

Information Circular

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Communication from the Permanent Mission of the Russian Federation to the Agency

1. On 14 May 2024, the Secretariat received a Note Verbale, together with an attachment, from the Permanent Mission of the Russian Federation to the Agency.
2. As requested, the Note Verbale and its attachment are herewith circulated for the information of all Member States.

ПОСТОЯННОЕ ПРЕДСТАВИТЕЛЬСТВО
РОССИЙСКОЙ ФЕДЕРАЦИИ
ПРИ МЕЖДУНАРОДНЫХ ОРГАНИЗАЦИЯХ
В ВЕНЕ



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The Permanent Mission of the Russian Federation to the International Organizations in Vienna presents its compliments to the Secretariat of the International Atomic Energy Agency and has the honour to request to circulate among all IAEA Member States as soon as possible the information on the Russian efforts to ensure sustainable and safe operation of the Zaporozhskaya NPP.

The Permanent Mission of the Russian Federation avails itself of this opportunity to renew to the IAEA Secretariat the assurances of its highest consideration.

Attachment: 9 pp.



Vienna, " 19 " May 2024

THE SECRETARIAT OF THE
INTERNATIONAL ATOMIC ENERGY AGENCY
Vienna

Ensuring Sustainable and Safe Operation of Zaporozhskaya NPP

1. General information

The construction of the Zaporozhskaya Nuclear Power Plant (ZNPP) began in 1979 by decision of the USSR Council of Ministers, adopted in 1977. In the period from 1984 to 1987, four power units were put into operation, and in 1988, a plant expansion project was adopted, providing for the construction of two more power units with similar reactors. As a result, six power units with VVER-type reactors (pressurized water reactor) with a nominal electrical power of 1,000 MW each were built and put into operation at the ZNPP site. This type of reactor is the most common in its series.

Equipment for the ZNPP was produced by enterprises located in St. Petersburg and in Volgograd. Power units of a similar design are currently in operation at the Balakovo NPP, Kalinin NPP and Rostov NPP. Due to historical continuity, as well as due to the fact that the ZNPP operates Soviet-design power units, the Ukrainian legislation contains approaches similar to the Russian legislation in this area.

Thus, the Russian Federation is the owner of the technology by which the ZNPP was designed and built, and has the entire complex of design and operational documents for this plant.

At units No. 2 and No. 6 of the ZNPP, the reactor core consists of fuel assemblies produced by the State Corporation Rosatom (FA-A). At units No. 1, 3, 4 and 5 of the ZNPP, the core consists of fuel assemblies, purchased by the Ukrainian side from Westinghouse (FA-W). The placement of nuclear fuel that does not comply with the ZNPP design and was not agreed upon with the plant design organization.

During a special military operation, the Russian armed forces in March 2022 placed the ZNPP under guard. As a result of the referendums held at the end of September 2022, the Zaporozhye region, on the territory of which the ZNPP is located, became part of the Russian Federation. Currently, the ZNPP asset complex is the property of the Russian Federation.

Russia is taking all possible measures to increase the reliability of the plant's protection, strengthening its nuclear safety and nuclear security in accordance with national legislation and its obligations arising from the relevant international legal instruments to which our country is a party.

Taking into account the location of the plant in close proximity to the line of military contact, Russia agreed to presence of experts from the IAEA Secretariat at the plant. Their first group arrived at the ZNPP on September 1, 2022. Russia considers their main task is to prevent threats to the safety and security of the plant created by the Kyiv regime.

2. Nuclear safety

At the ZNPP, Russian legislation in the field of the atomic energy use is in force, taking into account the specifics established by the President of the Russian Federation and the Government of the Russian Federation. Nuclear safety at the ZNPP is ensured by the Russian operator.

In accordance with the Decree of the President of the Russian Federation dated October 5, 2022 No. 711 "On the specifics of legal regulation in the field of atomic energy use in the territory of the Zaporozhskaya region," JSC "Operating organization of the ZNPP" has been granted the status of an operator in the field of atomic energy use, which

carries out activities for the operation and decommissioning of ZNPP nuclear facilities. The same Decree defines a transitional period of special regulation, which will last until January 1, 2028. During this period of time, a special regime of nuclear supervision, state regulation of industrial safety, as well as the use of financial resources to ensure safety at the ZNPP is in effect. Federal state supervision in the field of atomic energy use in relation to ZNPP is carried out in a regime of permanent supervision by the territorial body of Rostekhnadzor.

