Swedish Nuclear Fuel and Waste Management Company

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Agenda

- Historical background to the Swedish radioactive waste management program resulting in clear and defined responsibilities
- The SKB’s system for managing radioactive waste
- Building of public trust
Short Facts

SKB:s Mission:

- To manage and dispose of the radioactive waste from the Swedish nuclear power plants. We also deal with radioactive waste from medical care, research and industry. It is SKB:s task to develop and realize a method for safe disposal of this radioactive waste

- SKB is owned by the producers of nuclear energy in Sweden
- Main office: Stockholm
- Facilities in Oskarshamn and Forsmark
- 400 employees
- Turnover 140 million EUR

Repository for short lived radioactive waste (SFR) at Forsmark

Historical background to the Swedish program resulting in clear and defined responsibilities
Early history (1)

A ‘problem free’ period 1974

- 1954 First research reactor in operation at KTH Stockholm
- 1972 First nuclear power reactor in operation – Oskarshamn 1
- During this period the spent nuclear fuel was classified as a resource. The fuel could be reprocessed and reused
- Nuclear waste – a non-issue in the public debate

The Oskarshamn 1 and 2 nuclear power reactors

Early history (2)

Political dissonance on nuclear energy 1975

- Two governments (1976, 1978) fell mainly upon dissonance regarding nuclear energy policy
- Referendum in 1980 on nuclear energy resulted in a statement by the parliament that nuclear energy should be phased out not later than 2010

Waste management 1975

- 1976 the ‘AKA’ commission (set up by the Government) proposed a national strategy on nuclear waste management including transport system, interim storage facility and repositories for final disposal.
- 1977 ‘Stipulation Act’ – need to show that high-level nuclear waste from reprocessing and/or spent nuclear fuel could be safely long-term disposed of as a condition to allow operation of new nuclear power plants
  - 1977 KBS-1 (HLW after reprocessing)
  - 1978 KBS-2 (spent nuclear fuel)
  - 1983 KBS-3 (spent nuclear fuel)

- The owners of the nuclear power plants are responsible for handling and final disposal of radioactive waste.
- The owners of the nuclear power plants are responsible for all costs associated with handling and final disposal of radioactive waste.
- The owners of the nuclear power plants are responsible to submit a RD&D plan every third year to the Government, i.e. a stepwise approach in developing repository concepts.
- The responsibility of the state is to make sure that the owners of nuclear power fulfil their obligations and that they take the full responsibility for managing radioactive waste.

RD&D programmes – basis for Government decisions on future development

- RD&D 2007 + supplement
- RD&D 2004
- RD&D 2001
- RD&D 1998 + supplement
- RD&D 1995
- RD&D 1992 + supplement
- R&D 1995
- R&D 1989
- R&D 1986
- R&D 1984
The Nuclear Waste Fund

0.01 SEK per kWh of nuclear electricity

Around 41 billion SEK in 2008, (about 5 billion USD)

Authorities and legislation

The Government

Swedish Radiation Safety Authority  The Swedish National Council for Nuclear Waste  Municipality  Environment Court

The Planning and Building Act  The Nuclear Activities Act  The Radiation Protection Act  The Financing Act  The Environment Code
The SKB’s system for managing radioactive waste

Different kind of waste – different solutions

Operational and decommissioning waste

Spent nuclear fuel

Low- and intermediate level

High level
Final Repository for Short-lived Radioactive Waste, SFR, at Forsmark

SFR
Planned extension of SFR for short-lived decommissioning waste

Planned to be operational in 2020

SKB’s system

Medical care, industry and research

Operational waste

m/s Sigyn

Spent nuclear fuel

Nuclear power plant

Encapsulation plant

Central interim storage for spent nuclear fuel (Clab)

Final repository for short lived radioactive waste (SFR)

Final repository for spent nuclear fuel
Central Interim Storage Facility for Spent Nuclear Fuel, Clab, at Oskarshamn

Interim storage
Interim storage

Clab 2 increases the capacity from 5,000 to 8,000 tonnes

SKB’s system

Operational waste

Spent nuclear fuel

Central interim storage for spent nuclear fuel (Clab)

Final repository for short lived radioactive waste (SFR)

Encapsulation plant

m/s Sigyn

Medical care, industry and research

Nuclear power plant

Final repository for spent nuclear fuel
Siting of a repository for spent nuclear fuel

Knowledge accumulation

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Site investigations 2002-2007

Hultsfred
Malå
Nyköping
Oskarshamn
Storuman
Tierp
Åvkarleby
Östhammar

Oskarshamn (Laxemar)
Östhammar (Forsmark)

Decision on site 2009

June 2009 - SKB selects Forsmark for the repository for spent nuclear fuel

The application to construct the repository will be submitted later this year – if the proposed site and method (KBS-3) is approved by the Government, construction can start at the earliest 2015 and operation 2025

Main reason for selection of Forsmark:
Considerable better conditions for long term safety of a repository

Photomontage of a repository for spent nuclear fuel at Forsmark
Building of public trust

Final repository in own municipality?

Opinion 2009

- Much against
- Against
- Undecided, not for or against
- For
- Much for

Source: Synovate
Talking with the local people

Consultation sessions
Open facilities to visitors

- SFR Repository
- Canister laboratory
- Clab – interim storage of spent nuclear fuel
- Äspö laboratory

Visits to SKB exhibition aboard m/s Sigyn
Summary

Key factors for progress in the Swedish nuclear waste management programme

- Legal framework - clear roles/responsibilities for industry and state
- Robust funding mechanism
- Strong regulatory authority
- Dedicated waste management organisation
- Building of trust in affected municipalities creates the necessary public acceptance
- Review and final approval of the waste management organisation’s planning (RD&D programmes) every third year by the Government and its authorities.
- The review process includes the scientific community, municipalities, NGO’s and the general public
Existing and planned repositories at Forsmark

Thank You