

NEA fact sheet 2005
Decommissioning in member countries
Decommissioning in Finland

Current status

There are two major nuclear sites in Finland: the Loviisa NPP with two 488 MW_e PWR units and the Olkiluoto NPP with two 840 MW_e BWR units. The nuclear power plants have been in operation for more than 20 years and are planned to be operated at least for another two decades. No decommissioning projects are underway or foreseen in the near future.

Policy objectives

Regulation

The principal legislation regulating nuclear activities in Finland consists of the Nuclear Energy Act (1997) and Decree (1988). They define the responsibilities and the principles for financing the decommissioning projects. The licensing procedures included in the legislation are also applicable to decommissioning of nuclear facilities.

The licensees are responsible for decommissioning activities. In the event that a licensee is incapable of doing so, the state has the secondary responsibility. In this case, the costs are covered by assets collected in the Nuclear Waste Management Fund and by the securities provided by the licensees.

The safety related regulations are issued by the Government (general rules) and the Radiation and Nuclear Safety Authority STUK (detailed rules). Currently, there are no specific regulations for decommissioning.

Strategy

According to the Governmental policy decision of 1983, the licensees are obliged to update their decommissioning plans every five years. These plans aim at ensuring that decommissioning can be appropriately performed when needed and that the estimates for decommissioning costs are realistic. The latest updates of the decommissioning plans were published at the end of 2003.

The Finnish decommissioning plans cover the dismantling of only those structures and components the activity of which exceeds the clearance constraints; thus the “green field” option is not required on the basis of the regulations.

The decommissioning plan for the Loviisa NPP is based on immediate dismantling, within less than 10 years from the shutdown of the reactors, excluding facilities needed for spent fuel storage. The plan for the Olkiluoto NPP envisages a 30 years safe storage period prior to dismantling the reactors.

Social and environmental impacts

Assessments of radiation safety of decommissioning tasks and of disposal of decommissioning waste are included in the decommissioning plans. Implementation of an environmental impact assessment procedure is required prior to the commencement of decommissioning of a nuclear power plant.

Competent bodies and roles

The Ministry of Trade and Industry is responsible for the supervision of nuclear energy. The Ministry's approval is required for the decommissioning plans. The Radiation and Nuclear Safety Authority (STUK) is responsible for the regulation of safety. See also Policy objectives.

Funding arrangements

The nuclear energy legislation includes financial provisions for all nuclear waste management, including decommissioning. That has been arranged through the State Nuclear Waste Management Fund. At each moment there shall be sufficient funds available to take care of the remaining nuclear waste management measures. Payments to the fund are based on liabilities, which are yearly estimated by the operators, scrutinized by the regulator and then confirmed by the ministry. The Fund does not pay for the waste management measures but keeps in safe the money corresponding to the costs of the liabilities.

Decommissioning technique and inspection

A special feature of the Loviisa decommissioning plan is that large components, i.e. the pressure vessels and steam generators would be removed intact, without cutting them in pieces. Before dismantling, the whole primary circuit would be decontaminated.

The Olkiluoto decommissioning starts with a thorough flushing of all contaminated systems. The excess fire load is removed and ventilation and sewer systems are modified before moving to the safe storage period. The dismantling starts with the removal of the reactor vessels with internals as intact.

The inspection procedures of the decommissioning are supposed to be similar to those for major repair and maintenance works and LILW management at the NPPs.

Radioactive waste management

Both utilities envisage on-site disposal of the decommissioning waste. The existing repositories for operational low and intermediate level waste, located in the crystalline bedrock at the NPP sites, would be enlarged to accommodate the waste from decommissioning as well.

The repository at the Loviisa site would consist of two disposal compartments, located at the depth of about 100 m. Low level waste, packed in drums and concrete containers, would be emplaced in a large rock cavern. The pressure vessels with core internals would be put into concrete silos in two large deposition holes. The rock cavern above them is intended for disposal of steam generators and other decontaminated large components. The spaces in the emplacement rooms would be backfilled with concrete grout and/or mixture of crushed rock and bentonite and crushed rock, depending on the type and activity level of waste.

The repository at the Olkiluoto site would consist of two new silos, with the top about 30 m and the bottom at about 100 m depth. The silos are for low-level waste. They are shotcreted bedrock silos. The waste packages would be put into large concrete boxes and then lowered into the silos. Concrete grout is used as backfill.

The pressure vessels would be removed as one piece with most of the core internals inside and disposed of in a bedrock shaft (diameter 8 m and depth 110 m).

Picture 1 Repository for decommissioning waste from Loviisa NPP

Picture 2 Repository for decommissioning waste from Olkiluoto NPP

Public information

Decommissioning plans are updated every five years. The next updates are going to be published at the end of 2008. See also Policy objectives.

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