



Two years of IAEA continued presence at the Zaporizhzhya nuclear power plant

The IAEA's unwavering support for nuclear safety, security and safeguards in Ukraine





About the cover: IAEA Director General Rafael Mariano Grossi and IAEA staff crossed the frontline of the conflict in Ukraine to reach the Zaporizhzhya nuclear power plant. (Photo: IAEA)



Foreword



Two years into the IAEA's continued presence at the occupied Zaporizhzhya nuclear power plant (ZNPP), our commitment to helping prevent a nuclear accident remains resolute. Amid the significant challenges and risks to nuclear safety and security, we are steadfast in our mission to assess the situation and keep the international community informed.

Since 1 September 2022, IAEA staff have been deployed to the ZNPP, the largest nuclear power plant in Europe, which sits on the frontline of the armed conflict. On the occasion of this historic milestone, we take stock of the events that have shaped the past two years: the unprecedented difficulties, as well as the diligence of our staff in fulfilling their responsibilities with unwavering impartiality and professionalism.

The situation at the ZNPP has remained precarious and very fragile over the past two years and continues to be so, with all Seven Indispensable Pillars being either fully or partially compromised. The teams regularly report explosions, drone attacks and gunfire in the vicinity of the ZNPP, which continue to put at risk the five concrete principles for protecting the ZNPP ('Five Principles') and the Seven Pillars for ensuring nuclear safety and security in an armed conflict ('Seven Pillars'). This year alone, the teams have followed up on alleged drone strikes in the plant's perimeter, damaged transformers, and a fire in one of the cooling towers. Fortunately, these incidents have not yet led to a radiological accident, however the risks to plant personnel, the international community and the public grows as the armed conflict continues.

As I have stressed repeatedly, no one can benefit from attacks against nuclear facilities, and we cannot become complacent in the face of these risks. Observance of the Five Principles is essential to avoid the danger of a nuclear accident. Entering into our third year at the ZNPP, we pledge to continue to transparently share information and IAEA assessments with the international community, Member States and the public, from all sites where our teams are stationed.

Assembling and maintaining the teams deployed to the ZNPP has been a substantial undertaking, but we are aware of our critical mission and have been steadfast. The objective and impartial assessments of the situation provided by our teams have made a significant contribution to maintaining nuclear safety, security and safeguards at the plant. In early 2023, the continued presence was expanded to the other four nuclear facilities in Ukraine. Our work at these facilities remains essential and I am immensely proud of the courageous work the teams continue to perform.

In total, there have been 139 Support and Assistance Missions to the nuclear sites in Ukraine. I personally led nine of those, including four to the ZNPP. As I embark on my fifth visit to the ZNPP, I want to reassure the international community that the IAEA, and I as Director General, will continue to do everything possible within our mandate to assist in averting a nuclear accident.

Our comprehensive assistance to Ukraine has facilitated 59 deliveries of equipment needed to maintain nuclear safety and security in Ukraine, with a total value of over €10 million. Assistance programmes in the areas of health care and the nuclear safety and security of radioactive sources, and for the Kherson Oblast, were established, and actions continue to be implemented to provide the support needed during these trying times.

We have also continued our vital safeguards verification activities across Ukraine, ensuring that there is no diversion of nuclear material for military purposes. These activities have included complementary access visits at multiple locations in Ukraine and the successful conduct of many physical inventory verifications.

Together, we will continue to work tirelessly to ensure that the Five Principles and the Seven Pillars are upheld, and that nuclear safety, security and safeguards are a top priority.

This report highlights the challenges and achievements of two years of continued presence at the ZNPP, the continued presence at the other facilities, and details of the IAEA's comprehensive programme of assistance.

Rafael Mariano Grossi
Director General, IAEA



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Introduction



On 24 February 2022, the International Atomic Energy Agency (IAEA), through its Incident and Emergency Centre, was notified by the State Nuclear Regulatory Inspectorate of Ukraine, in its capacity as a national competent authority under the Convention on Early Notification of a Nuclear Accident, of the imposition of martial law on the territory of Ukraine and of an alert at the Chornobyl nuclear power plant (ChNPP).

Russian armed forces took control of the ChNPP site, from 24 February to 31 March 2022. The ZNPP has been under the control of Russian armed forces since 4 March 2022.

The events that have unfolded since 24 February 2022 have resulted in challenging years in terms of sustaining nuclear safety and security at the nuclear facilities in Ukraine, in particular the ZNPP and the ChNPP site. As this was the first time that the IAEA and the international community had faced an armed conflict that directly threatened the facilities of a large, established nuclear power programme, the IAEA's role was and remains crucial in helping to stabilize the situation and prevent a nuclear accident.

Since the beginning of the conflict, the IAEA has closely monitored and assessed the situation in Ukraine on a daily basis. Ukraine's request for assistance in 2022 prompted the IAEA to establish a comprehensive programme of assistance to Ukraine's nuclear facilities and activities involving radioactive sources. The provision of IAEA support and assistance includes the continued presence of IAEA staff at the nuclear power plant (NPP) sites in Ukraine and the deployment of other staff missions to Ukraine. The IAEA has maintained an uninterrupted presence at the ZNPP since 1 September 2022, and at the Khmelnytsky NPP (KhNPP), the Rivne NPP (RNPP), the South Ukraine NPP (SUNPP), and the Chornobyl NPP (ChNPP) site since January 2023.

