Towards the 40th Anniversary of the 1986 Catastrophe
at the Chornobyl Nuclear Power Plant

Ukraine: Nuclear Power Plants and the International Atomic Energy Commission's Monitoring, Preparedness Programs and Support and Assistance Missions

At the request of World Federation of Ukrainian Women's Organization (WFUWO) the information and research in this report was prepared and provided by Motrya Kokoris, Environment Specialist and former WFUWO Representative to UN/ECOSOC. The purpose or this report was to identify key developments between the onset of russia's full-scale invasion of Ukraine in February 2022 through December 2025. Primary sources for the information summarized in the report were the American Nuclear Society and the publication Nuclear Newswire; International Atomic Energy Commission reports and statements; UN Security Council reports and statements, and Ukrinform – the national news agency of Ukraine.

> In 2009, all Member States of the International Atomic Energy Commission (IAEA) adopted a decision that "any armed attack on and threat against nuclear facilities devoted to peaceful purposes constitutes a violation of the principles of the United Nations Charter, international law and the Statute of the Agency."
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> Numerous times IAEA Director General Rafael Grossi has stated that "A nuclear accident in Ukraine could involve a massive radioactive release into the atmosphere... The risk of an accident increases the longer the war continues due to the degradation of infrastructure and the stress on personnel."

February 24, 2022, marked the beginning of the armed conflict in Ukraine with russia's full scale invasion and Ukraine's nuclear power plants (NPPs) have faced unprecedented military threats, marking the first time in history that operational civilian nuclear facilities have been caught in active war zones. Numerous events, such as shelling, air attacks, difficulties with staffing levels and working conditions and losses of off-site power supply, severely impacted and continue to impact on-site nuclear safety and security.

Two nuclear facilities have come under the control of russian armed forces: the Chornobyl NPP site from February 24 through March 31, 2022, and the Zaporizhzhia NPP on March 4, 2022, that currently remains under the control of the russian federation. In Spring 2022,

the IAEA promptly took steps to help stabilize the critical nuclear safety and security situation and to prevent a nuclear disaster in Ukraine.

IAEA Director General Rafael Mariano Grossi has frequently travelled to Ukraine to lead IAEA missions to assess the situation and conduct high-level talks. Within three years between Spring 2022 and 2025, DG Grossi visited Ukraine a dozen times. The IAEA is in continuous contact with officials from Ukraine and from the russian federation. A full timeline of the IAEA comprehension security efforts in Ukraine can be viewed at: https://www.iaea.org/interactive/timeline/169792

Key attacks and events involving Ukrainian nuclear infrastructure include:

- **Chornobyl NPP Siege and Occupation (February-March 2022):** The Chornobyl nuclear power plant [NPP] was seized by russian forces on February 24, 2022, the first day of the russia's invasion into Ukraine. As reported by the World Nuclear Association, the capture raised many concerns due to risks from personnel disruption, damage to safety systems, and disturbance of soil. russian troops not only drove their armored vehicles through the highly toxic terrain of the "Red Forest," kicking up clouds of radioactive dust; they also dug trenches in the soil that soviet emergency workers had covered with a layer of sand to contain the catastrophic levels of radioactive contamination shortly after the 1986 explosion of Chornobyl's reactor No.4. Despite the hasty departure of the russian troops one month later as the first signs of radiation poisoning began to appear, all are now presumed deceased. Control of the Chornobyl NPP was returned to Ukraine on March 31, 2022. In February 2025, three years after the initial invasion, a russian kamikaze drone hit the New Safe Confinement [NSC] arch, which covers Chornobyl NPP's Reactor 4 and its original protective sarcophagus, forcing the suspension of ongoing decommissioning work. World Nuclear News reported that the breach impacted the outer and inner cladding. The strike caused significant damage, creating a hole in the roof, and damaging equipment including construction cranes. The NSC's function as a protective barrier was compromised and will need extensive repairs. The IAEA is supporting efforts to restore its containment function, with international support.
- **Zaporizhzhia NPP Siege and Occupation (March 2022 - Present):** On March 4, 2022, russian forces attacked and seized the Zaporizhzhia NPP, Europe’s largest nuclear power plant. A projectile hit a training building, creating a severe fire hazard. The plant has become a focal point of conflict, with repeated shelling damaging external power supplies and risking meltdowns. Workers operate under extreme intimidation, with reports of abuse by occupying forces. The IAEA has negotiated temporary ceasefires with moscow in order to have Ukrainian and international workers repair energy supply lines to the ZNPP that cool the reactors.
- **Infrastructure Targeting:** russia has repeatedly targeted Ukrainian electrical infrastructure, causing multiple instances of all nuclear plants losing off-site power, forcing them to temporarily shut down or operate at reduced capacity.
- **Other Sites:** The Khmelnytskyi NPP has faced several incidents involving drones or missiles flying near the site, causing damage to windows and buildings.

- The International Atomic Energy Agency (IAEA) has maintained a permanent presence **at all Ukrainian nuclear plants** since January 2023, to monitor the precarious safety situation.

Report of Record:

Upon Ukraine's request for assistance in April 2022, the IAEA developed a concrete and detailed technical plan for safety and security assistance to Ukraine's nuclear facilities and activities involving radioactive sources.