Any decisions of the Ukrainian regulatory authority made after September 30, 2022 regarding licenses to operate ZNPP power units or plant employee permits have no legal force.

2.1. Supervision activities

The implementation of the regime of permanent state supervision is carried out in accordance with work plans to ensure nuclear and radiation safety at the ZNPP. In accordance with these plans, in 2023, 208 control and supervision measures (CSM) were carried out in relation to the plant's facilities, and in 2024 – 77 CSMs.

In April 2023, an agreement was reached between Rostekhnadzor and the IAEA Secretariat to study the issue of determining the forms and directions of possible joint activities at the ZNPP site. As a result of subsequent discussions, a draft list of facilities was compiled for joint visits/walkdowns/inspections by representatives of Rostekhnadzor and the Agency.

From the autumn of 2023 to the present, about 50 joint CSMs have taken place, including:

- verification of compliance with the requirements of federal norms and rules, regulations and operating instructions at the workplaces of operating personnel of reactor buildings, turbine compartments, and the main control room of ZNPP power units;

- verification of compliance with the requirements for ensuring physical protection and the requirements of operational and process documentation at the site of the dry storage facility for spent nuclear fuel at the ZNPP;

- verification of compliance with the procedures for training plant employees to obtain permits for the right to conduct work at a nuclear energy facility;

- checking compliance by plant personnel with the terms of validity of issued permits for the right to conduct work at a nuclear facility;

- checking the operational condition of the equipment of the 750 kV open switchgear at the ZNPP;

- checking the emergency prevention and response system with a visit to a temporary crisis center;

- monitoring the operational condition of the equipment of the solid radioactive waste storage facility and the radioactive waste processing complex.

No deficiencies affecting the safety of ZNPP nuclear facilities have been identified. The results of control and supervision activities are discussed with responsible persons and management of the ZNPP, recommendations are given for bringing its facilities and activities into compliance with the requirements of federal norms and rules in the field of atomic energy use.

At the moment, the technical condition of ZNPP units is assessed by Rostekhnadzor inspectors as satisfactory. Limits and conditions for safe operation are observed. The radiation situation is normal.

The inspections of equipment and systems important from the safety point of view conducted by Rostechadzor inspectors are aimed at assessing compliance with nuclear and radiation safety of NPPs. Visits to the central halls of power units by IAEA employees are planned as part of routine inspections of containment shells according to the schedule of inspections by operational personnel.

2.2. Emergency preparedness and response

In 2023, the following drills and emergency exercises were conducted at ZNPP:

November 23 – plant-level emergency drill on the topic: “Radiation accident due to a rupture of the wash water pipeline in the section from power unit No. 4 to SB-1” with an additional scenario event “Damage to the unit transformer of power unit No. 5. Blackout at power unit No. 5”;

December 12 – emergency exercise with the Nuclear Power Plants Emergency Response group of the Crisis Center of Rosenergoatom on the topic: “Damage to the dam of the cooling pond and the process water collector of channel 1 of the safety system of power units No. 3, 4 of the ZNPP”.

2.3. Radiation monitoring

Today, all standard radiation monitoring (RM) systems are in operation at ZNPP. Radiation monitoring is carried out using more than 2000 measuring channels, which provide:

- radiation and process control of the main equipment and process systems of power units, including control of releases into the environment;

- radiation dosimetry monitoring of personnel exposure doses, as well as the radiation situation in the premises within the controlled access area and other on-site facilities;

- radiation monitoring of the environment in terms of gamma radiation dose rate, activity of radionuclides in atmospheric air and atmospheric fallout, content of radionuclides in environmental objects, monitoring of activity in vegetation, soil, water and bottom sediments;

- radiation control over the spread of radioactive contamination from the surfaces of production rooms and equipment.

Radiation monitoring equipment, the parameters of which are necessary for the safe operation of the power unit in all modes, including emergency, is powered from reliable sources of the first, the second and the third safety systems.

