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

1. On 21 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.

PERMANENT MISSION OF THE RUSSIAN FEDERATION TO THE INTERNATIONAL ORGANIZATIONS IN VIENNA

No. 2023-n

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 forward comments from Russian technical organizations regarding the content of IAEA Information Circular INFCIRC/1188.

The Permanent Mission of the Russian Federation requests the Secretariat to circulate this information to all Agency Member States as soon as possible.

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

Enc.: 4 pages

[stamp] Vienna, 21 May 2024

IAEA Secretariat
Vienna

Results of the review of IAEA Information Circular INFCIRC/1188 of 19 March 2024

1. Comments from Atomenergoproekt JSC

Experts from Atomenergoproekt JSC considered the arguments set out in the information note by the National Nuclear Energy Generating Company "Energoatom" concerning an alleged deterioration of the safety level at the Zaporizhzhya NPP generating units.

NPPs with VVER-1000 reactors, like Zaporizhzhya NPP, are being operated successfully in a number of European countries in addition to the Russian Federation and Ukraine, and have demonstrated a high level of safety. The frequency of occurrence of nuclear fuel damage in the core or spent fuel pool for all operational states at generating units that were modernized after the Fukushima Daiichi accident in Japan does not exceed 10^{-5} events per plant operating year — an order of magnitude lower than that recommended in INSAG-3 and INSAG-12 for operating NPPs (10^{-4}). Probabilistic safety criteria are assessed using certified codes (the software most commonly used is RiskSpectrum PSA, which is similar to the Sapphire code in terms of its functional properties).

With regard to the estimated CDF and LERF probability values calculated by Energoatom specifically for the conditions at Zaporizhzhya NPP, it should be emphasized that these estimates have been presented without any clarification of the source data or probabilistic models used for the calculations. They are therefore not substantiated in any way and do not correspond to reality.

Zaporizhzhya NPP is currently in a steady state and is staffed with personnel who are experienced in operating NPPs with VVER-1000 reactors. Furthermore, the reactors at all the NPP units are shut down (all the units are in a cold state), and the units have minimal need for off-site auxiliary power supply owing to reduced residual energy release, and have been provided with sufficient diesel fuel reserves to last at least 22 days in the event of power line outages. The NPP site has been provided with additional heat supply sources in the form of modular boiler plants. There is also the possibility of starting up one of the units to meet the NPP's own needs.

The probability of a severe accident involving damage to nuclear fuel at Zaporizhzhya NPP's generating units, under the current operating conditions and taking into account the measures taken, can be no higher than the probability calculated on the basis of long term operation at nominal power. Furthermore, it should be noted that, even with the alleged deterioration of probabilistic safety indicators referred to in the Energoatom note, core damage frequency does not exceed the value recommended by INSAG for operating NPPs.

2. Comments from "Operating Organization of the ZNPP" JSC

Comments on the statement "deterioration of equipment reliability due to non-compliance with schedules and volumes of maintenance and repairs".

In 2023, all scheduled maintenance and repair work, as well as repairs on equipment damaged as a result of shelling by the Ukrainian armed forces, were duly carried out at Zaporizhzhya NPP.

The following scheduled work was carried out:

– Major overhaul of valves in safety system trains 1, 2 and 3 at Units 1–6;

– Major overhaul of pumps in safety system trains 1, 2 and 3 at Units 2–6;

– Routine maintenance of emergency cooling heat exchangers in safety system trains 1, 2 and 3 at Units 4 and 6;

– Routine maintenance of emergency power system diesel generators in safety system trains 1, 2 and 3 at Units 5 and 6;

– Major overhaul of electric motors and group 'A' service water pumps in safety system trains 1, 2 and 3 at Units 5 and 6;

– Major overhaul and routine maintenance of automatic fire suppression system valves in safety system trains 1, 2 and 3 at Units 5 and 6;

– Repair of 6/0.4 kV emergency power system switchgears in safety system trains 1, 2 and 3 at Units 5 and 6;

– Repair of emergency and working lighting equipment in safety system trains 1, 2 and 3 at Units 5 and 6;

– Maintenance of protection equipment, interlocks and control circuits for relay protection and automatic control system equipment in safety system trains 1, 2 and 3 at Units 5 and 6;

– Major overhaul of safety related system valves at Units 3, 5 and 6;

– Major overhaul of normal operation system valves at Units 3, 4 and 5;

– Major overhaul of normal operation system pumps at Units 3–6;

– Major overhaul, maintenance and testing of hydraulic shock absorbers at Units 2, 3 and 5;

– Major overhaul and routine maintenance of 0.4–6 kV electric motors in the turbine building.

Scheduled maintenance was carried out on the following electrical equipment in the main power delivery circuit:

– Unit transformers at Units 4, 5 and 6, including performance of comprehensive high-voltage measurements and tests;

– 1st and 2nd busbar systems for the 750 kV open switchyard, including replacement of damaged sections of wire;

– Circuit breakers for the 750 kV "Zaporizhzhya NPP–Yuzhno-Donbasskaya" overhead line, including replacement of damaged phase A current transformer;

– Standby auxiliary transformers 3 and 4;

– Unit 1 gantry tower lines.

