



Nordisk kernesikkerhedsforskning  
Norrænar kjarnöryggisrannsóknir  
Pohjoismainen ydinturvallisuustutkimus  
Nordisk kjernesikkerhetsforskning  
Nordisk kärnsäkerhetsforskning  
Nordic nuclear safety research

# Overview of the NKS-R programme and summary of ongoing activities

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NKS-R Programme Manager

## NKS – Nordic Nuclear Safety Research

- Has for decades supported Nordic co-operation in nuclear safety research
- The aim is to maintain and strengthen Nordic competence in the areas of nuclear safety and research,
- And to develop close informal networks between scientists, workers and end users from the relevant Nordic authorities, organisations, industries and university departments





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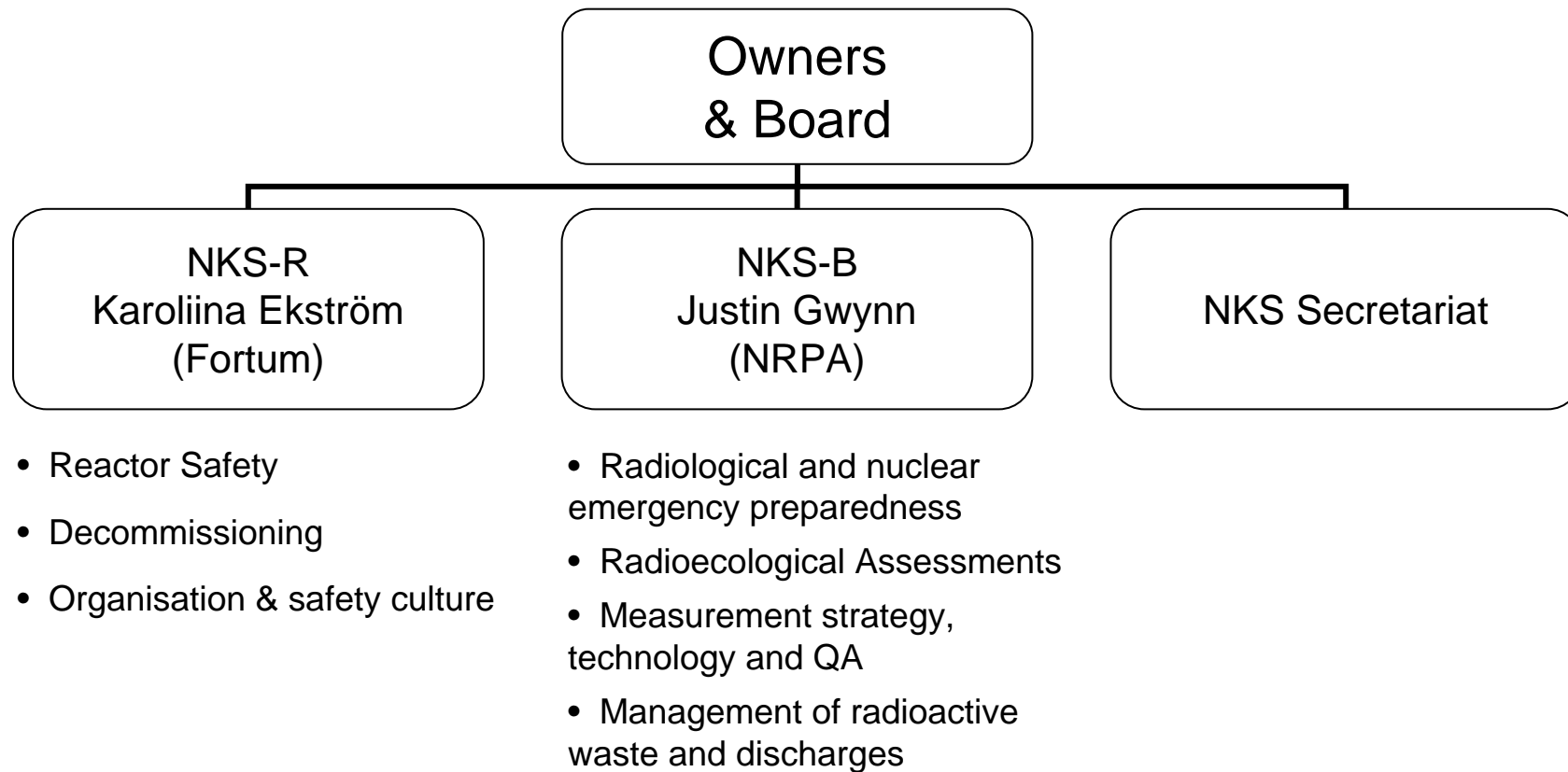
NKS is a voluntary co-operation of Nordic authorities

### **Owners and Main Financiers**

DK	Danish Emergency Management Agency
FI	Ministry of Employment and the Economy
IS	Icelandic Radiation Safety Authority
NO	Norwegian Radiation Protection Authority
SE	Swedish Radiation Safety Authority

