



OBJECTIVES

The Fukushima nuclear accident in Japan resulted from the combination of two correlated extreme external events (earthquake and tsunami). The consequences, in particular flooding, went beyond what was considered in the initial NPP design.

Such situations can be identified using probabilistic safety assessment (PSA) methodology that complements the deterministic approach for beyond design accidents. If the results of a PSA conclude that such a low probability event can lead to extreme consequences, industry (system suppliers and utilities) or Safety Authorities may take appropriate decisions to reinforce the defence-in-depth of the plant.

The project ASAMPSA_E aims at promoting good practices for the identification of such situations with the help of PSAs and for the definition of appropriate criteria for decision-making in the European context. It offers a new framework to discuss, at a technical level, how “extended PSA” can be developed efficiently and be used to verify if the robustness of Nuclear Power Plants (NPPs) in their environment is sufficient.

The project gathers experts from 30 organisations in 18 European countries, US and Japan and is open for collaboration with organisations that have a broad experience in the field.

DESCRIPTION OF WORK

The project, with a total duration of 3,5 years, comprise the following activities :

- o building relationship with the international community of PSA users and developers to identify the gaps in knowledge and methodologies (2 surveys and international workshop are organized),
- o development of guidance reports on PSA applications (lessons from the Fukushima accident, PSA and defense-in-depth concept, selection of initiating events, risk metrics, PSA and decision-making ...),
- o development of guidance reports to extend the scope of PSA to earthquake, flooding, extreme weather, lightning, biological infestation, man-made hazards and aircraft crash,
- o development of guidance reports on PSA for severe accident (severe accident management optimization with L2 PSA, modelling reactor shutdown states and spent fuel pool accident in L2 PSA, recent insights from R&D).

MAIN RESULTS / HIGHLIGHTS

The project will provide an updated view of available practices to extend the scope of PSAs that will be useful for the PSA practitioners and contributes to design extension approaches. More than 15 guidance reports will be published after a peer review. In the context of NUGENIA, the project conclusions can be useful to identify some gaps in PSA methodologies, practices or knowledge for which some additional research activities or new standards can be useful.

DURATION

1 July 2013 – 31 December 2017
3,5 years

PARTNERS

IRSN, GRS, AMEC NNC, RSE S.p.A., LRC, UJV, UNIVIE, CCA, ENEA, NRG, IEC, EDF, LEI, NUBIKI, FKA, AREVA NP SAS, NCBJ, SSTC, VUJE, NIER, TRACTEBEL, BeL V, JSI, INRNE, ICN, TUS, AREXIS and US-NRC, JANSI, TEPCO.

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