

# 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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## Thermal Field Modeling of Spent Fuel Transport Container C-30

In Slovakia we use nuclear energy for more than forty years. In the past spent fuel was transported to former Soviet Union. Since 1987 we store all spent fuel in Interim Spent Fuel Facility at Bohunice site. So the spent fuel is stored before its final deposition or reprocessing. For transport of spent fuel we use transport container C-30. The paper describes thermal calculations of C-30.

The capability of removal of residual heat from spent fuel is very important feature for every device or facility. It is therefore important to understand the process of heat removal.

First calculation of thermal field of transport container C-30 was done by the manufacturer of C-30 in eighties. The calculation was used as an approval for the ability of sufficient heat removal.

In nineties and in the beginning of 21st century the use of new type of fuel raised question, whether C-30 could be used also for transportation of spent fuel with higher burnup and residual heat. In the application for the type approval of C-30 new calculation was realized, in order to demonstrate the ability to safely divert the residual heat. The evaluation of information technology enabled to use more detailed model than in previous calculations.

Despite technological advices all models used one common assumption. The inside of the container was considered to be a homogenous heat source. This assumption may be sufficient for type approval; however, in order to get most accurate results more detailed analysis of inside of C-30 became desirable. New calculation of residual heat removal considers the inventory of C-30 as a system of separate spent fuel assemblies - separate heat sources.

Paper describes the results of thermal field modeling calculations.

### Country/ int. organization

Slovakia

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