The results of monitoring of the water chemistry indicate the integrity of the first and the second barriers of the defense-in-depth system.

The results of control over the spread of radioactive contamination indicate the integrity of barriers 3, 4, 5 of the defense-in-depth system.

Radiation monitoring of the dry storage facility for spent nuclear fuel is carried out along the entire perimeter of the dry storage site. Based on the results of measurements, the content of radionuclides in environmental specimens in the area of the storage site corresponds to the natural radiation background.

Average daily releases of radioactive substances into the environment through the ventilation stacks of power units and special buildings do not exceed the established permissible levels.

Radiation monitoring in the exclusion area and surveillance area of the ZNPP is carried out by standard systems at 18 radiation monitoring posts (RMP). In autonomous

mode (without power supply), the posts can operate for up to 72 hours on storage batteries. In case of failure of an RMP, monitoring of the radiation situation is carried out by the personnel of the external radiation monitoring laboratory with a visit to the location of the RMP. The radiation situation in the area where the ZNPP is located ranges from 8 to 15 $\mu\text{R/h}$, which corresponds to the natural radiation background.

The results of radiological monitoring indicate that there is no significant impact of the ZNPP on the environment in the area of its location.

Information on continuous radiation monitoring at the ZNPP site, exclusion area and surveillance area is transmitted online to the network of the on-site crisis center of ZNPP and to the crisis center of Rosenergoatom.

Every day, radiation monitoring parameters are transmitted to IAEA employees located at the ZNPP. Additionally, Agency experts carry out manual measurements. The data is also entered into the international monitoring system IRMIS. Besides, radiation monitoring data is automatically transmitted to the IAEA Incident and Emergency Center.

3. Physical protection

Russia complies with all fundamental requirements for the protection of nuclear material in accordance with the Convention on the Physical Protection of Nuclear Material and its Amendment dated July 8, 2005 (hereinafter referred to as the Convention). Russia bears full responsibility for the creation, introduction and maintenance of a physical protection regime on its territory.

The requirements of the legislative framework of the Russian Federation in the field of physical protection of nuclear materials and nuclear installations on its territory are fully consistent with the 12 fundamental principles of the Convention governing activities in the field of atomic energy use and compliance with international requirements for the safety of nuclear material. Three of these principles, namely “Threat”, “Emergency Action Plans” and “Confidentiality”, are functionalities that use mechanisms and information, the unauthorized disclosure of which could jeopardize the physical protection of nuclear materials and nuclear installations under the responsibility of the state. Under the Convention, Parties are not required to provide any information that they do not have a right to disseminate under national legislation or that may jeopardize national security or physical protection of nuclear material or nuclear installations.

In pursuance of the instructions of the President of the Russian Federation, work is being carried out at Zaporozhskaya NPP to restore and bring the physical protection system (design, construction and installation work and commissioning) into compliance with the requirements of the legislation of the Russian Federation.

In accordance with the Decree of the President of the Russian Federation dated October 19, 2022 No. 756 “On the introduction of martial law in the territories of the Donetsk, Lugansk People’s Republics, Zaporozhskaya and Kherson regions”, martial law was introduced in the territory of the Zaporozhskaya region.

Based on the above, the demands for the admission of IAEA experts to certain facilities of the ZNPP and the adjacent territory, as well as to familiarize them with classified information at the station, contradict the legislation and the requirements of international law. In this connection, the Russian side has organized preliminary planning of the work of Agency employees for the period of their mission in accordance with the established procedure and in line with the legislation of the Russian Federation.

Access of any visitors to nuclear facilities, both at NPPs in the Russian Federation and at facilities in other countries, is subject to strict control, due to the confidentiality of information about measures for ensuring nuclear security, as provided for by the Convention.

All checks and inspections at NPPs, both in the Russian Federation and at foreign facilities, are carried out only with an advance notice and agreement with representatives of the facility regarding plans for upcoming visits.

Access of IAEA representatives to facilities in the territories adjacent to the plant is also limited for reasons of safety of mission participants in connection with possible attacks on them by the armed forces of Ukraine (AFU) from adjacent territory.

