framatome

Severe Accident Training

Technical Support for Staff and Shift Personnel

Raising awareness by learning from the past to improve your nuclear power plant's safety in the future

Challenge

Several severe accidents with core damage have occurred in the past. Beside technical issues, these events also demonstrated operational challenges to emergency organizations, internal and external crisis communication and detrimental working conditions for field operators.

Plant operators need to be aware of these hard and soft lessons learned to support their staff in the best manner and to avoid and manage such issues in a possible future crisis situation.

Solution

We offer a comprehensive severe accident training program, based on class-room trainings as well as emergency drills.

Our trainings can be held as individual modules, as full-day or multi-day events, based on your specific needs. All Framatome instructors are recognized severe accident experts being able to address specific questions of the audience.

Classroom trainings

We offer the following classroom training modules:

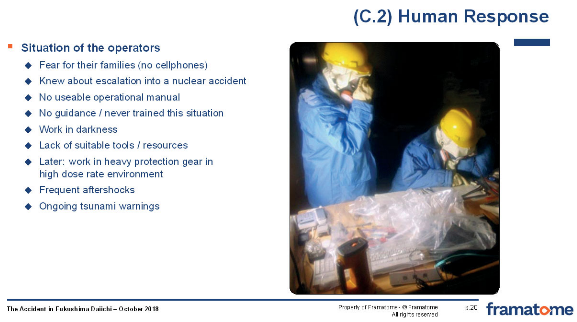
- **Introduction to Severe Accidents**
  (Length about 1 hour. Introduction to the severe accident related physical/technical basics for e.g. shift personnel)
- **The Accident in Fukushima Daiichi**
  (Length about 4 hours. Discusses the expectable working conditions and personal challenges to operators and support organizations)
- **The Three Mile Island Unit 2 (TMI2) Accident**
  (Length about 4 hours. Reviews the lessons learned with respect to installed base plants – boiling water reactors and pressurized water reactors)
- **The Chernobyl Disaster**
  (Length about 3 hours. Includes a basic introduction into neutronics)
- **Severe Accident Control in the EPR Reactor**
  (Length about 4 hours. Gives a review about state-of-the-art severe accident control)

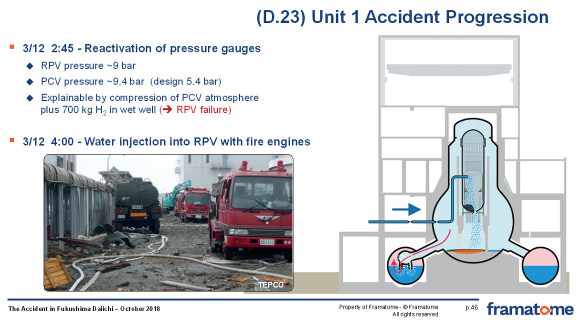
The length and technical depth of the class-room trainings can be adapted to best suit the anticipated audience.

Your performance
is **our** everyday **commitment**

Customer benefits

- Improved understanding about the occurred nuclear accidents supports the personnel of a nuclear power plant to anticipate and deal with challenges unique to a severe accident
- Efficient preparation of personnel for a worst-case scenario is a fundamental aspect of nuclear safety
- Gaining insights in the know-how and know-why of up-to-date severe accident mitigation systems and guidance schemes allows utilities to make informed decisions about possible plant modifications



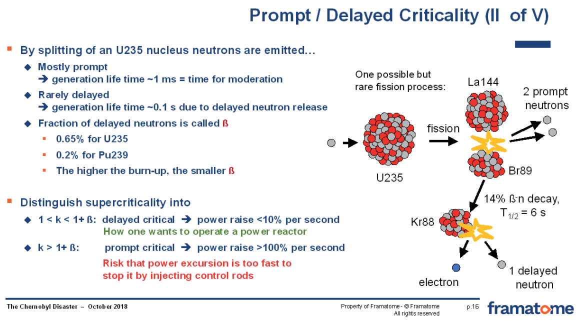


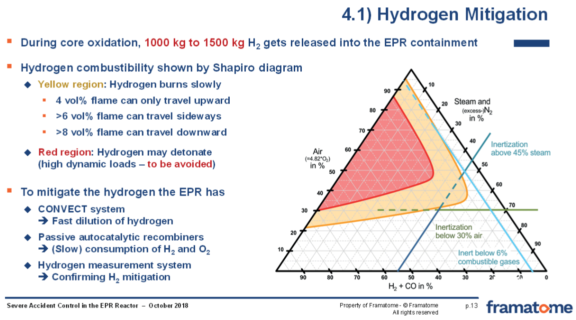
Excerpts from the Fukushima course material

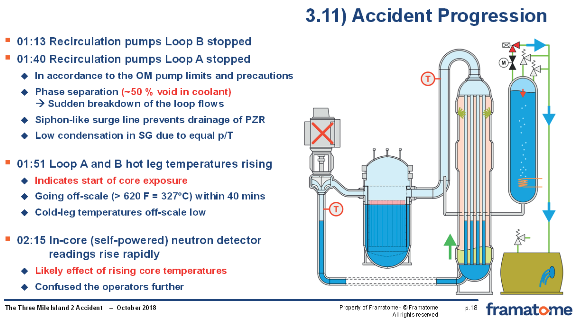
Exercise drills

To ensure a long-lasting success of the classroom trainings, we recommend a subsequent emergency drill, where trainees can practically apply the theoretically acquired knowledge in a simulated environment.

The scope of drills strongly depends on the existing structures within the plant organization, such as, accessibility of simulators and implemented severe accident management procedures. Framatome offers severe-accident drills as primary organizer with shared responsibilities or to send only observers to provide you with qualified feedback.







Excerpts from Chernobyl, TMI2, and EPR course material

Objectives of a special severe accident training for operators

- The severe accident background education enables to anticipate an accident development and evaluate information to identify false or misleading data.
- The proper training of accident sequences enables to develop a basic understanding of relevant time periods during the progression of a severe accident.
- The ability to assess accident situation reliefs stress and enables for more focused work.
- The knowledge about radiological consequences on-site and in nearby communities enables the educated decision making about relevant actions.

Naturally, the plant staff is mostly focused on operational occurrences training. Hence, training experiences with regard to beyond design severe accident situations is often rather theoretical.

A severe accident training with our Framatome experts, who work extensively in the field of severe accident research, methodology development and accident simulations and evaluations, targets to help your crew to immerge into very extraordinary situations and to gain first-hand knowledge from our experts.

References

- Emergency drills in Germany, Brazil, Spain, Finland and Switzerland
- Participation in several industry- and university-based educational programs
- OECD observer mission
- Performance of multi-week trainings of emergency organization in new-build plants

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