

## Possible Contributions from NKS-R

NKS Seminar on the Fukushima Accident and Perspectives  
for Nordic Reactor Safety and Emergency Preparedness

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# Nordic nuclear safety research, NKS

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- NKS is a platform for Nordic cooperation
- NKS aims to:
  - maintain and strengthen Nordic competence in the areas of nuclear safety and research
  - develop close informal networks between scientists, workers and end users from the relevant Nordic authorities, organisations, industries and university departments that are concerned with the various aspects of nuclear safety and research
- Research activities are divided in two parallel programmes
  - NKS-R: Reactor physics and safety
  - NKS-B: Nuclear and radiological emergency preparedness

# NKS annual call for proposals

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- New NKS activities are sought under annual call for proposals
- NKS activities can take the form of research and development projects, exercises or seminars and workshops to address relevant issues of common Nordic interest
- The result of the NKS activities are published and always available cost-free on the NKS website

# The NKS-R programme

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- Focused on Nordic research in the area of reactor safety including organisational issues and decommissioning of nuclear installations
- There are 7 main topics in NKS-R
  - Thermal hydraulics
  - Severe accidents
  - Reactor physics
  - Risk analysis & probabilistic methods
  - Organisational issues and safety culture
  - Decommissioning, including decommissioning waste
  - Plant life management and extension

# Ongoing NKS-R activities

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## *Thermal Hydraulics*

DECOSE: Debris coolability and steam explosion

ENPOOL: Experimental and numerical studies on suppression pool issues

POOLFIRE: Predictive analysis of pool fires in enclosures by means of CFD models for risk assessment of nuclear power plants

## *Severe Accidents and Reactor Physics*

AIAS: Ad-/absorption and desorption/revaporisation behaviour of iodine aerosols on containment surface materials

RASTEP: Using bayesian belief network modelling for rapid source term prediction after a severe accident

## *Risk Analysis*

DIGREL: Guidelines for reliability analysis of digital systems in PSA context

## *Organisational Issues and Safety Culture*

MOREMO: Modelling resilience for maintenance and outage

SADE: Safety culture in design and implementation of technological and organisational solution - improving resilience of the sociotechnical system through the life-cycle

## *Decommissioning*

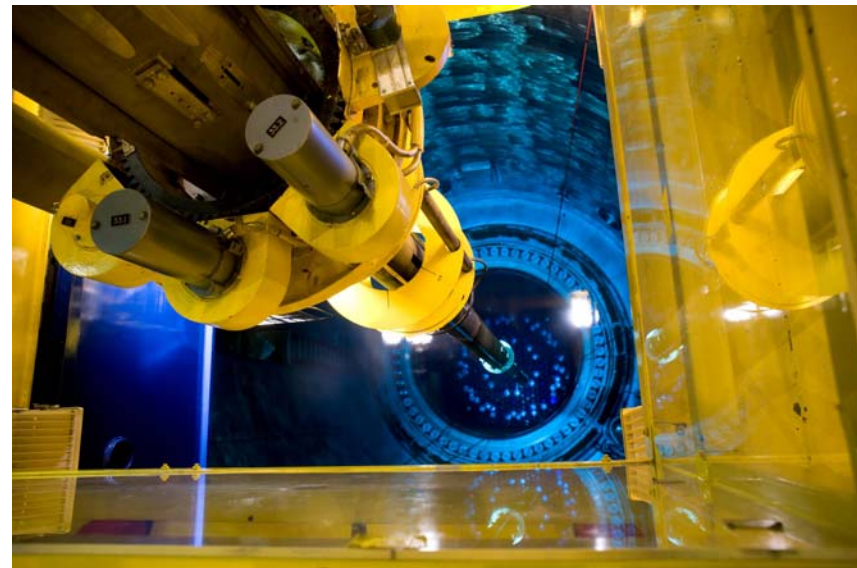
No activities at the moment.

## *Plant life management and extension*

Nordic-Gen4: Nordic nuclear forum for generation IV reactors.

# Early response to the Fukushima accident

- In May after the Fukushima accident NKS Board indicated an interest to prioritise Fukushima related projects in that year's call for proposal
- At the same meeting Board allocated money for Fukushima related workshop or similar event



# NKS-R and the Fukushima accident

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- Unfortunately, any directly Fukushima initiated proposal was not received in NKS-R CfP 2012
- However, ongoing NKS-R activities cover topics on severe accident and accident management
  - AIAS: investigates adsorption of iodine oxide aerosols on different surfaces. Iodine contributes significantly to the source term for a range of severe accidents scenarios, and the ways for decreasing the iodine release are studied in the project
  - DECOSE: studies on debris coolability and steam explosions in Nordic boiling water reactors. The main goal is to reduce uncertainties related bed properties by experimental and analytical studies.
  - RASTEP: joint project of NKS-B and NKS-R. A computerised rapid source term prediction tool is developed to predict NPP source terms

# Possible contributions in future

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- Hopefully, plenty of new Fukushima related applications in the NKS Call for Proposals 2014
- Possible research areas for the Fukushima related studies in NKS-R
  - Thermal hydraulics: fuel pool cooling
  - Severe accidents
  - Risk analysis: especially PRA level 3
  - Plant life management and extension: Nordic safety improvements



**Thank you for your attention!**