Nordic Nuclear Safety Research (NKS) programme: Nordic cooperation on nuclear safety issues

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Decommissioning of a Danish research reactor

What is NKS? NKS (Nordic Nuclear Safety Research) is a platform for Nordic cooperation and competence in nuclear safety, including radiation protection and emergency preparedness. It is an informal forum, serving as an umbrella for Nordic initiatives and interests. Its purpose is to carry out joint activities producing seminars, exercises, scientific articles, technical reports and other types of reference material. The work is financed and supported by Nordic authorities, companies and other organisations.

Research areas

Areas of interest covered by NKS activities fall under two main programmes, NKS-R and NKS-B, which cover the following specified research areas.

NKS-R Programme:

- Thermal hydraulics
- Severe accidents and reactor physics
- Risk analysis
- Organisational issues and safety culture
- Decommissioning
- Plant life management and extension

NKS-B Programme:

- Emergency preparedness
- Measurement strategy, technology and quality assurance
- Radioecological assessments
- Wastes and discharges

High pressure hosing of a radioactively contaminated wall in connection with a Nordic preparedness exercise in 2007.

Some examples of ongoing NKS activities:

Development of guidelines for reliability analysis of digital systems

Digital protection and control systems are appearing as upgrades in older nuclear power plants and are commonplace in new plants. To assess the risk of nuclear power plant operation and to determine the risk impact of digital systems, there is a need to quantitatively assess the reliability of the digital systems in a justifiable manner. Practical guidelines for analysis and modelling of digital systems in probabilistic safety assessment for nuclear power plants are developed in this activity (NKS-R DIGREL).

Modelling of consequences of severe radioactive releases to Nordic marine environment

This topic has been highlighted by the Fukushima NPP accident. Hypothetical severe reactor accident source terms to Nordic marine environment are considered as case studies, for example at Finnish (Loviisa, Olkiluoto) and Swedish (Forsmark, etc.) NPP-sites. Local sea area models for locations near Nordic NPP-sites as well as models for the Baltic Sea are adapted and applied in dispersion analyses of the released radionuclides (NKS-B COSEMA).

NOTE: NKS is arranging a seminar on lessons learned from the Fukushima accident. This will take place in Stockholm on the 8-9 January 2013.

Fukushima NPP control room before the accident on 11th of March 2011.