The IAEA established the Seven Indispensable Pillars for ensuring nuclear safety and security during an armed conflict ('Seven Pillars'). The Seven Pillars, which were outlined by IAEA Director General Rafael Mariano Grossi at the meeting of the Board of Governors on 2 March 2022, derive from Agency safety standards and nuclear security guidance and describe key nuclear safety- and security-related

issues specific to the circumstances that arise during an armed conflict. They provide an efficient way to assess and communicate important aspects that must be maintained to ensure the safe and secure operation of nuclear facilities in such circumstances.

Because the ZNPP is the facility most exposed to and impacted by military activity so far, the Director General, at the meeting of the United Nations Security Council (UNSC) on 30 May 2023, outlined the five concrete principles for protecting the ZNPP ('Five Principles') in order to prevent a nuclear accident and ensure the integrity of the plant. The Five Principles address the specific and unprecedented circumstances faced by a nuclear facility on the frontline of an armed conflict.

This report highlights the IAEA's main activities over the last two years and its unwavering support for nuclear safety, security and safeguards in Ukraine.



ZNPP has six reactors (each of 950 MW(e)), commissioned between 1984 and 1995. All reactors are in cold shutdown.



KhNPP has two reactors (each of 950 MW(e)), commissioned between 1987 and 2004.



RNPP has four reactors (two of 950 MW(e) each, one of 381 MW(e), and one of 376 MW(e)), commissioned between 1980 and 2004.



SUNPP has three reactors (each of 950 MW(e)), commissioned between 1982 and 1989.



ChNPP has four reactors that have been shut down for decommissioning (Units 1 to 3), with Unit 4 severely damaged during the nuclear accident in 1986 and subsequently confined.

Continued presence at the ZNPP

“The IAEA will remain present at the Zaporizhzhya nuclear power plant for as long as it is needed. The nuclear safety and security situation at the plant remains extremely precarious and challenging. Thanks to our experts at the site, we can inform the world about developments there. We will continue to do everything in our power to keep this major nuclear facility safe and secure.”

Rafael Mariano Grossi
Director General, IAEA
May 16, 2024



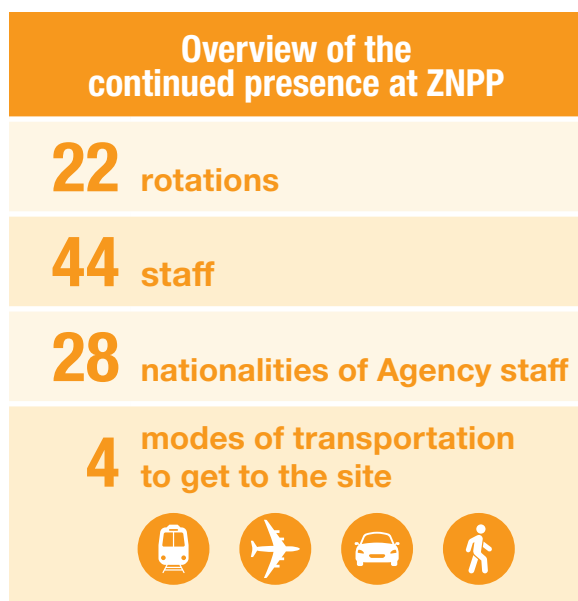
1 September 2022 marked a significant milestone: on that day, the first team of IAEA staff, led by the Director General, arrived at the ZNPP. It was the first time in history that such a team had been assembled to stabilize the situation around an operational NPP located on the frontline of an armed conflict. Since then, IAEA staff have been continuously present at the site.

Before establishing the continued presence at the ZNPP, the IAEA had received conflicting information about the facility's status and operation, and the damage it had sustained. To ensure objectivity and impartiality in assessing this information and to help stabilize the situation, the Director General established the continued presence of IAEA staff at the site.

As the sole international organization with a continued presence there, the IAEA receives first-hand information on nuclear safety- and security-related issues, enabling the sharing of impartial data with the public and the international community.

Accomplishments

The objective and impartial assessment of the situation provided by the team at the site, and the continued presence of subsequent teams throughout the two years, has made a crucial contribution to maintaining nuclear safety, security and safeguards at the facility.





The establishment of the continued presence of IAEA staff at the ZNPP was pivotal in providing technical support and assistance to Ukraine and continues to be a major undertaking for the IAEA.

For each rotation at the ZNPP, up to five IAEA staff with relevant technical expertise cover nuclear safety, security and safeguards aspects for approximately five weeks at a time. Prior to deployment, IAEA staff receive comprehensive briefings and training.



