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STRENGTHENING NUCLEAR POWER THROUGH INNOVATION IN SAFETY ANALYSIS

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H2020 MUSA project "*Management and Uncertainties of Severe Accidents*" **proved**:

- The feasibility of **broadly applying of Uncertainty and Sensitivity Analysis (UaSA) approach** in severe accident analysis for reactors and spent fuel pools
- The necessity to develop **a consolidated methodology** that supports a systematic application of the UaSA approach, acceptable within a regulatory framework

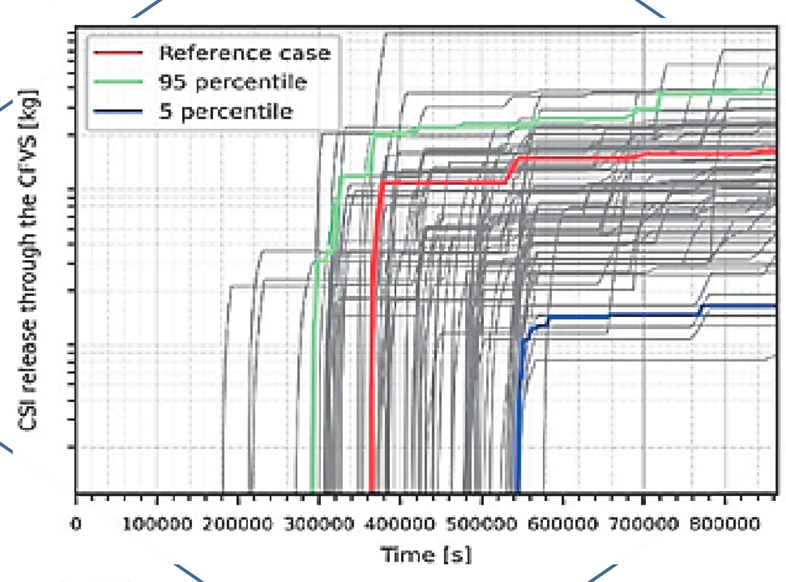
SWOT Analysis

Strengths

- **A settled community (MUSA)**
- Maturity of SA codes
- "Inspiration" drawn DBA expertise
- Computing power on the raise
- Deep understanding of SA scenarios
- Identification of "uncertainty sources"

Weaknesses

- Database of uncertain parameters (UP)
- Anomalies in realizations campaigns
- Numerical framework issues (noise/nodalization; …)
- **Multiple-option methodology (FOMs/UP set; …)**
- Drawbacks inherent to Order Statistics



Opportunities

- Database of uncertain parameters (UP)
- **Development of a consolidated methodology**
- Application of advanced data analysis
- Exploitation of engineering judgement
- Extension to SMR & ATF domains

Threats

- **Lack of a systematic procedure**
- Excessive computation times
- Poor characterization of UP in adv. technologies
- Miscommunication of insights from BEPU

UaSA

A "NEED" in Nuclear Safety through Innovation in Severe Accident Analysis