A set of organizational and technical measures has been implemented to protect the ZNPP from the unlawful use of unmanned aerial vehicles (UAVs). According to statistical data, the monthly number of unauthorized entries of UAVs of the AFU into the boundaries of the protected zone and the territory adjacent to the ZNPP is about 150–170 cases.

In spite of the fact that the ZNPP is located in close proximity to the line of military contact and repeatedly becomes the target of provocative acts of Ukraine, enhanced physical protection measures are applied to the plant. In March 2023, construction and installation work was completed on building of a protective structure at the open site of the spent nuclear fuel (SNF) dry storage facility, which had been exposed to the shelling by the AFU. Its construction seriously reduced the risks of SNF containers destruction, which could have resulted from such shelling. At the same time, the configuration and dimensions of the SNF dry storage facility site itself remained the same, and the IAEA experts permanently located at the ZNPP site were informed about the technical details of the protective structure and visited it. Afterwards, physical protection of the ZNPP was additionally enhanced by installation of directional mine barriers. This is a standard mean of protection against attacks and sabotage, and the usage of mines does not contradict either global practice, or the IAEA Safety Standards, or the IAEA Nuclear Security Guidance that themselves are purely advisory in nature. Mines were planted between the inner and the outer perimeters of the ZNPP, in a closed “buffer” zone, access to which is restricted. Mines do not pose any threat to the personnel or facilities of the plant.

4. Operation and maintenance

In order to ensure the safe operation of the plant and maintain its infrastructure, a large range of work has been carried out both for technical maintenance of the ZNPP and for scheduled maintenance. A significant part of the work was caused by the need to restore the equipment and infrastructure of the ZNPP, damaged by attacks by the AFU on the plant site.

4.1. Power supply

During 2022-2023, three 750 kV lines of ZNPP and six 330 kV lines of Zaporozhskaya TPP (ZaTPP), as well as electrical equipment for 150 kV, 330 kV outdoor switchgear at ZaTPP and the linear node of the Zaporozhskaya NPP – Kakhovskaya overhead line, 750 kV outdoor switchgear at ZNPP were damaged by shelling by the AFU.

Currently, the ZNPP in-house loads are supplied with power via overhead lines (750 kV Zaporozhskaya NPP – Dneprovskaya overhead line and 330 kV Zaporozhskaya TTP – Ferrosplavnaya 1 overhead line). During the reporting period, the power supply was repeatedly interrupted without any warning from Ukrainian dispatch services.

The Russian operator provided the supply and installation of seven diesel generator sets (DGS) at the ZNPP, and also maintains the diesel fuel reserve for emergency power supply to the plant.

Currently, 19 DGS are in “On duty” mode: 17 unit-level DGS and 2 plant-level ones. The total reserve of diesel fuel is 3257.354 tons (the minimum diesel fuel margin established by the operator is 1700 tons), the operating time of the DGS is 21.7 days.

4.2. Logistics

The equipment of the ZNPP is similar to the equipment of the Balakovo NPP, Kalinin NPP and Rostov NPP, designed and built according to the same design. The production of spare parts, tools and accessories for carrying out repair work on ZNPP equipment has been established. The operator has established appropriate procurement and material support services. Purchases and deliveries are carried out in accordance with the annual procurement program, taking into account current needs and the need to perform scheduled and emergency repairs. Integration into the procurement systems of the Russian Federation has been completed.

Taking into account the continuing threat of attacks on ZNPP by the AFU, the main warehouse of spare parts and equipment for the plant is organized outside the territory of its site.

4.3. Repair work

Maintenance and repair of equipment are carried out according to approved repair schedules. The IAEA experts were shown the forecast schedule for maintenance and repairs developed for all six power units of ZNPP for 2024 and subsequent years.

Upon detection of boric acid leaks, measures to eliminate them are carried out in the prescribed manner: for safety systems and primary circuit equipment – taking into account the requirements of the technical specifications for the safe operation of the power unit.

If stains of boric acid are detected in the radioactive drains of the reactor compartment rooms, the source is determined; if necessary, the equipment is checked for defects and a decision is made on the timing of the leak eliminations. Contamination is eliminated using decontamination agents.

