

# NKS-R Status

June 2018

Overall the work in NKS-R is progressing according to revised plans

- Status for the 7 activities from CfP 2017:
  - 2 activities completed (NORDEC and SC\_AIM)
  - 3 activities planned to be completed in June/July (FIREBAN, SPARC and COPSAR)
  - 2 activities be completed later in 2018 (HYBRID and WRANC)
- Status for the 6 activities from CfP 2018:
  - Contracts signed for all activities - No delays reported (BREDA-RPV, FIREBAN, SITRON, SPARC, SYNTAGMA and NORDEC)
  - TVO support agreement signed
  - Fortum support agreement expected in June (submitted 27 April)

# Status for activities from CfP 2017

| Activity | Partners   | Contract number       | Final report received | Files sent to Risö | Report number           |
|----------|------------|-----------------------|-----------------------|--------------------|-------------------------|
| COPSAR   | LUT        | AFT/NKS-R (17) 114/1  | 2018-03-22            | 2018-04-25         |                         |
|          | KTH        | AFT/NKS-R (17) 114/2  |                       |                    |                         |
|          | VTT        | AFT/NKS-R (17) 114/3  |                       |                    |                         |
| FIREBAN  | LU         | AFT/NKS-R (17) 119/7  |                       |                    |                         |
|          | VTT        |                       |                       |                    |                         |
|          | AAU        |                       |                       |                    |                         |
|          | DBI        |                       |                       |                    |                         |
| HYBRID   | CTH        | AFT/NKS-R (17) 120/8  |                       |                    |                         |
|          | IFE        |                       |                       |                    |                         |
| SC_AIM   | VTT        | AFT/NKS-R (17) 121/4  | 2018-01-31            | 2018-02-02         | <a href="#">NKS-405</a> |
|          | KTH        |                       |                       |                    |                         |
| SPARC    | KTH        | AFT/NKS-R (17) 122/9  |                       |                    |                         |
|          | VTT        | AFT/NKS-R (17) 122/10 |                       |                    |                         |
|          | LRC        | AFT/NKS-R (17) 122/11 |                       |                    |                         |
| NORDEC   | IFE        | AFT/NKS-R (17) 123/5  | 2018-01-31            | 2018-02-01         | <a href="#">NKS-404</a> |
|          | NRPA       |                       |                       |                    |                         |
|          | SSM        |                       |                       |                    |                         |
|          | STUK       |                       |                       |                    |                         |
|          | SIS        |                       |                       |                    |                         |
|          | VTT        |                       |                       |                    |                         |
|          | Vattenfall |                       |                       |                    |                         |
| Fortum   |            |                       |                       |                    |                         |
| ÅF       |            |                       |                       |                    |                         |
| WRANC    | Inspecta   | AFT/NKS-R (17) 124/6  |                       |                    |                         |
|          | KTH        |                       |                       |                    |                         |
|          | SINTEF     |                       |                       |                    |                         |

partly completed (LUT)

(July)

(December)

**completed**

(June)

**completed**

(September)

Delays at IFE as reported in December 2017

Delayed measurements at SINTEF

# Status update on HYBRID 2017

---

*1) The technical work at Chalmers and VTT is completed. The final report for their part of the project will be prepared and delivered to NKS in the early fall of 2018.*

*2) IFE has not been able to identify a suitable student for a Masters or Bachelors project. Alternatives to student participation are currently being considered involving resources from another project where relevant development work is being done (HRP). If knowledge can be transferred to HYBRID, then IFE is confident that it will be able to submit a completed report by December 2018.*

# New NKS-R reports published on website

---

## NORDEC

- NKS-404: *Challenges and opportunities for improving Nordic nuclear decommissioning* (Feb 2018)

## SC\_AIM

- NKS-405: *Safety Culture Assurance and Improvement Methods in Complex Projects – Final Report from the NKS-R SC\_AIM* (Feb 2018)

