

International Conference on Management of Spent Fuel from Nuclear Power Reactors: An Integrated Approach to the Back End of the Fuel Cycle



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Enlargement of the Olkiluoto spent fuel interim storage

The objective of this presentation is to share regulator's experiences of regulating and having oversight for the enlargement of a spent fuel interim storage. An overview of the current situation of spent fuel management and near future plans in Finland will be given.

In Finland, there are four operating reactors, one under the construction and two reactors that are waiting the construction licenses to be submitted. In Olkiluoto, the two operating units and one unit under construction, have a shared interim storage for the spent fuel. The storage was designed and constructed in 1980's. The option for enlarging the storage was foreseen in the original design.

Considering spent fuel from these three units and the fact that the final disposal begins after 2020, extra space in the spent fuel storage was estimated to be needed around 2015.

The spent fuel is cooled in the interim storages before encapsulating it for the underground final disposal. The construction license application of the spent fuel encapsulation plant and the underground final repository was submitted at the end of 2012. The operation of these final disposal units is estimated to begin after 2022.

The enlargement of the interim storage was included in Olkiluoto NPP 1&2 operational license and it was considered as a major plant modification. To conduct the enlargement, the operator was required to submit the documentation similar to application for the construction license of a nuclear facility.

When conducting changes in an old nuclear facility, the updated safety requirements have to be followed. The major challenge in designing the enlargement was to modify it to withstand a large airplane crash. The operator chose to cover the pools with protective slabs and also to build a landfill embankment and concrete structures out side the interim storage. The designing of cover slab structures is an optimisation task between the safety issues that are partly opposite to each other.

The construction phase of the enlargement caused some unexpected events. Synchronization of the construction phases with implementation of the system modifications proved out to be more challenging than originally considered. These experiences emphasize the importance of good, thorough and detailed planning of the construction phases.

Country/ int. organization

Finland/Radiation and nuclear safety authority

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