



Máster Universitario en “*Ciencia y Tecnología Nuclear*”

Master Erasmus Mundus SARENA (Safe and Reliable Nuclear Applications)

ADVANCED SEMINAR

“PSA Applications and Precursor analysis”

Enrique Meléndez

Nuclear Technology Subdirectorate

Nuclear Safety Council (CSN)

Enrique Meléndez has 30+ years' experience in the nuclear sector working for the regulatory body in Spain (CSN). He started working in thermal hydraulic and severe accident codes, then moved on to assessment and application of Probabilistic Safety Analysis. He is responsible for the analysis of operational events, for overseeing the application of PSA indicators in CSN's regulatory system (SISC) and other PSA applications. He also has extended responsibilities in operator licensing.

Monday 21 to Thursday 24 June, from 15:30 to 17:30 (CET)

This Seminar will be face-to-face in **Classroom L01** [in a building located at the end of the courtyard, on the right side]

If the COVID-19 conditions do not allow the face-to-face activity, it would be developed online in MS-Teams

“PSA Applications and Precursor analysis”

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PSA applications:

- *Overview of the most important PSA applications (2h)* [Maintenance rule, RI-ISI, RI-IST, 10CFR69, etc.].

PSA technology, initially used to understand NPP vulnerabilities and quantitative risk, has been applied to understand the risks of different activities at NPPs. It is also a support analysis for licensees' requests to the regulatory body from plant modifications to changes in the licensing basis. Probabilistic methods have gradually made its way into the general deterministic approach to regulation in what is called Risk Informed Decision Making, reaching a number of different processes in the regulatory environment.

- *PSA activities at the Regulatory Body (2h)* [Inspections, assessment of findings, indicators, etc.]; PSA quality requirements

In the particular case of the regulatory body, PSA is used in oversight activities, informing inspection scope and inspection results, for defining safety performance indicators and for the assessment of operational events, among other activities. To perform these applications, standard methodologies have been put in place, which will be described in the lecture. In addition, an overview of the quality requirements for PSA will be presented.

Precursor Analysis:

- *Description of the international experience with probabilistic event analyses (PSAEA, precursor analyses). Spanish experience (2h)*
- *Case studies on precursor analysis (2h)*

A long standing application of PSA is the assessment of the operational events (PSAEA). This activity is being developed by regulatory bodies and licensees alike. The lecture will present activities in PSAEA carried out by different organizations, the particular structure of PSAEA making use of plant-specific PSA and a number of actual events and their detailed assessment.