The activities of IAEA staff continually present at the ZNPP include:

-  holding discussions with the ZNPP to broaden the understanding of and assess the nuclear safety and security situation at the facility
-  performing field observations and assessments of key plant areas
-  preparing technical reports for IAEA Headquarters

Through the continued presence, the IAEA has used the information gathered and observations made to assess the nuclear safety and security situation at the ZNPP against the Seven Pillars and the Five Principles.

Seven Pillars



Pillar 1 – Physical integrity

The physical integrity of facilities – whether it is the reactors, fuel ponds or radioactive waste stores – must be maintained.



Pillar 2 – Safety and security systems and equipment

All safety and security systems and equipment must be fully functional at all times.



Pillar 3 – Operating staff

The operating staff must be able to fulfil their safety and security duties and have the capacity to make decisions free of undue pressure.



Pillar 4 – Off-site power supply

There must be a secure off-site power supply from the grid for all nuclear sites.



Pillar 5 – Logistical supply chain

There must be uninterrupted logistical supply chains and transportation to and from the sites.



Pillar 6 – Radiation monitoring and emergency preparedness and response

There must be effective on-site and off-site radiation monitoring systems, and emergency preparedness and response measures.



Pillar 7 – Communication

There must be reliable communication with the regulator and others.

Five Principles

1

There should be no attack of any kind from or against the plant, in particular targeting the reactors, spent fuel storage, other critical infrastructure, or personnel

2

ZNPP should not be used as storage or a base for heavy weapons (i.e. multiple rocket launchers, artillery systems and munitions, and tanks) or military personnel that could be used for an attack from the plant

3

Off-site power to the plant should not be put at risk. To that effect, all efforts should be made to ensure that off-site power remains available and secure at all times

4

All structures, systems and components essential to the safe and secure operation of ZNPP should be protected from attacks or acts of sabotage

5

No action should be taken that undermines these principles

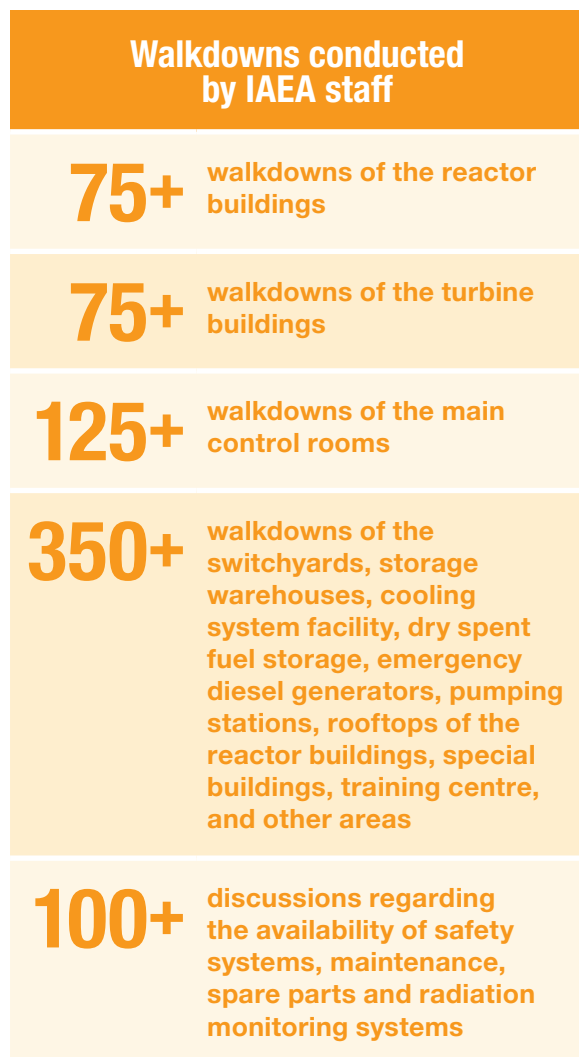
The ZNPP has faced several challenges to its nuclear safety and security systems and structural integrity, including the loss of the main cooling water source due to the destruction of the Kakhovka dam, large fire in one of the cooling towers and direct drone attacks. The plant has experienced eight complete losses of off-site power, some of them lasting for days, and has sustained significant damage to its power grid connections. In each instance, IAEA teams independently analysed the situation and engaged in dialogue with the ZNPP to help find solutions to stabilize the situation and prevent a nuclear accident.

The IAEA recommended the use of external diesel steam boilers, installed in 2024, to enable the plant to transfer all of its units to cold shutdown while ensuring a reliable source of steam for processing liquid radioactive waste.

To date, there have been no releases of radioactive substances into the environment above regulatory limits and no damage to the integrity of nuclear fuel at the ZNPP.

Walkdowns

IAEA staff conducts walkdowns of the facility and hold technical discussions with the ZNPP with a focus on nuclear safety and security, including plant safety systems, maintenance and testing, configuration management, staffing, physical protection, radiation protection and emergency preparedness and response. These activities occur on weekdays, weekends, holidays and evenings, as necessary.



Although these activities have been beneficial for assessing the nuclear safety and security situation at the plant, the IAEA has faced restrictions in obtaining access to some areas. It continues to request timely and appropriate access to all areas of the ZNPP of significance or with potential implications for nuclear safety and security.