Following shelling of the territory of Zaporizhzhya NPP by the Ukrainian armed forces, the following damage was noted and remedied:

– Fraying of a section of wire and breakage of a phase conductor in the 750 kV "Zaporizhzhya NPP–Dniprovska" overhead line;

– Damage to the main transmission lines for Units 2, 4 and 6 (broken wires);

– Damage to overhead line L-330 AEhS (wires and pylon) for the AT-1 coupling autotransformer;

– Damage to overhead line LSN-330 (wires and pylon) for standby auxiliary transformers 3, 4, 5 and 6;

– Damage to overhead line L-150 AEhS (wires and pylon) for standby auxiliary transformers 1 and 2;

– Damage to group ‘A’ service water system pipelines in spray ponds in safety system 2 at Units 1–4;

– Damage to the compressed air system feeding the pneumatic ducts for valves in safety system train 1 at Unit 5 (receiver and pipelines);

– Damage to the normal operation system for the supply of clean condensate at Units 2, 4 and 5 (tanks and pipelines for chemically demineralized water);

– Damage to turbine, transformer and diesel oil storage containers (10 tanks);

– Damage to window glazing in buildings and other structures (walkways at Units 1–6 and in the ‘dirty’ zone, LBK [laboratory and amenities building] 2; SK [special buildings] 1 and 2, BNS [unit pumping stations] 1–6, Units 1–6 DO [unknown abbreviation], ABK [administrative and staff services building], Canteen No. 11, OVK [general auxiliary building], OGK [general gas building], AKS [oxygen and nitrogen production facility], MDKh [diesel oil facility], wastewater pumping station for the ‘clean’ and ‘dirty’ zones, Units 1–4 and 6 (reflective panels), automated process control system archive, welding workshop);

– Damage to floor/ceiling and roof slabs (MDKh [diesel oil facility], OVK [general auxiliary building], SK [special building] 1).

Repair work on the following equipment has not been completed:

– 11 hydrogen receivers;

– Receiving tank at the Kristall waste disposal plant;

– Equipment in the node for the “Zaporizhzhya NPP–Kakhovskaya” overhead line for the 750 kV open switchyard (current transformers, voltage transformers, disconnector);

– 150 kV and 330 kV open switchyards for Zaporizhzhya thermal power plant.

Comments on the statement “an increase in the probability of human errors due to the lack of a sufficient number of qualified personnel, the use of unqualified staff from Russian nuclear power plants, as well as due to the tense state of personnel related to the occupation of the plant and the city of Enerhodar”.

The staffing at Zaporizhzhya NPP is currently sufficient to ensure the safe operation of the plant. The staff at Zaporizhzhya NPP number 4832, of whom 833 are operating staff.

Zaporizhzhya NPP is operated in accordance with safety standards and on the basis of Rosenergoatom’s wealth of experience in operating nuclear power plants. Russian NPP operating staff, including those trained for Rosenergoatom’s pool of specialized experts, have been enlisted to work at Zaporizhzhya NPP. Staff training takes place at similar VVER-1000 generating units. Before being permitted to work independently, operating staff are onboarded at the various Zaporizhzhya NPP workplaces and must naturally obtain all necessary permits for NPP operation.

The tense state of the staff is due to Ukraine’s constant terrorist acts on the territory of Enerhodar. The most recent explosions occurred on 17 March 2024 at the Zaporizhzhya NPP cultural and business centre and the Sovremennik cultural centre in Enerhodar.

Between 5 and 7 April 2024, drone strikes were carried out on the territory of Zaporizhzhya NPP, including on the oxygen and nitrogen production facility, the Unit 6 reactor dome and the staff canteen. An attack on Unit 5 was prevented.

On 9 April 2024, the Kyiv regime attacked the Zaporizhzhya NPP training centre, which houses the world's only full-scale reactor hall simulator.

Comments on the statement "The current state of power supply lines of the ZNPP (only one of the planned seven lines is currently in operation), which increases the probability of a complete power outage of the ZNPP due to constant shelling by the occupying forces of the Russian Federation".

During the course of 2022–2023, shelling by the Ukrainian armed forces resulted in damage to three 750 kV lines supplying Zaporizhzhya NPP and six 330 kV lines supplying Zaporizhzhya TPP, as well as electrical equipment in Zaporizhzhya TPP's 150 kV and 330 kV open switchyards and in the node for the "Zaporizhzhya NPP–Kakhovskaya" overhead line for Zaporizhzhya NPP's 750 kV open switchyard. Auxiliary power supply to Zaporizhzhya TPP and backup auxiliary power supply to Zaporizhzhya NPP were lost.

Following emergency repairs, power was supplied to the busbars of Zaporizhzhya TPP's 330 kV open switchyard and backup auxiliary power supply to Zaporizhzhya NPP was restored.

The repair work on Zaporizhzhya NPP's 750 kV open switchyard and Zaporizhzhya TPP's 150 kV and 330 kV open switchyards is ongoing.

As of 17 April 2024, Zaporizhzhya NPP's own power requirements were being met by two overhead power transmission lines:

– 750 kV "Zaporizhzhya NPP–Dniprovska" overhead line;

– 330 kV "L-243–Ferrosplavnaya-1" overhead line, via Zaporizhzhya NPP autotransformer AT-1 (put into operation on 6 April 2024 at 18:09).