The tightness of the lining of the sump tank with boric acid store is controlled by a leakage control system. The leak rate at power unit No. 6 is within acceptable values; elimination of the defect is planned during scheduled maintenance until August 2025. Materials are available.

After the appearance of traces of boric acid in the boiler water of the secondary circuit of the steam generator (SG) of power unit No. 4 in August 2023 (leakage of the weld seam of the SG collector air vent), the personnel, in line with the technical specifications for safe operation of the power unit, transferred the power unit from the “hot shutdown” mode to the “shutdown for repair” mode. In accordance with the procedure for performing work, the defect was eliminated, and quality control of the work performed was carried out.

Boric acid was discovered in the coolant of the SG secondary circuit of the power unit No. 5 of the ZNPP, which was in the “hot shutdown” mode in November 2023. In accordance with the operational documentation, the personnel increased the frequency of sampling from the secondary circuit of power unit No. 5 for boron content. The concentration of boric acid and the activity of the coolant in the secondary circuit of power

unit No. 5 were both within acceptable limits set by the technical specifications for safe operation. On November 21, 2023, power unit No. 5 was transferred to “cold shutdown” mode. After transferring power unit No. 5 to “cold shutdown” mode, the presence of boric acid in the secondary circuit coolant was not detected.

4.4. Water supply

Currently, there is one spray module in operation at the plant (the total number of spray modules is 41). The spray modules can be fed: from artesian wells; from the domestic water supply system; through the use of mobile pump units from the water area of the cooling pond. Due to destruction of the Kakhovka HPP dam by the AFU, the design layout for makeup of the cooling pond of the ZNPP was disrupted.

To ensure uninterrupted water supply to essential consumers of power unit systems, 11 wells were installed in 2023. Taking into account the two previously existing wells, the total flow rate was ensured at the level more than 300 m³/hour (the required water consumption for the water supply needs of ZNPP is 6000 m³/day).

There are 18 mobile pump units in a state of readiness on the territory of the ZNPP industrial site. If necessary, it is possible to deliver similar mobile pump units from other nuclear power plants.

The operator decided to build a cooling pond makeup pumping station. It is planned to ensure the average makeup flow rate to the ZNPP cooling pond at the level up to 5.0 m³/s (18,000 m³/hour).

In accordance with their monthly Work Plans, in 2023, Rostechadzor inspectors carried out 6 control and supervisory actions in relation to the ZNPP hydraulic structures, in 2024 – 14, during which visual inspections are carried out of the purge structures and makeup structures of the plant's cooling pond, the open inlet channel to the unit pump station of the ZNPP, the open outlet channel of the spray ponds of the circulation system, hydraulic structures (spray ponds of essential consumers of power units No. 1-6), buildings of the service water pump station of the ZNPP, etc.

5. Personnel

Today, ZNPP has enough experienced operating personnel authorized to work unsupervised to ensure safe operation of the plant. From February 1, 2024, ZNPP employs personnel who have only Russian citizenship and have entered into a contract or written a statement of desire to enter into contact with JSC “Operating Organization of the ZNPP”.

5.1. Staffing at ZNPP

The headcount of the Zaporozhskaya NPP (subsidiary of JSC “Operating Organization of the ZNPP”), is 4837 people. Particular attention is paid to staffing the ZNPP with operating personnel.

The minimum required number (hereinafter referred to as the MRN) of operating personnel to ensure safety of the nuclear installation was determined. To ensure the MRN of operating personnel, employees of operating nuclear power plants of the Russian Federation are engaged. As of April 17, 2024, the operating personnel MRN is ensured at the level of 720 people, with a target of 515 staffing positions. The main control room staffing is 118 people. The staffing level for workers (field operating personnel) is 602 people.

In Russia, the minimum requirements to the number and composition of personnel at NPPs are established by the technical specifications for the operation of the plant. At the

Rostov NPP, where units of the same type as those of ZNPP are operated, the staff coefficient is 0,8 people/MW. At ZNPP, this coefficient is currently also about 0.8 people/MW despite the units being in shutdown mode.

