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Technological Support of Model of Cryogenic Pelletized Neutron Moderator of IBR-2M Reactor

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Abstract

Complex of cryogenic pelletized neutron moderators is a part of the plan of IBR-2M modernization. Cryogenic moderator represents a chamber filled with working material in the form of frozen balls (pellets) of mixture of aromatic hydrocarbons (mesitylene and mxylyene). Charging the chamber with pellets is doing by conveying them with flow of cold helium at temperature about 30-40 K. Such moderator is a very complicated facility demanding optimization of engineering parts and verification of all system integrity on a special experimental model. The major purpose of the full-scaled model is performing experiments to recognize an optimal regime of charging a simulating chamber of the moderator by working material. Loading the chamber and serviceability of the model is provided by basic technological components and control systems: a cryostat with helium circulator (blower), temperature control system, vacuum system, metering device, the system detecting of balls, visualization of loading the chamber with pellets.