Fifth Review Meeting
Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management
11-22 May 2014

Country Group 4 Rapporteur's Written Report

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Country Group 4

CONTRACTING PARTIES OF THE COUNTRY GROUP:

Albania, Chile, Finland, Georgia, Latvia, Netherlands, Nigeria, Senegal, Sweden, UK

OFFICERS TO THE COUNTRY GROUP 4:

Chair:	Mr M. Turner	Slovakia
Vice Chair:	Mr G. Williams	Australia
Rapporteur:	Dr W. Mester	Germany
Coordinator:	Mr J.-M. Ferat	France

Daily Country Report

Sweden

Sweden – General discussions

- Countries of CG4 being present:
  Albania, Finland, Georgia, Latvia, Netherlands, Nigeria, Sweden, UK
  (not present: Chile, Senegal)
- Other countries being present:
  Belgium, Canada, China, Euratom, France, Germany, Japan, Korea, Oman, Norway, Slovenia, Switzerland, UAE, USA
- Issues being discussed:
  Composition and missions of local safety boards; safety implications of extended SF storage; changes in safety standards in response to Fukushima accident; further development of regulatory requirements; seismic assessment of Clab facility; waste classification scheme; Nuclear Waste Fund; siting of encapsulation plant and other facilities; role and engagement of municipalities in licensing process; timescales for SFR extension and decommissioning; maintaining intelligent customer capability within the regulator; roles of SSM in licensing process; Action Plan after IRRS mission 2012; different waste inventories in 2011/2014; legal requirements for retrievability; cost estimations; criteria for stakeholder involvement; record-keeping after closure of a repository; financing of decommissioning in case of bankruptcy; extent of public consultation with regard to SFR extension; lessons learnt from WIPP incident; competitiveness of nuclear energy in relation to waste management costs; repatriation of disused sealed sources; SF as a resource or waste.

Sweden – General discussions

- The attending Contracting Parties discussed all issues being raised and listed briefly in the previous slide. There were no disagreements.

Sweden – Progress on issues identified in the 4th Review Meeting

Challenges identified in the 4th Review Meeting (1)

Implementation of disposal strategy including licensing of encapsulation plant

The review of the nuclear industry's licence application for a spent nuclear fuel repository and an encapsulation plant is progressing and a statement by the Swedish regulator is expected in 2017.

Implementation of national plan, in particular for institutional waste

By an amendment in 2013 in the Ordinance, SSM shall provide for a national plan for the management of spent fuel and radioactive waste that corresponds with the requirements of the Council Directive 2011/70/EURATOM.

Sweden – Progress on issues identified in the 4th Review Meeting

Challenges identified in the 4th Review Meeting (2)

Implementation of actions resulting from stress tests and IRRS mission

In September 2012, all licensees submitted their action plans dealing with the deficiencies identified during the stress tests.

The stress test analysis of Clab indicated that the facility is robust and able to withstand the events it is designed for. The analysis, however, identified areas for improvement. The resulting action plan is continuously monitored by SSM.

Based on the IRRS team's recommendations, SSM produced an action plan for its development work. A compulsory training programme for all personnel with supervisory tasks is now operational, a risk-based approach to long term strategic planning of SSM's supervisory activities is under development and a major revision of SSM's regulatory framework has been initiated. A follow-up IRRS mission is planned for 2016.

Sweden – Progress on issues identified in the 4th Review Meeting

Challenges identified in the 4th Review Meeting (3)

Development of waste acceptance criteria for long-lived waste

Acceptance criteria for long-lived waste, which will be based on the analysis of the chosen concept facility, still need to be developed and SKB is expected to present these criteria in 2017 to SSM.

Implementation of a repository for decommissioning waste

The existing repository for low and intermediate level waste (SFR facility) is planned to be expanded to receive decommissioning waste. A licence application for the extension was filed in 2014. A statement of SSM is expected in 2017/2018.

Sweden – Progress on issues identified in the 4th Review Meeting

Planned Measures to Improve Safety identified in the 4th Review Meeting (1)

Licensing of a repository for SF

In March 2011 the Swedish SKB submitted applications for a licence to construct and operate an encapsulation plant in Oskarshamn and a SF repository at the Forsmark site. The applications are currently being evaluated, a statement to the government is expected in 2017.

Licensing of a repository for decommissioning waste

In preparation for SKB's forthcoming licence application for the extension of the SFR facility, SSM has drafted a review plan comprising the relevant aspects of SSM's regulatory review of the application, a statement to the government is expected in 2017/2018. SSM will enhance its competence base by consulting external experts in a number of fields.

Sweden – Progress on issues identified in the 4th Review Meeting

Planned Measures to Improve Safety identified in the 4th Review Meeting (2)

Development of waste acceptance criteria for long-lived waste

See previous slides.

Safety reassessment of NPPs and CLAB

See previous slides.

Sweden – Overview / 1

Type of Liability	Long-term management policy	Funding of Liabilities	Current practice / Facilities	Planned facilities
Spent fuel	NPP licensees jointly responsible. Strategy in place for disposal.	Funded by fees on nuclear energy production, accumulated in segregated funds (The Nuclear Waste Fund).	Stored on site initially, then transferred to the central interim storage facility (Clab) pending disposal.	Licence application for an encapsulation plant and a spent nuclear fuel repo-sitory under review..
Nuclear fuel cycle wastes	NPP licensees jointly responsible. Strategy in place for disposal.	Mainly funded by fees on nuclear energy production, accumulated in the Nuclear Waste Fund. Disposal of short-lived operational LILW waste (SFR) from NPPs paid for directly by owners.	Short-lived LILW disposal at existing repository (SFR); Shallow land burial sites for shortlived VLLW exist at NPP sites.	Submission of a licence application for extension of the existing repository for short-lived LILW (SFR) expected in 2014. Long-lived LILW to be disposed of in the planned repository for long-lived LILW nuclear fuel cycle waste (SFL). Licence application expected in 2030.

