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OPERABILITY VALIDATION OF FUEL PINS WITH CLADDINGS MADE OF EK164-ID STEEL IN THE BN-600 REACTOR

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To ensure the increased fuel burn-up in the BN-600 and BN-800 reactors, EKA64-ID steel is going to be used as a fuel rod cladding material because it has bigger index of radiation resistance (swelling and creeping) in comparison with the used ChS68-ID steel. To introduce this steel, an irradiation examination of experimental FSAs is needed to be performed. Owing to the irradiation examination, experimental data will be obtained to validate FSA operability and a database on properties of the steel will be updated thanks to which computational codes will be verified. Tests are performed as per appropriate procedure in cooperation with operating organization and Rostechndadzor experts.

By now, reactor examination of 14 experimental FSAs has been successfully performed in the BN-600 reactor. The maximum achieved irradiation parameters are as follows: the fuel burn-up is $\sim 14\%$ h.a., the damaging dose is ~ 100 dpa. The examination is planned to be continued for using the steel as fuel rod cladding with higher parameters: the fuel burn-up should be 14.8% h.a., the damaging dose should be ~ 112 dpa.

Activities aimed at improving the quality of cladding tubes both in the stage of fuel rod cladding manufacture and in the metallurgic stage of tubing stock manufacture are performed simultaneously with manufacture and irradiation of the experimental FSAs.

Results of these experimental activities will be used to validate operability of fuel rods made of this steel in the initial stage of the BN-1200 reactor operation.

Country/Int. Organization

Russia/JSC "Afrikantov OKBM"

Primary author: Mr BELOV, Sergey (JSC "Afrikantov OKBM")

Presenter: Mr BELOV, Sergey (JSC "Afrikantov OKBM")

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