Radiation monitoring

Following the occupation of the ZNPP, the automatic data transfer from the off-site radiation monitoring stations located within 30 kilometres of the plant was disrupted. Consequently, Ukrainian officials could no longer supply the data to the Agency's International Radiation Monitoring Information System (IRMIS). In response, IAEA staff at the site ensured the off-line transmission to IRMIS of radiation monitoring data from the off-site stations.

Independent radiation monitoring is regularly performed by IAEA staff at the site. To date, more than 100 radiation monitoring walkdowns have been conducted at the ZNPP.

100+
radiation
monitoring
walkdowns

The IAEA uploads the measurements to IRMIS, making it accessible to all competent authorities of Member States. The IAEA has confirmed that, based on the measurements taken during the regularly scheduled walkdowns, the radiation levels at the ZNPP remain within the expected range.



Radiation monitoring data from the monitoring stations and measurements taken by IAEA staff in the 20 km radius around the ZNPP. Radiation levels are normal.

Monitoring and assessment

Given that the ZNPP is on the frontline of the armed conflict, the risk to nuclear safety and security is substantial. IAEA staff stationed at the site closely monitor and examine significant issues that could impact the overall nuclear safety and security

of the plant. They play a crucial role in documenting and checking the accuracy of information received directly from the ZNPP.

The comprehensive information collected during the two years of continued presence is provided in the reports of the Board of Governors.

2022



IAEA team conducts a walkdown of the facility (Photo: IAEA)



IAEA team conducts a walkdown of the ZTPP 330 kV switchyard after damage by reported shelling (Photo: ZNPP)



IAEA team conducts an assessment of the damage to ZNPP after reported shelling (Photo: ZNPP)

2023



IAEA team conducts a walkdown of the cooling towers at the facility (Photo: ZNPP)



IAEA team observes the drilling of additional wells (Photo: ZNPP)



IAEA team observes the water level at the Kakhovka reservoir from the ZTPP discharge channel isolation gate (Photo: ZNPP)

2024



Small crater observed in the ground outside the wall surrounding the diesel fuel storage tanks (Photo: ZNPP)



IAEA team observes the damage at the Raduga electrical substation (Photo: ZNPP)



IAEA team observes drone remnants at the containment dome of Unit 6 following a drone strike (Photo: ZNPP)



IAEA team observes the damage caused by a fire at cooling tower 1 (Photo: ZNPP)



IAEA team conducts a walkdown in the turbine hall of Unit 4 (Photo: IAEA)

Reporting to the Member States and the public

IAEA staff at the ZNPP provide regular updates and reports based on their observations and the information gathered. Since the establishment of the IAEA's continued presence, this valuable information continues to be disseminated to the public and the international community through the following channels:

150+ press releases by the Director General

IAEA website and social media platforms



8 reports of the Board of Governors on nuclear safety, security and safeguards in Ukraine

2023 Summary Report by the Director General on nuclear safety, security and safeguards in Ukraine



Timely sharing of this information is crucial in terms of keeping the international community informed and facilitating dialogue with relevant international stakeholders.

The IAEA's overall assessment of nuclear safety and security

The continued presence of IAEA staff has been instrumental in helping to decrease the risk of a nuclear accident at the ZNPP. However, the overall situation with respect to nuclear safety and security at the ZNPP continues to be very precarious.

In the two years of continued presence, all Seven Pillars have been fully or partially compromised. The assessments conducted by the IAEA to date demonstrate that the risk at the ZNPP remains high.

Challenges to nuclear safety and security at the ZNPP

- Ensuring that sufficient cooling water is available
- Maintaining a stable connection to off-site power
- Maintaining adequate staffing arrangements
- Implementing a comprehensive preventative maintenance plan
- Ensuring a reliable supply chain

As recently as April 2024, a violation of the first of the five concrete principles occurred, with drone attacks against the plant. This was the first violation to have been observed since the principles were established in May 2023. Additionally, IAEA staff continue to report the presence of armed troops and military equipment at the site. Observance of the five concrete principles, by all parties, is essential to ensure nuclear safety and security at the ZNPP and to prevent a nuclear accident.

“No one can conceivably benefit or get any military or political advantage from attacks against nuclear facilities. Attacking a nuclear power plant is an absolute ‘no-go’. I firmly appeal to military decision makers to abstain from any action violating the basic principles that protect nuclear facilities.”

Rafael Mariano Grossi

Director General, IAEA

7 April 2024



Major IAEA activities





IAEA Director General briefs the Security Council meeting on threats to international peace and security on 15 April 2024 (Photo: United Nations)

The urgency and importance of all parties committing to protect the ZNPP and prevent a nuclear accident continues to be a top priority for the IAEA.

During the two years of continued presence, the Director General has sustained continuous diplomatic efforts to maintain the nuclear safety and security of the ZNPP, including exchanges, meetings and consultations with high-level officials from Ukraine and the Russian Federation, and with their nuclear regulatory bodies. During these meetings and consultations, the Director General has reiterated the importance of the strict observance of the Five Principles

and the Seven Pillars in order to protect the ZNPP and prevent a nuclear accident.

