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FUSION NEUTRON SOURCE BASED ON T-15MD SCALE TOKAMAK ^{*)}

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NIC “Kurchatov Institute” is developing an experimental prototype of a thermonuclear neutron source (TIN-1) of the tokamak T-15MD scale, with the aim of using it in a pilot-industrial hybrid reactor plant (OP GRU) to study the process of obtaining uranium-233 from natural thorium-232 by irradiating samples containing thorium-232 by thermonuclear neutrons. It is planned to develop preliminary and technical designs for the TIN-1 tokamak with geometric scale dimensions of the T-15MD tokamak with cryo-resistive coils of the electromagnetic system. A preliminary and technical design of a nuclear complex for TIN-1 will be developed, including variants of the TIN-1 blanket containing thorium-232 for the production of uranium-233 by irradiation with thermonuclear neutrons. Analytic studies are being carried out on the formation of the TIN-1 appearance. Two- and three-dimensional TIN-1 models for neutron calculations have been created. Multilevel modeling of the modification of the properties of structural materials (radiation swelling, radiation creep) has been carried out, taking into account the characteristics of the neutron spectrum of the installation.

The work was carried out within 15th complex theme at NRC “Kurchatov Institute”.

References

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^{*)} [abstracts of this report in Russian](#)