamics (CFD) and severe accidents (SAs) to assess their applicability to SMR and define what extra work will be needed. In particular, subjects of high priority were identified as reliability assessment of passive system, modelling innovation in CFD, severe accident management (SAM) countermeasures, advanced measurement methods and instrumentation, and modelling robustness of safety analysis codes.
Furthermore, starting in 1993, the NEA initiated development of CSNI Code Validation matrix (CCVM) that gathers up-to-date the largest set of test data in matrix for various technology and reactor design including relevant phenomena dominating different types of accidents and transients; phenomena occurrence vs experimental facilities; and suitability of the experimental facilities, thus databases, for code assessment. The construction of this internationally agreed CCVM for safety codes is great achievement to systematically collect the best sets of openly available test data for code validation, assessment, and improvement, including quantitative assessment of uncertainties in the modeling of individual phenomena by the codes. To support validation of the codes to be used for safety assessment of SMR significant efforts will be needed to update the current CCVM and extend it to cover phenomena, experiments, and facilities specific or even unique to AT-SMR designs.
This paper aims at summarizing the recent achievements of the WGAMA.

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Track Classification: Topical Group C: Safety, Security and Safeguards: Track 8: Demonstrating SMR's Safety Case