The Director General has addressed the UNSC on seven occasions to provide updates on the IAEA's activities concerning nuclear safety, security and safeguards in Ukraine. In his most recent address, on 15 April 2024, he shared concerns over the threats and risks posed by the armed conflict following the escalation resulting from the drone attacks at the facility on 7 April 2024.

Throughout the armed conflict, the Director General has provided regular updates to the IAEA Board of Governors on the nuclear safety and security situation in Ukraine.



Director General Rafael Mariano Grossi meeting the Ukrainian President Volodymyr Zelenskyy on 6 February 2024. (Photo: www.president.gov.ua)



Director General Rafael Mariano Grossi meeting Russian President Vladimir Putin in the company of the Director General of Rosatom, Alexey Likhachev, on 6 March 2024. (Photo: Kremlin.ru)

Since the conflict began, the Director General, together with a high-level delegation of IAEA officials, has visited Ukraine nine times and has crossed the frontline to travel to the ZNPP four times.



1 September 2022: The first visit was to help stabilize the nuclear safety and security situation at the ZNPP site and to establish the continued presence (Photo: IAEA)



29 March 2023: The second visit was to witness the damage to the ZNPP that had occurred since September 2022, in particular that associated with the reported shelling in November 2022 (Photo: IAEA)



15 June 2023: The third visit focused on observing and assessing the impact of the destruction of the Kakhovka dam on the nuclear safety of the ZNPP (Photo: IAEA)

7 February 2024: The most recent visit was to discuss and assess important issues and recent developments in relation to the fragile nuclear safety and security situation at the plant, including the status of power and cooling systems essential for the safety of the plant and the availability of qualified staff. The visit provided an opportunity to stress the importance of providing to the IAEA staff deployed to the plant timely access and information relevant to nuclear safety and security, to enable them to monitor observance of the Five Principles and the Seven Pillars. (Photo: IAEA)



Continued presence at the KhNPP, the RNPP, the SUNPP, and the ChNPP site



Since January 2023, IAEA staff have maintained a continued presence at the KhNPP, the RNPP, the SUNPP and the ChNPP site. The main objectives of the IAEA's strengthened presence at all nuclear sites in Ukraine are: to continue to monitor and assess the situation at each nuclear site against the Seven Pillars; to report on the impact of any military action against on-site or off-site facilities or against supporting infrastructure of significance for safety; and to facilitate the provision of technical support and assistance in nuclear safety and security.

Accomplishments

The continued presence consists of IAEA teams of up to three IAEA staff with relevant technical expertise in nuclear safety, security and safeguards at each site. The teams conduct field observations of key plant areas and hold discussions with technical counterparts. IAEA staff utilize the observations and information obtained to assess the situation at each nuclear site against the Seven Pillars. The teams rotate to the sites every three to four weeks.

The KhNPP, the RNPP and the SUNPP

The three operational NPPs (the KhNPP, the RNPP and the SUNPP) have continued operating safely and securely since the beginning of the conflict.

IAEA staff conducting walkdowns at the KhNPP, the RNPP and the SUNPP are shown below.



