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**Rosatom manufactured fuel for the first refueling of the second reactor at the Akademik Lomonosov FNPP**

*The core replacement will mark the end of the first fuel campaign of the world’s first floating power unit*

The Machinery Manufacturing Plant in Elektrostal near Moscow (MSZ JSC, Rosatom Fuel Division’s company) has shipped fresh nuclear fuel intended for the Unit 2 of the world's only floating nuclear power plant Akademik Lomonosov stationed in Pevek, Chukotka Autonomous Okrug (FNPP, a branch of Rosenergoatom).

The FNPP is based on two icebreaker propulsion KLT-40S reactors. In the case of these reactors, refueling differs from that in conventional ground-based high-power units (partial refueling every 12-18 months). These reactors require refueling once every few years with an unloading of the entire reactor core and complete replacement with fresh fuel.

KLT-40S core consists of fuel assemblies, control rods and startup neutron sources. A commission with the participation of a representative of the Russian Maritime Register of Shipping (the body authorized to accept nuclear fuel for propulsion reactors) accepted the fuel assemblies prior to their shipment to the FNPP.

The refueling of Unit 1 (the so-called starboard side of the FNPP) took place at the end of 2023. The first refueling on the left side of the FNPP is scheduled to take place before the end of 2024. This will be a significant milestone in the history of the plant, meaning the completion of a fuel campaign at the two reactors of the FNPP as designed.

The integrated development of the Russian Arctic is a national strategic priority. Increasing the cargo traffic along the Northern Sea Route is crucial to the tasks set in the field cargo shipping. This corridor is progressing due to regular shipments, building of new nuclear icebreakers and modernization of the relevant infrastructure. Rosatom companies are actively involved in this task.

**Background:**

The Akademik Lomonosov FNPP is the world's first floating nuclear power plant. Its commissioning marked a new page in nuclear energy, symbolizing the beginning of the era of transportable small power units. Serial floating power units based on RITM reference innovative reactors are a modern high-tech solution for ensuring reliable and cost-effective power supply to coastal regions isolated from a carbon-neutral source. Currently, under construction are floating power units that are to supply electricity to one of the largest projects in the non-ferrous metals sector. Dozens of countries and regions are showing their interest in floating power units. The Arctic alone has an estimated need of at up to 15 floating power units.

The Akademik Lomonosov’s reactors were first connected to the power grid in December 2019 and put into commercial operation in May 2020.

The Akademik Lomonosov FNPP generates about 76 MW for Pevek coastal network without shore heat consumption while its maximum heat capacity is about 44 MW. At the end of 2023, the FNPP generated 194 million kWh of electricity. Pevek has a population of just over 4,000 people, while the FNPP is capable of supplying electricity to a city with a population of up to 100,000 people.

The FNPP fulfils two tasks. First of all this is the replacement of the retiring Bilibino NPP, which has been operating since 1974, and the Chaunskaya TPP, which is already more than 70 years old. Secondly the FNPP supplies energy to the main mining facilities in the Chaun-Bilibino energy hub, a large ore and metal cluster in western Chukotka including gold mining companies and projects run as part of the Baimsk ore zone development.

In September 2023, a 110 kilovolt power transmission line with a length of 490 kilometers was put into operation. This connects the cities of Pevek and Bilibino. Due to the line both Bilibino consumers and mining facilities, the largest of which is the Baimsky Mining and Processing Combine, have a more reliable power supply from the floating nuclear power plant.

The Machine-Building Plant (MSZ JSC in Elektrostal) is one of the world's largest producers of fuel for nuclear power plants. The plant produces fuel assemblies for VVER-440, VVER-1000, RBMK-1000, BN-600,800, VK-50, EGP-6, powders and fuel pellets to be supplied to foreign customers. It also produces nuclear fuel for research reactors. MSZ JSC is a company of Rosatom TVEL Fuel Company.

TVEL Fuel Company (Rosatom Fuel Division) includes nuclear fuel producing companies, uranium conversion and enrichment facilities, gas centrifuges manufacturers, as well as research and design organizations. As the only supplier of nuclear fuel for Russian NPPs, TVEL provides fuel for a total of more than 70 power reactors in 15 countries, research reactors in nine countries, as well as propulsion reactors of the Russian nuclear fleet. Every sixth power reactor in the world runs on TVEL fuel. Rosatom's fuel division is the world's largest producer of enriched uranium, as well as the leader on the stable isotopes global market. The Fuel Division is actively developing new business in chemistry, metallurgy, energy storage technologies, 3D printing, digital products, as well as decommissioning of nuclear facilities. TVEL Fuel Company also includes Rosatom industry integrators for additive technologies and electricity storage systems.