

## ИССЛЕДОВАНИЕ ЭФФЕКТИВНОСТИ ОЧИСТКИ НАТРИЯ ВТОРОГО КОНТУРА РЕАКТОРНОЙ УСТАНОВКИ БН-800

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## INVESTIGATION OF THE EFFECTIVENESS OF SECOND-CIRCUIT SODIUM PURIFICATION BN-800 REACTOR PLANT

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The analysis of the existing sodium purification systems from impurities of the sodium coolant of fast reactors is given. Based on the results of the study, the main directions of work to improve the characteristics of sodium purification systems are recommended.

Currently, programs for the development of nuclear energy both in the world and in the country are aimed at the development of fast reactors. In the coming years, it is planned to increase the share of nuclear energy to 20-30%, and within the framework of Russia's energy strategy until 2030, it is planned to increase electricity production at nuclear power plants by 4 times. To meet the growing needs of the country, 40 new reactors are to be built by 2030 [1]. During the operation of nuclear power plants, a number of new tasks arise, one of which is to increase the productivity and capacity of cleaning systems the heat carrier. Analysis of sodium purification systems of nuclear power plants with fast neutron reactors from the experience gained on BR-5 to the designed purification systems on BN-1200 showed that there are possibilities to improve the characteristics of purification systems. The efficiency of cleaning systems also affects the reduction of repair work and the output of a nuclear power plant to nominal parameters [2]. Impurities in the sodium of an active nuclear reactor can be divided into those present in the initial sodium and those that appeared during the operation of the installation both in normal operation, and in case of emergency situations and during repair work. When carrying out work on a system where sodium was previously located, contamination by products of the interaction of coolant residues with air is inevitable. The main pollutants will be sodium hydroxide and carbonate. [3] In this work, a study was conducted to determine the efficiency of the second-circuit sodium purification system at the operating BN-800 installation. As a sodium purification system, cold filter traps are used, which are based on the principle of cooling contaminated sodium and thereby crystallization of impurities and their precipitation into the settling tank area. The dependence of the clogging temperature on the operating time of the purification system and the initial temperature of sodium in the circuit is obtained. Solutions are proposed to reduce the time of sodium

purification both during operation and during the final the stages of repair work at the NPP.

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