

EXPERIMENTAL INVESTIGATIONS ON NEUTRONICS OF THE ACCELERATOR DRIVEN TRANSMUTATION TECHNOLOGIES AT THE SUBCRITICAL FACILITY "YALINA" *

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By now a lot of theoretical papers was published where basic aspects of Accelerator Driven Systems (ADS) concept were discussed: production of energy, transmutation of radioactive waste, tritium production and incineration of weapon plutonium. The experimental research in this field is rather scarce because the experiments on available high energy accelerators are difficult and expensive, and in some case even unfeasible. In this regard experimental research of various aspects of ADS on the basis of low energy ion accelerators are of great importance. The subcritical assembly with thermal neutron spectrum driven by the neutron generator NG-12-1 was designed and constructed at the Institute of Radiation Physics and Chemistry Problem, National Academy of Sciences of Belarus in the frame of the ISTC project #B-070.

The comparison of some calculated and experimental data (multiplication factor, neutron flux density distribution, reactivity, effective fraction of delayed neutrons, energy spectra as well as spectral indices, external neutron source importance etc.) in the assembly "Yalina" at some levels of subcriticality and some external neutron sources will be presented. The samples of long-lived fission products (I-129) and minor actinides (Np-237, Am-243) were irradiated in the experimental channels of the assembly. The preliminary analysis of data will be presented.

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