## SPARC

- NKS-408: *Phenomena Threatening Containment Integrity and Evaluating Source Term Characteristics* (June 2018)

## COPSAR

- *PPOOLEX spray tests on mixing effects in condensation pool*
- *Mixing Test in PPOOLEX with Sparger in Centre Position*
- *General description of SEF-POOL test rig*
- *Characterizing tests in SEF-POOL facility*

} 4 reports from LUT  
- to be published as  
appendices to main report

# NKS-R seminars/conferences/publications

## FIREBAN

- Workshop for PRA Integration (Probabilistic Risk Assessment) at VTT – November 2018

## NORDEC

- Open workshop in Lillehammer – December 2018



OECD-HRP/NKS workshop on  
Challenges and opportunities for improving nuclear  
decommissioning  
in HRP member and Nordic countries

**December 6-7, 2018**  
**Hotel Scandic**  
**Lillehammer, Norway**



# Status for activities from CfP 2018

| Activity  | Title   | Leader          | Partners   | NKS number     | Contract number    | Total funding<br>kDKK | Partner<br>funding<br>kDKK | Contract<br>received |
|-----------|---|-----------------|------------|----------------|--------------------|-----------------------|----------------------------|----------------------|
| BREDA-RPV | Barsebäck RPV trepan studies  | KTH             | KTH        | NKS_R_2016_118 | AFT/NKS-R(18)118/1 | 500                   | 150                        | 2018-02-21           |
|           |   |                 | VTT        |                |                    |                       | 250                        |                      |
|           |   |                 | CTH        |                |                    |                       | 100                        |                      |
| FIREBAN   | Determination of fire barriers's reliability for fire risk assessment in NPP.             | LU              | LU         | NKS_R_2016_119 | AFT/NKS-R(18)119/2 | 450                   | 104,9                      | 2018-02-13           |
|           |   |                 | VTT        |                |                    |                       | 104,9                      |                      |
|           |   |                 | AAU        |                |                    |                       | 104,9                      |                      |
|           |   |                 | DBI        |                |                    |                       | 104,9                      |                      |
|           |   |                 | RAB        |                |                    |                       | 30,4                       |                      |
| SITRON    | SITE Risk Of Nuclear installations  | Risk Pilot (Fi) | Risk Pilot | NKS_R_2018_125 | AFT/NKS-R(18)125/3 | 600                   | 100                        | 2018-02-02           |
|           |   |                 | LRC        |                |                    |                       | 100                        |                      |
|           |   |                 | VTT        |                |                    |                       | 100                        |                      |
|           |   |                 | IFE        |                |                    |                       | 300                        |                      |
| SPARC     | Scenarios and Phenomena Affecting Risk of Containment Failure and Release Characteristics | KTH             | KTH        | NKS_R_2016_122 | AFT/NKS-R(18)122/4 | 600                   | 255                        | 2018-03-28           |
|           |   |                 | VTT        |                |                    |                       | 224                        |                      |
|           |   |                 | LRC        |                |                    |                       | 121                        |                      |
| SYNTAGMA  | Synthetic ground motions to support the Fennoscandian GMPEs                               | VTT             | VTT        | NKS_R_2018_126 | AFT/NKS-R(18)126/5 | 600                   | 277                        | 2018-02-14           |
|           |   |                 | UU         |                |                    |                       | 46                         |                      |
|           |   |                 | GEUS       |                |                    |                       | 46                         |                      |
|           |   |                 | CTH        |                |                    |                       | 231                        |                      |
| NORDEC    | Challenges and opportunities for improving Nordic nuclear decommissioning                 | IFE             | IFE        | NKS_R_2017_123 | AFT/NKS-R(18)123/6 | 250                   | 175                        | 2018-02-19           |
|           |   |                 | NRPA       |                |                    |                       | 6,25                       |                      |
|           |   |                 | SSM        |                |                    |                       | 6,25                       |                      |
|           |   |                 | STUK       |                |                    |                       | 6,25                       |                      |
|           |   |                 | SIS        |                |                    |                       | 6,25                       |                      |
|           |   |                 | VTT        |                |                    |                       | 12,5                       |                      |
|           |   |                 | Vattenfall |                |                    |                       | 12,5                       |                      |
|           |   |                 | Fortum     |                |                    |                       | 12,5                       |                      |
| ÅF        | 12,5  |                 |            |                |                    |                       |                            |                      |