Overview of the continued presence

117 missions to KhNPP, RNPP, SUNPP, ChNPP site

123 staff to KhNPP, RNPP, SUNPP, ChNPP site

51 nationalities of Agency staff

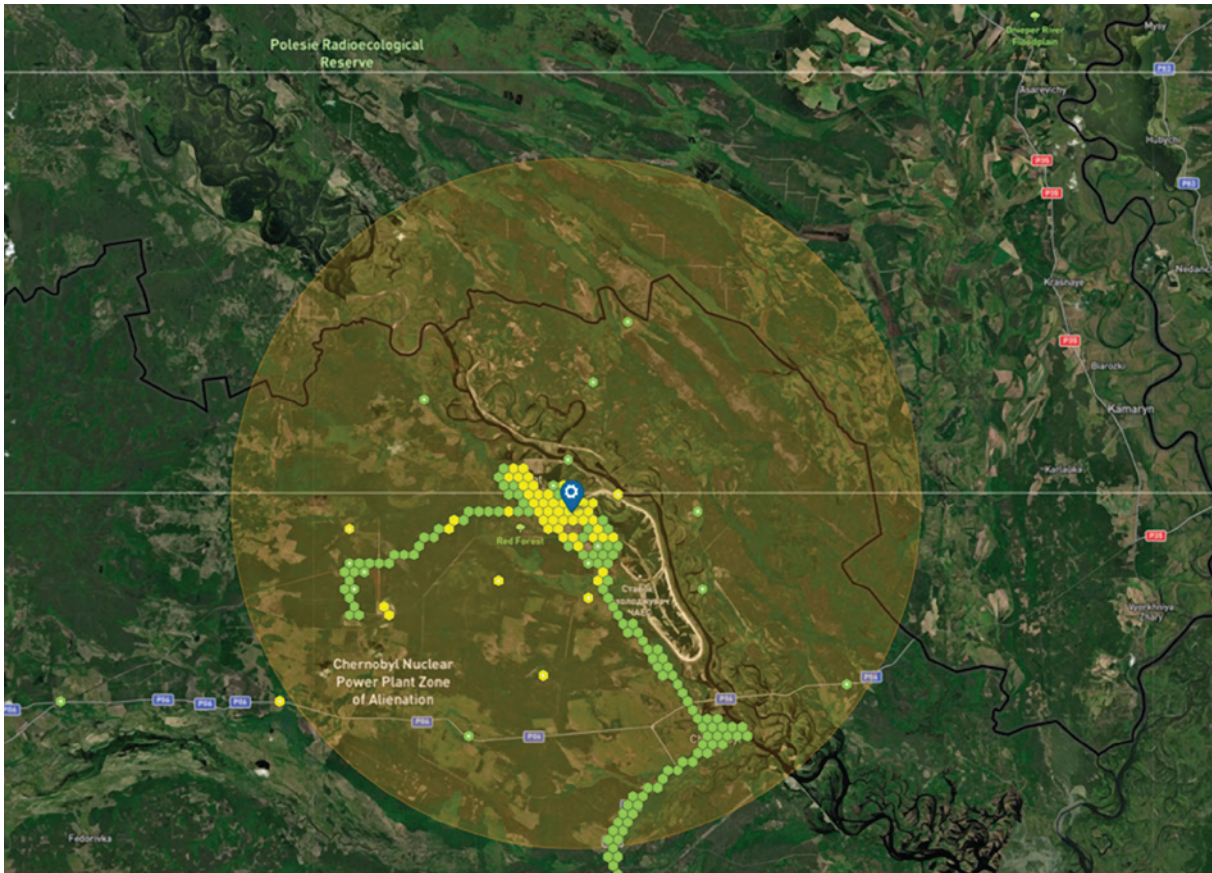
The ChNPP site

The ChNPP site and facilities in its Exclusion Zone were occupied by Russian troops for 35 days from 24 February 2022.

The occupation resulted in damage to infrastructure and physical protection systems, stressful and tiring conditions for staff, disrupted communications, and the destruction or theft of safety and security equipment in laboratories.



IAEA staff conducting a walkdown on the roof of the New Safe Confinement at ChNPP (Photo: IAEA)



Radiation monitoring data from the monitoring stations in the 20 km radius around the ChNPP site. Radiation levels are normal.

Walkdowns

Over 200 walkdowns have been conducted at each facility since the continued presence began in January 2023.

IAEA staff conducts walkdowns of the sites, chemistry laboratories, emergency diesel generators, unit transformers, main control rooms, turbine halls and other areas. The information collected and independently analysed during the continued presence is provided in the Director General's reports to the Board of Governors.

The IAEA teams continually present at the ChNPP site have conducted over 50 walkdowns

50+
radiation
monitoring
walkdowns

to check radiation levels within the site perimeter. Consequently, the IAEA is able to confirm that radiation levels at the site are normal.

The IAEA's overall assessment of nuclear safety and security

The KhNPP, the RNPP and the SUNPP continued to operate safely and securely despite the challenging circumstances imposed by the armed conflict, and the ChNPP site has not shown any significant deviation in nuclear safety or security as a result of the issues caused by the occupation of the site.

The armed conflict in Ukraine continues to result in frequent air raid alarms at these sites, exposing operating staff to increased stress and delays in planned maintenance activities.

The IAEA comprehensive programme of assistance

Donated equipment received by the RNPP on 11 October 2023. The donation comprised a dissolved oxygen analyser and sodium and gas analysers procured using an extrabudgetary contribution from Japan. (Photo: RNPP)

The IAEA has developed a comprehensive programme of assistance to address Ukraine's needs, encompassing in-person missions and other IAEA Support and Assistance Missions. The programme has expanded since the start of the armed conflict as the situation has evolved, and currently consists of the components presented below. It may also include rapid deployment of assistance, should needs arise. Each and every component of the programme of assistance is essential in addressing Ukraine's

needs in terms of maintaining nuclear safety and security and addressing any relevant risks and threats arising from the armed conflict that could affect human life, property and the environment.

All of the IAEA's activities under the comprehensive programme of assistance are based on the requests received from Ukraine and are implemented in close cooperation and coordination with Ukrainian authorities, IAEA Member States and various international organizations.

