Licensing of the Spent Fuel Disposal Facility in Finland

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Contents

• Nuclear Finland
• Steps in the disposal program
• Summing up: Important factors for getting where we are now
Nuclear power in Finland

**Olkiluoto NPP (TVO)**
- 2 operating units - BWRs 860MWe (-78, -80), AFR storage, LILW repository
- New EPR under construction
- 4th NPP, Decision in Principle
- SNF Repository site with ONKALO URCF under construction

**Hanhikivi NPP (Fennovoima)**
- a new NPP, Decision in Principle

**Loviisa NPP (Fortum)**
- 2 operating units - VVERs 488MWe (-77, -81) AFR storage, LILW repository
## The Finnish spent fuel disposal program in stages

<table>
<thead>
<tr>
<th>Period</th>
<th>Implementation</th>
<th>Regulatory activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>1978 - 1983</td>
<td>• Management options, conceptual planning</td>
<td>• Government decision on waste management</td>
</tr>
</tbody>
</table>
| 1983 – 1999 | • Technical planning  
  • Site investigations  
  • R&D                                            | • Government’s Policy Decision 1983  
  • STUK’s safety reviews in 1987, 1994 and 1997                                    |
| 1997 – 2001 | • EIA program and report  
  • **Decision-in Principle application**          | • Safety regulations  
  • EIA review/judgement  
  • STUK’s preliminary safety appraisal  
  • Government’s Decision in Principle                           |
| 2000 – 2012 | • Confirming site investigations  
  including the URCF  
  • Research, design and technical development  
  • **Construction license application**  | • Oversight of site investigations  
  • Review of the status of and plans for RTD at three years interval                  |
| 2013 – 2020 | • Construction of the facilities  
  • **Operating license application**                | • Review of the CL application  
  • Oversight of construction                                                             |
| 2022 –       | • Operation of the facilities                   | • Review of the OL application  
  • Oversight of operation                                                               |
1978 – 1983 Responsibilities set, options explored

Government, regulator
- Government decision of 1978 on responsibilities for waste management including disposal, also financial; R&D
- License for OL1 reactor for 5 years, licensee to investigate waste management options (Loviisa fuel sent back to Russia)

NPP licensee
- Report on waste management options
- Conceptual planning

- Government strategy decision of 1983 laying out the schedule for disposal (other options - export and reprocessing - also considered)
- Site selection process in stages by implementer (next slide)
- Research, development and conceptual design
- Regulator safety review in 1987, 1994, 1997
- Environmental Impact Assessment program and report
- Decision-in-Principle application, preliminary safety appraisal by regulator
- New regulations in 1987, detailed regulations in 1997
Site selection 1983 – 2000

Site Identification
1983 - 1985

More than 100 candidate sites were identified

Preliminary Site Characterisation 1986 - 1992

Five sites were subject to extensive investigations

Detailed Site Characterisation 1993 - 2000

Olkiluoto site was finally selected in 2000

RP 25.3.2013
2000 – 2012 Decision-in Principle to Construction License application

Implementer:
• Site confirmation investigations
• Underground Rock Characterization Facility construction 2004 – 2004
• Research, design and technical development
• Safety Case development with intermediate reporting
• Construction License submittal at the end of 2012

Regulator:
• Oversight of site investigations, URCF construction
• Review of licensees’ plans and actions in waste management every three years
• Commenting of draft Safety Case reports
• Evaluation preparedness for construction license submittal in 2010, including evaluation of draft SC documentation
2013 – 2022 License reviews, construction, operation

Implementer
• Submittal of additional information to regulator (as required)
• Investigations at Onkalo
• Construction of encapsulation plant, underground disposal facility and Engineered Barrier System components
• Continued research and development
• Operating License application 2020

Regulator
• Construction License review 2013 – 2014
• Oversight of construction
• Operation license review 2020 – 2022
Summing up: Important factors for getting where we are now

- Long term political commitment to resolve the nuclear waste issue; consistent national strategy
- Clearly defined liabilities and roles
- Funding system, responsibility of generator established early
- Veto-right for the candidate municipality regarding hosting the repository in a stepwise licensing process
- Development of regulatory approach in parallel with implementers program and in analogy with nuclear plant safety regulations
- Stepwise, open and defendable implementation program
- Importance of dialogue between the regulator and the implementer based on comparable levels of technical competence
- Transparency and engagement of the public and domestic and international scientific and technical communities
Where we are now..

- Construction License application submitted at the end of 2012
- Initial review of the Safety Case ongoing
- URCF ONKALO has reached the disposal depth