FASTNET
FAST Nuclear Emergency Tools

OBJECTIVES

The fast and reliable prediction of severe accident (SA) progression and the anticipation of possible releases of fission products into the atmosphere, in the form of a source-term, in the case of a severe accident are critical for the protection of surrounding population and for triggering the appropriate protection response to a nuclear emergency. The need for European mutualisation and improvements of fast and reliable existing methods and tools for the diagnosis/prognosis of severe accident progression and consequences in case of any emergency situation has been identified as a high priority following the analysis of the Fukushima-Daiichi accident. Indeed, these methods and tools are the cornerstones of accident management strategies and of the projection and prevention of the consequences that environmental releases would cause. When dealing with emergency, two issues with fully different time requirements and operational objectives, and thus different methods and tools, have to be considered: emergency preparedness and emergency response. This project will address both issues by combining the efforts of active organisations in these two areas to make already identified deterministic reference methods and tools a decisive step toward improvement and mutualisation. In particular capabilities of these methods and tools will be extended to tackle the main categories of accident scenarios in main types of operating or foreseen water-cooled NPPs in Europe, PWR, EPR, BWR, VVER, CANDU, including Spent Fuel Pools (SFP).

DESCRIPTION OF WORK

A first task will be to identify these scenario categories, to propose a methodology for their description and to develop a database of scenarios. Building this database will constitute a first important step in the harmonisation goal this project is aiming to reach. Promising probabilistic approaches based on Bayesian Belief Networks (BBN) have been and are currently developed to complement operational deterministic methodologies and tools by contributing first to the diagnosis of accidental situations. The development of the methodologies will be pursued in this project and extended to European reactors. Both approaches will be assessed against the above mentioned database of scenarios. Finally, a comprehensive set of emergency exercises will be developed and proposed to be run by a large set of partners.

MAIN RESULTS / HIGHLIGHTS

FASTNET will have a significant impact on the capabilities of a technical emergency centre to deal with a developing situation. Methodologies will be enhanced to formalise the diagnostic/prognosis approach and two tools will be enhanced to address all types of European reactors. A general database of accident sequences on these reactors will be also developed with corresponding source-terms.

DURATION

June 2015 – June 2019
4 years

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PARTNERS

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This project has received funding from the Euratom H2020 programme 2014-2018 under grant agreement No 754589.