

Report of the Reviewer on the proposal for the project «Construction of a complex of cryogenic moderators at the IBR-2 facility» (Theme 1105)

The proposed Project "Construction of a complex of cryogenic moderators at the IBR-2 facility" for 2020-2022 years is aimed at continuation of works on creation, debugging and improvement of moderators at the reactor IBR-2M in the course of implementation of the Theme 1105 "Development of IBR-2M facilities with a complex of cryogenic moderators". The continuation of the CM 202 operation and the start trial operation of CM-201 are planned.

It should be noted that, at present, the source of cold neutrons, developed and operated by FLNP JINR at the IBR-2 reactor, is the only cold neutron source in the Russian Federation. A distinctive feature of the source is the shape of the working substance and the way it is loaded into the moderator chamber using the pneumatic conveying of pellets at cryogenic temperatures. This principle of operation is unique and has no analogues in the world. In the process of implementation of the project, new technical units and devices, techniques and software have been developed. The inventions that are valuable not only for this project, but also for the national economy, have been protected by a number of patents, which enhances the significance of the project.

It is necessary to mention that the technical decisions allowing to change independently an effective temperature of elements of a complex of moderator in a wide range from 20K to 150K is developed. This actually leads to further optimization of experimental conditions for concrete works on neutron instruments.

The positive results of the CM-202 operation for physics experiments, development and construction of CM-201, modernization of the cryogenic system, development of the infrastructure of the complex including computerization of control system, results reported in scientific journals, obtained patents, high professional qualification of the personnel performing the work are to ensure the successful implementation of the project within the designated time frame.

Finally, I recommend realization of these activities at JINR according to **category A**.

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