

# **APAL Final seminar: Advanced deterministic and probabilistic integrity analyses of RPVs subjected to PTS Loading - Lessons learned from APAL**



**Tuesday 17 September 2024 - Wednesday 18 September 2024**

**IRSN: Institute for Radiation Protection and Nuclear Safety**

## **Scientific Programme**

## DAY 1

### State of the art overview

Overview on the state-of-the-art in PTS  
Warm pre-stress (WPS) in PTS  
Residual stresses relevant to PTS

### Advanced thermal-hydraulics analysis procedures

Introduction to Thermo-hydraulics  
Uncertainties and BEPU analyses

### Advanced deterministic PTS analysis procedures

Structural and fracture mechanics benchmarks  
Assessment of LTO improvements & Thermo-hydraulic uncertainties

### Advanced probabilistic PTS analysis procedures

Probabilistic fracture mechanics benchmark  
Probabilistic fracture mechanics benchmark related to LTO improvements  
Probabilistic fracture mechanics benchmark related to TH uncertainties  
Probabilistic margin assessment

## DAY 2

### Best practice for advanced PTS analysis I

Introduction to APAL Best practice guidance  
Overview of PTS assessment  
Selection of events leading to PTS  
Thermo-hydraulic analyses  
Temperature and stress field calculations  
Deterministic fracture-mechanics assessment for PTS analysis

### Best practice for advanced PTS analysis II

Probabilistic PTS analyses and uncertainties I  
Probabilistic PTS analyses and uncertainties II