

Course on Severe Accident Progression (analysis, data and uncertainties)



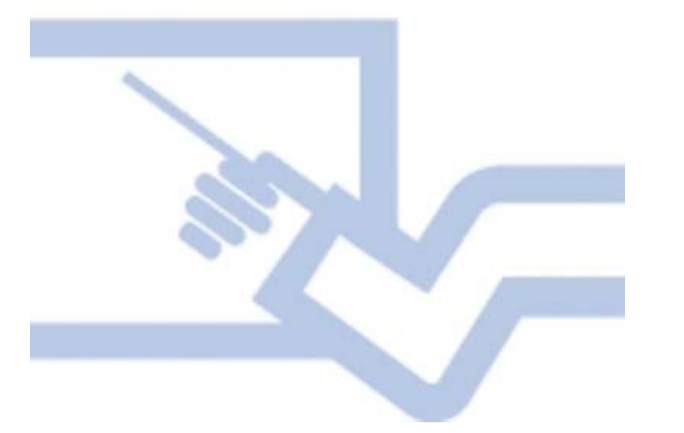
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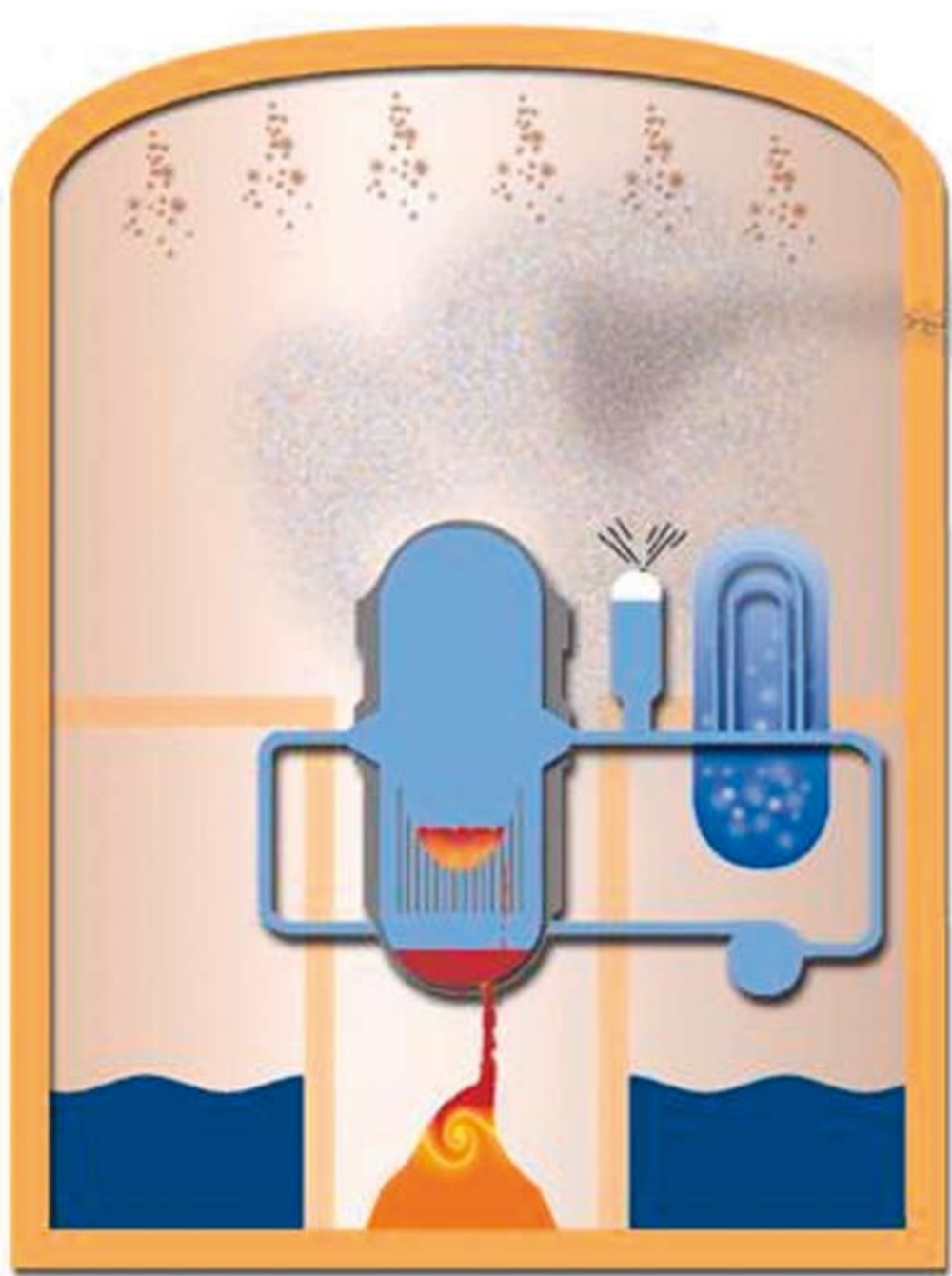
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Informations about this education
www.sar-net.org
www.irsn.org/formations



