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## **FAST REACTORS, FUEL CYCLES, AND PROBLEM OF NUCLEAR NONPROLIFERATION**

For 60 years of its existence, world nuclear power has passed a long way in its development and has reached a wide geographical spread. Currently there is quite intensive effort to development of nuclear power technology of IV generation having better nuclear safety and economical features.

Among these technologies, there are innovative nuclear energy technologies based on fast neutron reactors and closed nuclear fuel cycle. Commercial operation of such types of nuclear reactors, especially together with its nuclear fuel cycle facilities is a new approach in the world's nuclear power industry. Thus, it requires consideration in context of the nuclear nonproliferation regime and the IAEA safeguards implementation with respect to both fast neutron reactors and related nuclear fuel cycle facilities.

In connection with this, some important features of fast neutron reactor are considered in the report and elements of possible safeguards approaches for such reactor itself as well to its nuclear fuel cycle facilities are discussed basing on nuclear energy technologies developed in Russia.

Short history of fast reactor technology development in Russia and the achievements in this field are presented in the paper. Some features of possible options for launching fast reactors using plutonium fuel and enriched uranium are presented as well. An attempt made to outline and compare the peculiarities of both on-site and off-site centralized organization of nuclear fuel cycle infrastructure for fast reactors related facilities that are considered important for the IAEA safeguards implementation.

### **Which "Key Question" does your Abstract address?**

NEW1.6

### **Which alternative "Key Question" does your Abstract address? (if any)**

NEW1.1

### **Topics**

NEW1

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