Throughout 2022, the primary focus of the plan was on the provision of in-person assistance through on-site missions to cover various aspects of nuclear safety and security in Ukraine and delivery of equipment needed for the safe and secure operation of nuclear facilities, radioactive waste management facilities and activities involving radioactive sources.

In 2023, the IAEA increased its support to Ukraine, and the original technical plan grew into a comprehensive program of assistance. At present, the assistance for Ukraine includes:

- In-person assistance comprising of deployment of a continued presence of IAEA staff at all five Ukrainian nuclear sites and other expert missions in Ukraine;
- Delivery of equipment needed to maintain continued nuclear safety and security in Ukraine;
- Medical assistance for operating staff at the nuclear power plants (NPPs) in Ukraine;
- Assistance for the recovery of the Kherson Oblast following the flooding after the destruction of the Kakhovka dam;
- Assistance on the safety and security of radioactive sources;
- Provision of remote assistance; and
- Provision of rapid deployment of assistance.

All activities implemented by the IAEA within the comprehensive program of assistance to Ukraine are based on requests from Ukraine and are done in close cooperation and coordination with Ukrainian authorities, IAEA Member States and various international organizations.

IAEA Support and Assistance Missions and Other In-Person Expert Missions

The implementation of in-person expert missions in Ukraine has been essential to have a concrete understanding of the nuclear safety and security situation in the country and corresponding needs, and to share impartial and verified information with the broader international community.

During these missions, IAEA staff with relevant expertise engage in visits and discussions with Ukrainian counterparts at the different sites on various nuclear safety and security matters. Some missions involve high-level talks led by IAEA Director General and are aimed at ensuring continued political dialogue with all parties in order to keep the situation stable.

Limited duration in-person missions focused on particular sites were predominant at the start of the armed conflict. Now teams of IAEA experts rotate every few weeks at all five Ukrainian nuclear sites. This effort involves up to 13 IAEA staff present at the five nuclear sites in Ukraine and thousands of person-days spent on the ground.

Delivery of Nuclear Safety and Security Equipment

Ukraine submitted a number of requests for assistance for nuclear safety and security equipment to the IAEA. The assistance requested covers the needs of different organizations in Ukraine with relevant responsibilities in nuclear and radiation safety, nuclear security, radiation monitoring and protection, radioactive waste management safety, as well as emergency preparedness and response. Additional needs have also been identified during the in-person missions.

Considering the large number of equipment requirements and available resources, the IAEA conducts technical assessment of the needs and engages extensively with Ukrainian authorities to define priorities.

Medical Assistance for Operating Personnel

The medical assistance program for the operating personnel at the NPPs in Ukraine was announced in April 2023, in light of the following observations from in-person expert missions:

- Difficult working conditions in which operating personnel carry out their duties imposed by the ongoing armed conflict;
- Constant high stress and pressure among operating staff, causing anxiety, depression, and a range of psychosomatic symptoms affecting concentration and performance;
- Reduction in the number of operating staff available, resulting in an increased workload.

The medical assistance program aims to enable operating personnel of the NPP sites to have access to services they need to maintain their physical and mental health, and to conduct periodic assessments of their fitness for duty. Additionally, the program helps ensure that medical facilities in Ukraine possess the necessary capacity to provide those services and critical medical assistance and care in normal situations and in case of an emergency.

Assistance Regarding the Safety and Security of Radioactive Sources

Upon request from Ukraine, an IAEA Support and Assistance Mission on the Safety and Security of Radioactive Sources (ISAMRAD) was sent in July 2023, to assist Ukraine in ensuring a continued high level of radiation safety and nuclear security of radioactive sources which are at risk or potentially at risk due to the current armed conflict. ISAMRAD conducted a formal assessment of the situation and determined a proposal for a subsequent provision of support. The beneficiaries are Ukrainian authorities with

responsibilities for the safety and security of radioactive sources and various facilities and activities that use, store or transport such radioactive sources.

Remote Assistance

This component of assistance concerns the provision of external based support in relation to safety and security assessments of nuclear installations, including radioactive waste management facilities, as well as activities involving radioactive sources. This type of support also includes external support for the assessment of requirements to adapt safety and security procedures to the current circumstances.

Rapid Deployment of Assistance

This component of assistance comprises deploying rapid assistance in case of an emergency at a nuclear facility or relating to radioactive sources. Such assistance consists of the deployment of an IAEA expert team to provide immediate assistance on the ground, to assess the consequences and the status of the facility or source regarding nuclear safety and security, to provide in-person support in managing the consequences and to liaise efficiently to mobilize the resources needed to address nuclear safety and security issues. Until now there has been no nuclear or radiological emergency in Ukraine that has necessitated the deployment of such assistance.

IAEA Support and Assistance Missions

Number of rotations: 251
Number of facilities covered: 5
Number of staff involved: 177
Person-months spent in Ukraine: 563
Number of medical assistance in-person missions: 6
Number of Nuclear Safety and Security ad-hoc in-person missions: 32

Equipment Delivery

Number of requests: 29
Number of deliveries: 203
Number of beneficiaries: 36
Total EUR value of equipment delivered: 22.3-million

> Information current as of March 2026. In keeping with recent standards adopted by the Government of Ukraine, in non-government documents, the use of lowercase for russia, russian federation, moscow, etc. is considered acceptable and encouraged as a sign of disrespect. WFUWO also uses the Ukrainian to English transliteration of Chornobyl and not the russian to English transliteration of Chernobyl