



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

NKS-121
ISBN 87-7893-182-7

Nuclear Threats in the Vicinity of the Nordic Countries. Supplementary Final Report of the Nordic Nuclear Safety Research

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April 2006

Abstract

The purpose of this project was to continue the cross-disciplinary study SBA-1 “base of knowledge” in the NKS research program 1998-2001 regarding possible nuclear threats in the vicinity of the Nordic countries. The main task for the project was to expand and envelope this database. Finding information to be placed in the database and identifying and filling gaps in knowledge were prioritised. This is a continuous process which extends beyond the end of this project, in order to have an operating and updated database also in the years to come. In this project work has been done making information systems in Norway that can take care of the database in the future.

The scope of the preceding project was to prepare a base of knowledge regarding possible nuclear threats in the vicinity of the Nordic countries. The database, including a literature database, is presented on the website “Nuclear threats in the vicinity of the Nordic Countries”. The utilisation of modern information technology gives the user of the database easy access to information on different types of nuclear installations and threats.

The project focused on potential events at nuclear installations and the consequences for the Nordic countries, especially with regards to vulnerable food chains, doses to man, environmental contamination and emergency preparedness systems. The geographical area dealt with includes North-west Russia and the Baltic states and the nuclear installations investigated are nuclear power plants, ship reactors and storage and handling of used fuel and radioactive waste.

Key words

Nuclear threats, Nordic countries, nuclear power plants, nuclear ship, nuclear waste, literature database, base of knowledge, web-accessed information, atmospheric transport, decommissioning of submarines, nuclear installations, waste management, radioactive contamination in marine environment, radioactive sources, criticality analysis

NKS-121
ISBN 87-7893-182-7

Electronic report, April 2006

The report can be obtained from
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Nuclear Threats in the Vicinity of the Nordic Countries

Final Report of the
Nordic Nuclear Safety Research
Activity *Knowledgebase*

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Norwegian Radiation Protection Authority

Abstract

The acute phase of an accident and the possibility of high exposure of the populations are always the most important factors in emergency preparedness work. Radioactive contamination from an accident can however also cause long time effects for land use and enhanced doses to special population groups and economic problems for agriculture, grazing animals, reindeer industry, hunting, freshwater fishing, tourism and recreation. For planning purposes it is always valuable to be aware of potential radiation hazards and other potential threats in the vicinity of the Nordic countries. Thus, mapping such threats in a Nordic context is an important factor in emergency preparedness in the Nordic countries.

The project has dealt with threats from the north west of Russia and the Baltic states. The results from the different activities in the project is collected in a web based database called the “the base of knowledge”.

The “base of knowledge” on nuclear threats

This project was one of the new cross-disciplinary studies in the Nordic Nuclear Safety’s research program 1998-2001 and with new founding in 2002. The main task for the project was to aggregate already acquired knowledge of nuclear threats in the vicinity of the Nordic countries, into a “base of knowledge”, present by modern information technology. This web based “base of knowledge” will be available for the Nordic authorities as a supplement for the national emergency preparedness work. This base of knowledge can also, by information technology, be made available to authorities, media and the population. The users of the websites can easily get information on different types of nuclear installations and threats.

The first stage of the project was to prepare a list of relevant papers and reports that have been produced concerning nuclear threats in the vicinity of the Nordic countries, a literature database. The literature database was created as a part of the “base of knowledge” and is a database with the most relevant publications, papers and reports that have been produced regarding possible nuclear threats in the vicinity of the Nordic countries. The literature database is presented on a website and as a report with 500 references. As a summary of the literature in the database there were made two status reports on the most important issues of the project, threats from the nuclear power plants and the nuclear vessels. The reports give an overview of the work done in this matter. The reports are published as NKS reports.

At the Workshop 2000 experts from the different Nordic countries presented each country’s evaluation of the threats against their country. There were presentations from the different Nordic countries concerning the threats from nuclear installa-

tions and there were discussions about source terms, models and consequences of nuclear threats.

The results of the discussions at the workshop and the presenting literature reports on the threats from nuclear power plants, nuclear powers ships and storage and handling of used fuel and radioactive waste are presented in the “base of knowledge”.

Key words

Nuclear threats, Nordic countries, nuclear power plants, nuclear ship, nuclear waste, literature database, base of knowledge, web-accessed information, atmospheric transport, decommissioning of submarines, nuclear installations, waste management, radioactive contamination in marine environment, radioactive sources, criticality analysis.

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1 Introduction

The purpose of this project was to continue the cross-disciplinary study SBA-1 “base of knowledge” in the NKS research program 1998-2001 regarding possible nuclear threats in the vicinity of the Nordic countries.

The acute phase of a nuclear accident and the possibility of high exposure of the populations are some of the most important factors in emergency preparedness work. Radioactive contamination from an accident can however also cause long term effects for land use and enhanced doses to special population groups and economic problems for agriculture, reindeer industry, hunting, tourism and recreation.

The scope of the preceding project was to prepare a base of knowledge regarding possible nuclear threats in the vicinity of the Nordic countries. The database, including a literature database, is presented on the website “Nuclear threats in the vicinity of the Nordic Countries”. The utilisation of modern information technology gives the user of the database easy access to information on different types of nuclear installations and threats.

The project focused on potential events at nuclear installations and the consequences for the Nordic countries, especially with regards to vulnerable food chains, doses to man, environmental contamination and emergency preparedness systems. The geographical area dealt with includes North-west Russia and the Baltic states and the nuclear installations investigated are nuclear power plants, ship reactors and storage and handling of used fuel and radioactive waste.