Delivery of equipment

Aim

To address the needs of various organizations in Ukraine in maintaining continued nuclear safety and security

Beneficiaries

Organizations in Ukraine with relevant responsibilities in nuclear and radiation safety, nuclear security, radiation monitoring and protection, radioactive waste management safety, and emergency preparedness and response

Medical assistance for operating staff at the NPPs in Ukraine

Aim

To enable operating personnel at the NPP sites in Ukraine to access the services they need to maintain their physical and mental health, and to conduct periodic assessments of their fitness for duty

Beneficiaries

Medical units at the KhNPP, the RNPP, the SUNPP and the ChNPP site; local hospitals in the towns hosting these NPPs; and the National Research Centre for Radiation Medicine, which is part of the National Academy of Medical Sciences of Ukraine

IAEA Support and Assistance Mission to the Kherson Oblast

Aim

To support Ukraine in managing the adverse impact of the flooding of the Kherson Oblast and other regions in the aftermath of the destruction of the Kakhovka dam

Beneficiaries

Organizations in Ukraine with relevant responsibilities in human and animal health, food and potable water safety, soil and water management, and assessment of the integrity of critical infrastructure for areas affected by the flooding

IAEA Support and Assistance Mission on the Safety and Security of Radioactive Sources

Aim

To assist Ukraine in maintaining a high level of radiation safety and nuclear security of radioactive sources at risk or potentially at risk due to the current armed conflict

Beneficiaries

Organizations in Ukraine with relevant responsibilities pertaining to the safety and security of radioactive sources and various facilities and activities that use, store or transport radioactive sources

Provision of remote assistance

Aim

To provide, as needed, externally based support in relation to safety and security assessments of nuclear installations, including radioactive waste management facilities, as well as activities involving radioactive sources

Beneficiaries

Organizations in Ukraine with relevant responsibilities in nuclear and radiation safety, nuclear security, radiation monitoring and protection, radioactive waste management safety and emergency preparedness and response

Costs associated with the provision of the IAEA comprehensive programme of assistance to Ukraine are secured from extrabudgetary resources from currently 30 Member States and the European Union.

Member States that have provided contributions

 Australia	 Austria	 Belgium	 Canada	 China	 Czech Republic
 Denmark	 Finland	 France	 Germany	 Greece	 Hungary
 Ireland	 Israel	 Italy	 Japan	 Korea, Republic of	 Malta
 Kingdom of the Netherlands	 New Zealand	 Norway	 Poland	 Romania	 Saudi Arabia
 Slovakia	 Spain	 Sweden	 Switzerland	 United Kingdom of Great Britain and Northern Ireland	 United States of America

Organizations that have provided funding


European
Union

The IAEA received 12 requests in total for assistance in the form of equipment across various components of the assistance programme. An overview of the deliverables provided under the various components of the assistance programme since the start of the armed conflict is provided below.



Radiometers delivered to the RNPP on 6 July 2023 and procured using an extrabudgetary contribution from the European Union. (Photo: RNPP)



Agency staff meeting the management of the Slavtych Hospital, which provides medical support and care for the operating staff at the ChNPP site, on 6 November 2023. (Photo: IAEA)



South Ukraine hospital receiving the digital colour Doppler ultrasound system on 25 July 2024. (Photo: IAEA)



Gamma spectrometer in use at SUNPP. This piece of equipment was procured by the Agency using an extrabudgetary contribution from Japan and was delivered on 13 February 2024. (Photo: SUNPP)

Deliveries to Ukraine

9 air
sampling
kits

600+ communication
systems
and devices

230
power
supply units



500+
mattresses



10 pieces of decontamination
equipment and supplies

24 non-radiation related
measurement instruments
and devices

200 radiation/contamination
monitoring devices

240 000+
iodine
thyroid
blocking
agents

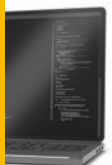
180 000+
items of PPE

100+
pieces of physical
protection
systems and
equipment



5 vehicles

150+
items of
IT equip.



2
meteorological
stations

1 000+ Personal dosimetry
systems and equipment
Spectrometers
Handheld radioisotope
identification devices

1
portable
ultrasound
system

**More than €10 million
of equipment**



80+
software
packages/
licenses

Next deliveries to Ukraine

5000+
personal dosimetry
systems and
equipment



40+ items of
monitoring and
patient care
equipment



200
first aid
supplies

1
mobile
laboratory



350+ items of
diagnostic
equipment



1 whole
body
counter

12 radiation
monitoring
devices

2 ambulances

2000 vaccines



40+
end user
organizations

14
spectrometers

Approximately €8 million of equipment



Safeguards in Ukraine



Ukraine acceded to the Treaty on the Non-Proliferation of Nuclear Weapons as a non-nuclear-weapon State in December 1994. It subsequently concluded a comprehensive safeguards agreement (CSA) with the IAEA, which entered into force in January 1998, and an additional protocol (AP) thereto, which entered into force in January 2006.

The Agency has continued to implement safeguards in Ukraine at 35 nuclear facilities and at more than a dozen locations outside facilities in accordance with the CSA and the AP and in line with annual implementation plans for Ukraine.

With the establishment of a continued presence of IAEA staff at the KhNPP, the RNPP, the SUNPP, the ZNPP and the ChNPP site, safeguards activities have been integrated into the IAEA Support and Assistance Missions to the extent possible. The IAEA teams' may include designated safeguards inspectors, depending on the activities planned for the rotation. Separate safeguards missions in the field are conducted, as needed, for activities that cannot be covered in the course of the IAEA Support and Assistance Missions.