First session: Cadarache (France) - March 12-16, 2007

Context



In case of an accidental situation occurring on a nuclear reactor with cumulative safeguards systems failures, core melt of the reactor could happen. In this situation, it is necessary to have the best knowledge in one hand of the complex and different physical mechanisms, in the other hand of possible loss of the confinement during short term or medium term with the aim to be able to suggest specific advices or actions and to provide prognosis on potential

consequences involving their kinetics and associated radioactive releases. Management of this type of situation has to be realized during a long duration.

The main question is relative to the associated knowledge of the staff needed to provide advices: are they by their usual tasks educated enough to core melt situations and depending on the corresponding answer, have they to be educated?

To date, only few engineers, everyone in his skill field, have contributed to the assessment of a core melt situation called "Severe accident progression".

The situation is the same for the engineers who have been involved in the level 2 probabilistic studies allowing radioactive release probability after a core melt.

Elsewhere, in most of the countries, only accidental transients leading to beginning of core discovery have been simulated. Consequently, the staff who could be involved in severe accident progression situations is not enough trained today with the specific physical phenomena and their kinetics.

Consequently, an important stake is to educate the staff having to intervene to provide advices and prognosis in case of core melt situation on a nuclear reactor.

Who can be interested?

All people working in the nuclear safety field having to intervene in case of severe accident occurring on nuclear reactor with the aim to provide diagnosis and prognosis on the accident evolution and consequently to allow the authorities to take adapted measures to protect the populations are concerned, whatever their position in the nuclear field management, safety authorities, technical support to safety authorities, utilities or designers.

Aim

This education involves the following:

- Knowledge on the associated risks linked with severe accident progression for the different types of nuclear reactors;
- Knowledge on the deterioration mechanisms of the different safety barriers in case of severe accident;
- Knowledge on the possible recovery actions.

The main aim is to provide the participants with a large set of data (consequences, kinetics...) associated with the different modes of deterioration of the different safety barriers of a reactor after its core melt.

It is also foreseen to include some addressing uncertainty data and methods into the severe accident course materials. And, perhaps beyond the scope of this effort, an international effort to characterize uncertainty of key input parameters and phenomena used on severe accident codes, specifying ranges and distributions, would be a large step moving towards the direction of making uncertainty characterization a routine element of severe accident analysis.

Expected benefits

This education will allow the different participants to catch the order of magnitude of physical phenomena occurring during core melt on a reactor of different types (PWR, BWR and, on request, VVER, CANDU and Generation III reactors) with corresponding data and uncertainties.

Means:

Lectures.

Duration:

5 days.

Educator:

France (Cadarache castle)
in March 2007.

Venue:

Nuclear Safety experts
from different countries
with large skills and knowledge
on the different types
of nuclear reactors and
on the progression
of a severe accident.

Participants:

At least 20 per session.

Prerequisite for participants:

Course for nuclear safety
specialists.

Responsible:

Jean-Marie MATTEI,
(France / IRSN).

Sessions:

The first session will focus on
PWR and BWR. Other sessions
will deal also with VVER,
CANDU and Generation III
reactors.