### **Additional funding from:**

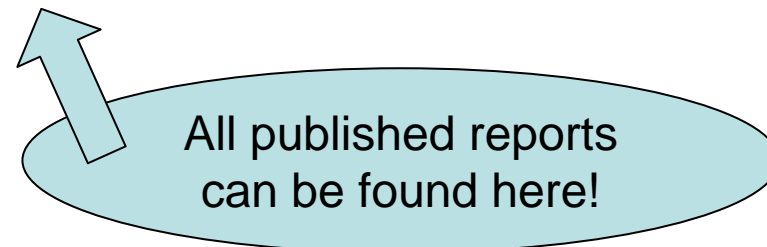
- Fortum Power and Heat Oy (Finland)
- TVO (Finland)
- IFE (Norway)
- Forsmarks Kraftgrupp AB (Sweden)
- Kärnsäkerhet och utbildning (KSU) AB (Sweden)
- OKG Aktiebolag (Sweden)
- Vattenfall Ringhals AB (Sweden)
- Fennovoima Oy (Finland)



- Support for research is sought under the annual Call for Proposals
- Next Call for Proposals opens September 1, 2011



[www.nks.org](http://www.nks.org)    nks@nks.org



## Topics of the NKS-R programme

- Severe accidents
- Thermal hydraulics
- Probabilistic methods/ risk analysis
- Decommissioning
- Plant life management
- Organisational issues and safety culture





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## Ongoing activities 2011

Activity Type	Activity Name	Activity Topic	Activity Leader	Funding (kDKK)
Severe accidents	AIAS	Adsorption of iodine oxide aerosols on surfaces	Christian Ekberg, Chalmers University of Technology	540
Risk analysis	DIGREL	Guidelines for reliability analysis of digital systems in PSA context	Jan-Erik Holmberg, VTT	300
Thermal hydraulics	ENPOOL	Experimental and numerical studies on suppression pool issues	Timo Pättikangas, VTT	650
Organisation and safety culture	MoReMO	Modelling resilience for maintenance and outage	Michael Hildebrandt, IFE	500
Plant life management and extension	NOMAGE4	Nordic Nuclear Materials Forum for Generation IV Reactors network activities	Clara Anghel, Studsvik Nuclear AB	250
Thermal hydraulics	POOLFIRE	Predictive analysis of pool fires in enclosures by means of CFD models for risk assessment of nuclear power plants	Patrick Van Hees, Lund University	360
R/B cross-over activity: Severe accidents / Emergency preparedness	RASTEP	Using Bayesian Belief network modelling for rapid source term prediction after a severe accident	Michael Knochenhauer, Scandpower AB	400
Organisation and safety culture	SADE	Safety culture in design and implementation of technological and organisational solutions	Teemu Reiman, VTT	450
			<b>total</b>	<b>3450</b>

## Ongoing activities 2011 – some examples

Topic: Severe accidents

AIAS - Adsorption of iodine oxide aerosols on surfaces.

Experimental study on iodine chemistry;  
Behaviour of iodine in the reactor containment during a (hyp.) severe accident.

Project partners:

Chalmers Technical  
University, Sweden

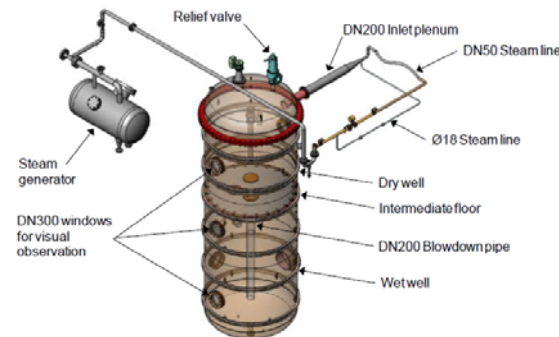
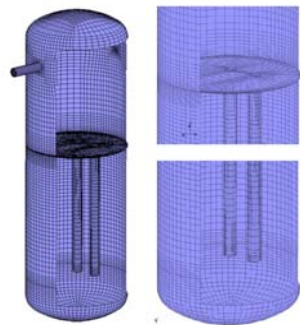
VTT Technical Research  
Centre, Finland



## Ongoing activities 2011 – some examples

Topic: Thermal hydraulics

ENPOOL- Experimental and numerical studies on suppression pool issues  
 Condensation pool experiments and development of simulation codes



*PPOOLEX test vessel.*

Project partners:

KTH Kungliga Tekniska  
 Höskolan, Sweden

VTT Technical Research  
 Centre, Finland

LUT, Lappeenranta  
 University of Technology,  
 Finland

## Ongoing activities 2011 – some examples

Topic: Organisation and safety culture

MOREMO - Modelling resilience for maintenance and outage

Research in resilience engineering for maintenance and outage of nuclear power plants, using Ringhals and Loviisa as case studies.



Project partners:

IFE Institute for Energy Technology, Norway

RAB, Vattenfall Ringhals AB, Sweden

VTT Technical Research Centre, Finland

Fortum, Loviisa NPP, Finland

## Ongoing activities 2011 – some examples

Topic: R/B Cross-over activity, severe accidents and emergency preparedness

RASTEP - Using Bayesian Belief network modelling for rapid source term prediction after a severe accident

Development of a computerized source term prediction tool. The output will be a set of possible source terms with associated probabilities -> interface with off-site dose calculation tools -> improving off-site emergency management

Project partners:

Scandpower AB, Sweden

IFE Institute for Energy Technology, Norway





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# Thank you for your attention

For more information on the NKS-R programme,

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