# NORDEC - revised plan due to funding cut

## Tasks

### T1: Work meetings (discussions)

- Video/phone discussions will be held with the project partners around the main Nordic decommissioning challenge areas identified in 2017.
- Opportunities and models for establishing a platform enhancing Nordic collaboration within the main Nordic decommissioning challenge areas will also be discussed.

### T2: Workshop preparation

- Presentations will be prepared by the project partners with focus on opportunities for enhancing collaboration within main Nordic decommissioning challenge areas.
- Demonstrations will be prepared by the project partners presenting new concepts related to the main Nordic decommissioning challenge areas and collaboration of Nordic countries.
- Administrative and technical preparatory work for the workshop will also be done within this task.

### T3: Workshop

- An open workshop will be held with the project partners and invitees. The workshop is planned to be held as a mini-workshop immediately following a larger international workshop organised by the project coordinator (Lillehammer, December 6-7).

### T4: Reporting

- A final report, mainly consisting of presented material and summaries from the workshop, will be prepared.

Main focus on  
work meetings  
and workshops!



Tiina Lavonen – Research Scientist at VTT (30 y.o.) M.Sc. planning for Ph.D.

*“VTT is currently preparing for the decommissioning of FIR1 (TRIGA type) research reactor and we have done and are currently doing the characterization analysis for research reactor waste and construction materials. My part has been to analyze the original composition of different materials from FIR1 with HR ICP-MS. I would like to participate in ICP conference, Nordic Plasma Conference (10-13 June in Loen, Norway) and do a poster about our characterization analysis with HR ICP-MS.”*

## Nordic research and development cooperation to strengthen nuclear reactor safety after the Fukushima accident

Christian Linde<sup>1,2</sup>, Kasper G. Andersson<sup>1,3</sup>, Sigurður M. Magnússon<sup>1,4</sup> and Finn Physant<sup>1,5</sup>

<sup>1</sup> NKS, Roskilde, Denmark

<sup>2</sup> Swedish Radiation Safety Authority, Stockholm, Sweden

<sup>3</sup> Technical University of Denmark, DTU Nutech, Roskilde, Denmark

<sup>4</sup> Icelandic Radiation Safety Authority, Reykjavik, Iceland

<sup>5</sup> FRIT, Roskilde, Denmark

STATUS – submitted to *Nuclear Engineering and Technology* (18-06-12)

## Nuclear Engineering and Technology

> Open Access

Editor-in-Chief: [Man Gyun Na](#)

> View Editorial Board

*Nuclear Engineering and Technology* (NET), an international journal of the Korean Nuclear Society (KNS), publishes peer-reviewed papers on original research, ideas and developments in all areas of the field of nuclear science and technology. NET bimonthly publishes original articles, reviews, and technical notes. The journal is listed in the Science Citation Index Expanded (SCIE) of Thomson Reuters.

NET covers all fields for peaceful utilization of nuclear energy and radiation as follows:

- 1) Reactor Physics
- 2) Thermal Hydraulics
- 3) Nuclear Safety
- 4) Nuclear I&C
- 5) Nuclear Physics, Fusion, and Laser Technology
- 6) Nuclear Fuel Cycle and Radioactive Waste Management
- 7) Nuclear Fuel and Reactor Materials
- 8) Radiation Application
- 9) Radiation Protection
- 10) Nuclear Structural Analysis and Plant Management & Maintenance
- 11) Nuclear Policy, Economics, and Human Resource Development

<https://www.journals.elsevier.com/nuclear-engineering-and-technology/>