IAEA safeguards inspector conducts verification activities at the ZNPP. (Photo: IAEA)

Since the start of the armed conflict in Ukraine on 24 February 2022, the IAEA has:

- Maintained continuity of knowledge over declared inventories of nuclear material through the acquisition of remotely transmitted data from its cameras, seals and unattended monitors;
- Performed 17 complementary access visits at multiple locations;
- Successfully conducted physical inventory verifications of declared nuclear material at 15 operating power reactors, seven fresh and spent fuel stores and two research facilities;
- Performed verifications of inter-unit spent fuel transfers at the KhNPP, the RNPP, and the SUNPP and of spent fuel transfers to the centralized spent fuel facility at the ChNPP site; and
- Installed, serviced and maintained the Agency safeguards systems that monitor the loading, conditioning and transfer of spent fuel from NPPs to dry storage at the ChNPP site.

The IAEA has also performed continuous acquisition and analyses of open source information and has analysed satellite imagery of nuclear installations in Ukraine. This has been essential for the IAEA in the preparation of its in-field verification activities, in particular at the ZNPP site.

Summary



1 September 2022 marked an unprecedented milestone: the start of the continued presence of IAEA staff at the ZNPP, which is on the front line of an armed conflict. The nuclear safety and security situation at the ZNPP remains difficult due to the ongoing armed conflict in Ukraine. Despite the challenges faced, the IAEA has maintained a continued, uninterrupted presence at the ZNPP for the past two years.

The continued presence of the IAEA staff at the ZNPP has been essential in assessing nuclear safety and security with the aim of preventing a nuclear accident. During the continued presence, IAEA staff have conducted walkdowns of the facility, performed independent radiation monitoring, followed up on reported events, and provided regular updates and reports based on their observations. Frequent updates have been provided to Member States and the public through press releases, reports to the Board of Governors and summary reports to keep all parties consistently informed.

The continued presence of IAEA staff at the ZNPP has been a substantial undertaking and demonstrates the IAEA's crucial role in providing support and assistance for the application of safety standards and nuclear security guidance. As highlighted in this report, the continued presence has contributed to the maintaining of nuclear safety, security and safeguards at the facility.

Challenges continue to be faced at the ZNPP in ensuring that sufficient cooling water is available, maintaining a stable connection to off site power, maintaining adequate staffing arrangements, implementing a comprehensive preventative maintenance plan, and ensuring a reliable supply chain. All of the Seven Pillars have been fully or partially compromised, and the IAEA assessments conducted to date demonstrate that the risk at the ZNPP remains high.

The IAEA's continued presence at the KhNPP, the RNPP, the SUNPP and the ChNPP site began in January 2023. The teams at these facilities continue to monitor and assess the situation against the Seven Pillars, to report on the impact of the armed conflict at the facilities, and to facilitate the provision of technical support and assistance in nuclear safety and security. The IAEA's safeguards activities have been integrated into its Support and Assistance Missions as much as possible. However, separate missions in the field are also conducted.

The Director General has led nine of these Support and Assistance Missions and has sustained continuous diplomatic efforts to support the nuclear safety and security of the nuclear facilities in Ukraine.

The IAEA continues to provide technical support and assistance to Ukraine through the comprehensive programme of assistance, which includes the delivery of nuclear safety- and security-related equipment, and the conduct of ad-hoc in-person missions for nuclear safety and security as well as medical assistance missions.

The IAEA will continue to:

- Provide Member States, international organizations and the public with regular and well documented information;
- Deliver technical support and assistance; and
- Work closely with Member States and international organizations to ensure effective coordination in the provision of assistance.

The ongoing commitment and close cooperation of Member States with the IAEA has been and continues to be essential to reduce the risk of a nuclear accident. The IAEA remains committed to providing its unwavering support to help ensure the safe and secure operation of nuclear facilities and activities using radioactive sources in Ukraine.

Catalogue for further reading

IAEA Statute



IAEA Safety Standards Series



IAEA Nuclear Security Series



IAEA Board of Governors resolution on the Safety, security and safeguards implications of the situation in Ukraine (document GOV/2022/17)



IAEA Director General's first Summary Report on Nuclear Safety, Security and Safeguards in Ukraine



IAEA Director General's second Summary Report on Nuclear Safety, Security and Safeguards in Ukraine



Summary Report by the Director General on Nuclear Safety, Security and Safeguards in Ukraine, February 2022 –February 2023



Nuclear Safety, Security and Safeguards in Ukraine (document GOV/2022/52)



Nuclear Safety, Security and Safeguards in Ukraine (document GOV/2022/66)



Nuclear Safety, Security and Safeguards in Ukraine (document GOV/2023/30)



Nuclear Safety, Security and Safeguards in Ukraine (document GOV/2023/44)



Nuclear Safety, Security and Safeguards in Ukraine (document GOV/2023/59)



Nuclear Safety, Security and Safeguards in Ukraine (document GOV/2024/9)



Nuclear Safety, Security and Safeguards in Ukraine (document GOV/2024/30)



Nuclear Safety, Security and Safeguards in Ukraine (IAEA webpage)



