**Current Status and Future Trends in the Development of Russian Research Reactors**

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The report presents the information about the current status of the operation, utilisation and future perspectives of Russian research reactors.

The current fleet of Russian research reactors is sufficient for to carry out in near future all necessary experiments for national programs in different areas of science and technology: nuclear physics, neutronic studies of condensed-matter physics, irradiation material testing for fission and fusion reactors in experimental loops and rigs; applied studies such as radioisotope production for medical and industrial purposes, neutron transmutation doping, neutron activation analysis, neutron radiography and naturally for education and training. The Russian research reactors can also propose the irradiation capabilities for foreign customers mainly for material testing.

The renaissance of nuclear power leads to increasing of utilization of Russian research reactors for material testing and now the utilization of Russian research reactors for these purposes especially high flux reactors is very high. The report presents the recent achievements in the development of new research programs that were realized at the Russian research reactors.

Last year several impressive results in commissioning of new and upgraded research reactors were reached in Russia. At the end of 2010 the pulse type research reactor IBR-2 was commissioned in JINR near Moscow. At the begin of 2011 the previous experiments in the frame of the physical start-up program of the very-high flux research reactor PIK in PNPI near St Petersburg was successfully made. The start up of these two modern research reactors open the broad capabilities for Russian and foreign scientists in the field of fundamental research. The report presents main parameters of these reactors and main results of physical start-up of them.

*FIG. 1. The general view of the PIK reactor site.*

Keeping in mind that the Russian research reactors shall provide the necessary experimental information for the development of power reactors of new generation it is clear that absolutely necessary to develop the new research reactor with fast neutron spectrum and broad experimental capabilities.

The new fast research reactor Multipurpose Fast Research Reactor (MBIR) will be developed according to Federal Russian Target Program "Nuclear Energy Technologies of New Generation" for 2010-2020 with the commissioning date in 2020.

The report presents the main design ideas of this reactor. It is the sodium cooled reactor and it has a very big power—150 MW. The neutron flux in the core is not less than $5\times10^{15}$ $cm^{-2}s^{-1}$. By commissioning the MBIR reactor with high-capacity loop facilities for Generation IV reactor fuel testing, new capabilities for the development of advanced technologies in the nuclear power engineering on the basis of reactors with fast neutron spectrum and advanced fuel cycles selected by international community will be created.

It will be possible to use MBIR for training of the personnel involved in the operation and maintenance of the reactor facilities, S&T developments using research reactor capabilities, as well as for training of students and postgraduates from local and foreign universities specializing in the field of nuclear and fusion power engineering, nuclear science, production of radioisotopes for industrial and medical purposes, radiation-induced modification of materials. According to the plans the MBIR shall to be an important international center for testing of new materials for nuclear reactors of the next generation.