The object of the continuation project was to:

- Continue the fact finding for the base of knowledge about the nuclear threats in the vicinity of the Nordic countries.
- Work with other nks project to establish a Nordic network for information exchange on scientific questions concerning nuclear threats
- Make an information system that takes care of the information in the base of knowledge.
- Present a new version of the base of knowledge for the emergency authorities.

The main goal for this project is better information preparedness in the Nordic countries through use of modern technology, and with that better emergency preparedness and response and better public information.

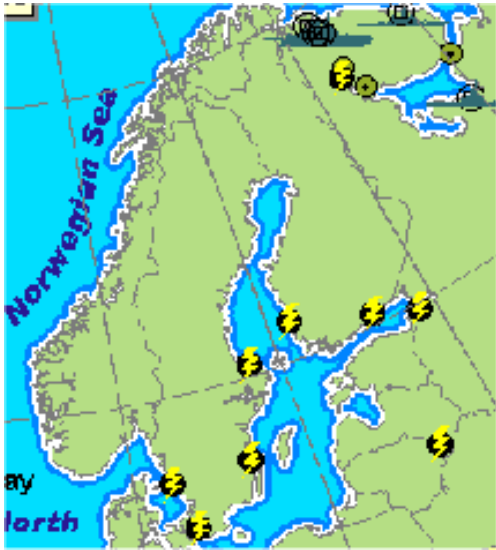


Fig. 1: Potential threats in the vicinity of the Nordic countries

The project was organised with a project leader and a project group which coordinated the different tasks and was responsible for aggregating knowledge from the different Nordic countries.

The Participants in this project have been the emergency preparedness organisations in the Nordic countries; SSI, SKI, STUK, Beredskapsstyrelsen and Geislavarnir ríkisins.

2 Base of knowledge

Finding information to be placed in the database is done continually, especially information about consequences of potential accidents. Whenever gaps in knowledge were identified, further studies were initiated. When new threats, such as theft from nuclear powered lighthouses, are identified, information about the subject are gathered and prepared and then presented in the base of knowledge.

Through participation in conferences such as Radioactivity in the Arctic in St. Petersburg in June and AMAP conference in Rovaniemi in October 2002, the project group has kept itself informed about the latest developments in the field.

A literature database is a part of the “base of knowledge”. It is a database with the most relevant publications, papers and reports that have been produced regarding possible nuclear threats in the vicinity of the Nordic countries. Publications by Nordic authors were emphasised, but other relevant publications were also included. The literature database can be accessed from the same website as the database “base of knowledge”.

Work has been done on making a national information system in Norway that can take care of the database in the future.

2.1 Accessibility

The website containing the database “Nuclear threats in the vicinity of the Nordic Countries” including the literature database is available to Nordic authorities as a supplement to national emergency preparedness systems. The users of the websites can easily get information on different types of nuclear installations and threats.

The responsibilities for the website today rest with NRPA, who updates it regularly. The site is located at a web server at the Svanhovd environmental centre. The web address is www.svanhovd.no/nrpa/nks. The database can be accessed by using the username *svanhovd* and the password *nks*. In this project work has been done making information systems in Norway that can take care of the database in the future.

2.2 Updating the database

A new version of the database has been presented at the annual meeting of Nordisk Selskap for Strålskydd in Turku in August 02 and at the Int. Symp. on Off-site Nuclear Emergency Management in Salzburg in September 03.

3 Work with other NKS projects

The project has been working with the NKS-B project EMRAD, “Emergency management and radiation monitoring in nuclear and radiological accidents”, to provide a network of information between the Nordic countries. The two projects are overlapping in that way that they are both dealing with gathering and systematizing information about the radiation monitoring strategies in the Nordic countries.

4 Conclusions and Recommendations

In the previous project already compiled knowledge of nuclear threats in the vicinity of the Nordic countries was collected and systematized into a “base of knowledge” and was made available to the authorities by modern information technology. The web based “base of knowledge” is a supplement to national emergency preparedness systems where the users of the websites can easily get information on different types of nuclear installations and threats. The main task for the project was to expand and envelope this database. Finding information to be placed in the database and identify-

ing and filling gaps in knowledge were prioritised. This is a continuous process which extends beyond the end of this project, in order to have an operating and updated database also in the years to come. In this project work has been done making information systems in Norway that can take care of the database in the future.

Acknowledgments

The author wishes to thank all who have contributed to the Knowledgebase activity (and the SBA- project before that), researchers, and representatives of the nuclear safety authorities and utilities. I am grateful to NKS and the NRPA who have supported me as a leader of this work.

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Title	Nuclear Threats in the Vicinity of the Nordic Countries Supplementary Final Report of the Nordic Nuclear Safety Research
Author(s)	Inger Margrethe H. Eikelmann
Affiliation(s)	Norwegian Radiation Protection Authority
ISBN	87-7893-182-7 <i>Electronic report</i>
Date	April 2006
Project/Sub Project	NKS-B / SBA-1
No. of pages	9
No. of tables	0
No. of illustrations	1
No. of references	7
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Key words	Nuclear threats, Nordic countries, nuclear power plants, nuclear ship, nuclear waste, literature database, base of knowledge, web-accessed information, atmospheric transport, decommissioning of submarines, nuclear installations, waste management, radioactive contamination in marine environment, radioactive sources, criticality analysis.