



# First proposal about European “stress tests” on nuclear power plants

## Definition and objective

We define a “stress test” as a targeted reassessment of the safety margins of NPPs in the light of the events which occurred in Fukushima.

This reassessment will be based on the existing safety studies and engineering judgement to evaluate the behaviour of a nuclear power plant when facing a set of challenging situations (those envisaged under the following section “technical scope”).

For a given plant, the reassessment will report on the behaviour of the plant (most probable behaviour, with mention of potential cliff-edge effect) for each of the considered situations.

The results of the reassessment may indicate a need for additional safety provisions being technical or organisational (such as procedures, human resources, emergency response organisation, use of external resources).

It remains a national responsibility to take any appropriate measures resulting from the reassessment.

## Technical scope

The scope takes into account the issues that have been directly highlighted by the events that occurred in Fukushima and the possibility for combination of initiating events.

The following situations will be envisaged:

### Initiating events

1. Earthquake exceeding the design basis
2. Flooding exceeding the design basis
3. Other extreme external conditions challenging the specific site

### Consequential loss of safety functions

4. Prolonged total loss of electrical power
5. Prolonged loss of the ultimate heat sink

### Accident management issues

6. Core melt accident, including consequential effects such as hydrogen accumulation
7. Degraded conditions in the spent fuel storage, including consequential effects such as the loss of shielding of radiation

Consideration should be given to:

- automatic actions,
- operators actions specified in emergency operating procedures,
- any other planned measures of prevention, recovery and mitigation of accidents, - the situation outside the plant
- the possibility of several units being affected at the same time.

Given the tight timeframe of the exercise, very clear guidance for each selected scenario will be developed by WENRA.

### **Methodology and timeframe**

The licensee has the prime responsibility for safety. Hence, it is up to the licensees to perform the reassessments, and to the regulatory bodies to independently review them.

A task force of WENRA should conduct discussions with the European nuclear industry and bring its proposal to the European Nuclear Safety Regulators Group (ENSREG) meeting scheduled on the 12th of May. This proposal will then be presented and further discussed at the European level.

Timeframe needs further consideration, taking into account the available resources for daily focus on safety. The following figures are just indications.

The licensees could be given 6 months to perform the reassessments as described above and to send the results and related documentation to their national regulator.

The regulator then would perform a review of the licensees' submissions. Interactions between European regulators will be necessary and could be managed through WENRA or ENSREG. Regulators will perform, within 3 months, the review and produce a report which should be published.

Results of the reviews could be discussed in a public seminar, to which other experts (from non nuclear field, from NGOs, etc) should be invited.