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Using of computer code GEFEST800 at the initial stage of NPP operation with BN-800

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The GEFEST800 code has been developed to carry out neutronic calculations of nuclear power plant operation for sodium cooled fast breeder reactor BN-800 (stationary and transient from minimum controllable power level to full reactor power with drive control rods and fuel burning). The code allows to calculate the following parameters: keff; maximum reactivity reserve; effective reactivity of control rods and control rod groups; full, specific and linear power of energy release in fuel assemblies; unevenness coefficients of energy release in fuel assemblies and reactor core; damaging irradiation dose for fuel assemblies; burning; reactivity coefficients; effective fraction of delayed neutrons; transient processes characteristics; decay energy release and many other parameters.

The code has diffusion, transport and Monte-Carlo modules. The CONSYST code with ABBN-93 library is used for constants' preparation. The code has thermomechanical module to take into account changes in the size of the cells. The presence of such module allows to consider these changes in calculations of reactivity coefficients at different power levels. Services such as calculated parameters control, graphics, data preparation, analysis of calculated results are provided in interactive mode using specially developed graphical shell. Some results of using the code at the initial stage of NPP operation with BN-800 are presented in the paper.

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