Sweden – Overview / 2

Type of Liability	Long-term management policy	Funding of Liabilities	Current practice / Facilities	Planed facilities
Application wastes	Disposal at fuel cycle waste facilities when appropriate, further actions ongoing.	Financed by producers/owners of waste. Government funding available for legacy wastes.	Disposal at fuel cycle waste repository (SFR) or interim storage pending disposal in the planned repository for long-lived LILW nuclear fuel cycle waste (SFL).	Licence application for extension of the existing repository for short-lived LILW (SFR) expected in 2014 . Long-lived LILW to be disposed of in the planned repository for long-lived LILW (SFL). Licence application expected in 2030.
Decommissioning liabilities	Licensee is responsible.	Mainly funded by fees on nuclear energy production, accumulated in the Nuclear Waste Fund.	Preliminary plans for decommissioning exist for all nuclear facilities, more detailed plans for those approaching or undergoing decommis-sioning. Reviews of the adequacy of funding every three years.	Licence application for extension of the existing repository for short-lived LILW (the SFR facility) expected in 2014 to accommodate radioactive waste from decommissioning. Long-lived LILW to be disposed of in the planned repository for long-lived LILW (SFL). Licence application expected in 2030.

Sweden – Overview / 3

Type of Liability	Long-term management policy	Funding of Liabilities	Current practice / Facilities	Planed facilities
Disused Sealed Sources	Return to manufacturer or long-term storage pending disposal.	Financed by producers/owners of waste. Government funding available for orphan sources.	Returned to manufacturer or disposed of in SFR or in interim storage pending disposal in the planned repository for long-lived LILW nuclear fuel cycle waste (SFL).	To be disposed of in repositories for nuclear fuel cycle wastes, SFR or SFL (if not returned to manufacturer).
NORM and non-NFC mining wastes	Not applicable. Sweden does not declare waste that contains only naturally occurring radioactive material and that does not originate from the nuclear fuel cycle as radioactive waste for the purpose of the Joint Convention.			

Sweden – Challenges

- Comprehensive updating including revision of waste safety regulations consistent with international standards
- Managing stakeholder interactions in the licensing review
- Resolution of scientific issues in the licensing review of the SF repository programme
- Transition in the RW management programme from an R&D phase to a licensing and implementation phase implies high demands on new types of skills and organizational changes
- Need for human resources for simultaneous licensing and decommissioning permissioning activities
- Managing a step-wise licensing process in the repository programme
- Maintaining knowledge management and adequate resources of competent staff over long time periods
- Maintaining public confidence

Sweden – Good practices

- Real progress towards a fully-operational deep geological repository for spent fuel involving the Äspö deep geological research facility, site selection for the repository, public engagement, international cooperation and concomitant development of the necessary safety case and regulatory processes

Sweden – Suggestions

- None

Sweden – Progress related to the lessons learnt from the Fukushima Daiichi accident / 1

- Stress tests for Clab facility: found to be robust with adequate margins
- Action plans submitted in September 2012
- Action plan for Clab included:
  - Instalment of mobile emergency equipment for power and water supply
  - Investigate the need for diesel secured drainage pumps
  - Investigate the need for a feed water system for pools above ground
  - Limit the possibility to isolate fuel with high thermal effect in an individual pool
  - Procedures for the inspection of the facility after an earthquake
  - Routines for managing internal and external flooding, and
  - Measures for the mitigation of the effects of extreme weather conditions

Sweden - Progress related to the lessons learnt from the Fukushima Daiichi accident

- Action plan for SF pools at NPPs included:
  - Use of a return frequency of 10^{-5}/year as a basis for reviews/backfitting
  - Long-term blackout of electrical power to be taken into account
  - Prolonged extreme situations should be the basis for technical and administrative measures
  - Ensure availability of instrumentation for measurement of necessary parameters (water level, temperature) during extreme situations
- Comprehensive updating of regulatory standards consistent with international standards
- Updated national emergency plan clarifying the roles of the relevant authorities and the management of large volumes of radioactive waste arising from a nuclear accident

Sweden – Planned measures to improve safety (Section K)

- Licensing of an encapsulation plant and a disposal facility for spent fuel
- Licensing of an extension of the existing LILW repository to also accommodate decommissioning wastes
- Development of waste acceptance criteria for long-lived waste
- Implementation of recommendations from the IRRS review
- Implementation of Directive 2011/70/Euratom (Waste Directive) and Directive 2013/59/Euratom (BSS)
- Review and updating of regulations
- Periodic safety reviews of nuclear installations
- Periodic updating of the safety case for waste facilities
- Actions to enhance openness and transparency

Sweden – Conclusions

- 10 nuclear power plants in operation, 4 under decommissioning
- Old reactors may be replaced by new ones at the same site
- Comprehensive long-term strategy for SF and RW management
- Repository for LILW in operation (SFR); in 2014 license application for extension to accommodate decommissioning waste
- 3 disposal sites for solid short-lived VLLW in operation
- Centralized storage of SF in Clab facility
- SF disposal programme is in a well advanced stage
- Financing system for decommissioning and disposal provides adequate funding; costs are covered by fees
- Funding mechanism available for managing orphan sources

Sweden – Conclusions

Positive developments:

- Responsibilities clearly defined in the regulatory framework and separated between regulatory body and nuclear industry
- Regular update of financing arrangements for waste management
- Long-term strategy in place for disposal of SF and nuclear fuel cycle wastes, with defined milestones
- Transparent siting and licensing process with extensive public consultation and engagement
- Constructive communication between regulator and licensees