5.2. Personnel training

In order to ensure safe and reliable operation of nuclear installations of power units at ZNPP, a system of professional training and psychological support has been established.

Professional training of ZNPP personnel includes: preparation for the position; sustainment; retraining; professional development.

Professional training of personnel is carried out both at ZNPP and in organizations engaged in educational activities, including in organizations of additional professional education of ROSATOM.

The organization and conduct of professional training of ZNPP personnel is carried out by the plant training center (hereinafter referred to as the TC). The buildings and rooms assigned to the TC are equipped with classrooms for theoretical training, classes for specialized training, laboratories and workshops. On the basis of the TC, there are an educational and methodological complex for training maintenance personnel and a training center for management and maintenance personnel. The training rooms of the TC are equipped with technical training tools, including full-scale simulator and analytical simulator.

Professional training and control of the level of knowledge of ZNPP personnel is carried out using educational and methodological documents, computer training materials, and multimedia information systems. The TC is fully provided with educational and methodological, technical, regulatory and operational documentation necessary for training for the position and sustainment of ZNPP personnel.

The TC employs specialist trainers who carry out and ensure the processes of training for positions and sustainment of ZNPP personnel in accordance with the requirements of Russian legislation and operational documents.

Training for the position is carried out for all ZNPP employees newly hired or transferred to another position in order to allow them to obtain the professional knowledge and practical skills necessary to perform their job duties. Sustainment of ZNPP personnel is carried out annually according to sustainment programs and is aimed at ensuring the maintenance of professional knowledge and practical skills necessary to perform job duties.

The annual volume of sustainment training provided to the ZNPP personnel is at least 20 hours, while the volume of sustainment training of plant operating personnel receiving permits to carry out work in the field of atomic energy use (issued by Rostekhnadzor) is at least 96 hours including 40 hours of practical training on simulators. To ensure sustainment of the ZNPP personnel carrying out accounting and control of nuclear materials, additional training (not less than 20 hours) is provided annually on how to carry out established procedures for accounting and control of nuclear materials.

In order to monitor the level of knowledge required from employees to perform their job duties, at ZNPP, in accordance with the procedure established by the operator, periodic testing of personnel knowledge is carried out.

In accordance with the legislation of the Russian Federation in the field of the atomic energy use, the performance of certain types of activities by ZNPP employees is carried out if they have permission from Rostekhnadzor to carry out work in the field of atomic energy use.

After successful completion of training for the position, ZNPP employees are allowed to perform unsupervised work, as per procedure established by the operator.

The practical solution of complex tasks to increase and maintain the required level of reliability of the human factor, including psychological and pedagogical support of the processes of professional training of personnel, is carried out by the laboratory of psychophysiological support of the ZNPP.

6. Social support

Social support, as well as improving the quality of life of ZNPP personnel and residents of Energodar, is carried out in several areas, including in the field of healthcare, education and enlightenment.

In order to preserve professional health and prevent diseases of ZNPP personnel, rehabilitation and health measures are carried out, and vouchers to sanatorium and resort institutions are also distributed. Along with this, health improvement and recreation for the children of plant employees are organized at several children's health camps.

The registration of voluntary and compulsory health insurance programs continues, as well as the implementation of financial assistance payments to plant employees and members of their families. ZNPP personnel continue to undergo periodic medical examinations according to the approved schedule.

The Skifia Development Support Fund of the city of Energodar and the Zaporozhskaya region was established and registered for the purpose of developing social infrastructure and conducting social events.

In total, in 2023, 1.8 billion rubles were allocated for the repair and reconstruction of social facilities in the city, such as schools, kindergartens, sports facilities and apartment buildings.

Special equipment required by city utilities was purchased.

In 2024, it is planned to continue the renovation of Energodar's social infrastructure facilities, including a kindergarten, a music school, canteens and gyms in schools and kindergartens, a city church, and elevator facilities in apartment buildings in Energodar.

Heat supply to the city of Energodar and the industrial site of the NPP was ensured in 2023-2024 (hot water boilers, block-modular boiler stations (BMBS), gas for BMBS, diesel fuel were purchased and installed).

Social and cultural life in the city is supported, including programs for the professional and creative development of youth.