



United Nations Situation Report: Crisis Response to the Partial Melt Down of Khmelnytskyi Nuclear Power Plant

Date: 28 February 2026

To: United Nations Delegates

Subject: Crisis Response to the Melt Down of Khmelnytskyi Nuclear Power Plant as a Result of Russian Missile Strikes to the Ukrainian Energy Grid

I. Introduction

This report addresses a critical and volatile crisis in Ukraine. The Khmelnytskyi Nuclear Power Plant lost power to the Ukrainian national energy grid at 4:47am local time on the 27th February. On-site diesel generators connected to Unit 1 malfunctioned at 12:12pm the same day, and Unit 1 was left with no cooling for over 24 hours. At 3:04pm local time on the 28th February Unit 1 went into meltdown. Unit 2 has remained powered by onsite diesel generators, although the situation remains unstable.

II. Incident Overview

Date of Incident: 27-28/2/2026

Location: Khmelnytskyi Nuclear Power Plant, Ukraine

Involved Parties:

- Ukraine
- Russian Federation
- The International Atomic Energy Association (IAEA)

III. Sequence of Events

- 1. Russia Strikes Ukraine's Energy Grid:** Russian missile strikes begin targeting the Ukrainian energy grid at 2:06am local time. The Rzeszów–Khmelnyskyi powerline is severely damaged at 2:56am, leaving it non-operational.
- 2. Khmelnyskyi Loses Connection to External Power:** Remaining external powerlines and substations are cut off from Khmelnyskyi at 4:47am local time. Repair works are unable to begin due to ongoing missile strikes.
- 3. Unit 1 Diesel Generators Malfunction:** Onsite diesel generators connected to Unit 1 suffer hardware malfunction due to conflagration following missile strikes. Fires are extinguished before Unit 2 generators suffer significant damage. Unit 1 is automatically reconnected to onsite common emergency generators at 6:13am local time.
- 4. Common Emergency Generators Fail:** Due to maintenance interruptions amid recent ongoing missile strikes in the area, the common emergency generators connected to Unit 1 run out of fuel at 12:12pm local time, leaving Unit 1 disconnected from all power. Damage to access routes and the risk of subsequent strikes delays the delivery of fuel.
- 5. Unit 1 Cooling System Becomes Non-Operational:** At 5:17pm local time the water cooling Unit 1 reaches boiling point and reserves run dangerously low. The reactor reaches unstable temperature levels. Maintenance staff remain unable to repair diesel generators due to ongoing missile strikes in the area.
- 6. Zirconium–Steam Reaction Begins in Unit 1:** Fuel rod cladding heats above 900 degrees Celsius. At 2:34am local time on the 28th of February, zirconium begins to react with water vapour producing hazardous levels of hydrogen. Heat buildup increases exponentially and damage to fuel begins.
- 7. Unit 1 Reactor Core Severely Damaged:** Fuel pellets begin to deform. Cladding fails allowing fission products to escape into reactor coolants. Hydrogen levels continue to rise. At 8:28am local time it becomes impossible to safely reconnect Unit 1 to a power source.
- 8. Unit 1 Enters Melt Down:** At 3:04pm local time on the 28th of February, Unit 1 of the Khmelnyskyi Nuclear Power Plant enters a state of meltdown. Molten fuel (corium) forms and infiltrates the lower reactor vessel head. Corium breaches the reactor vessel and falls into containment. Radioactive materials are released through a small weakness in the containment vessel.

9. **Current Status:** Pressure of corium and hydrogen within containment continues to rise, releasing further material into the atmosphere. Further damage to the containment vessel is probable unless cooling is safely restored. Water temperatures in spent fuel pools continue to rise without proper cooling, risking contamination.
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IV. Key Issues and Risks

1. **Local Impact:** Almost 500,000 civilians live within 100km of the Khmelnytskyi Nuclear Power Plant. Acute radiation risks are present for plant staff and emergency responders in the area. Heavy radioactive contamination of soil, rivers and groundwaters leaves surrounding land extremely hazardous.
 2. **National Repercussions:** Loss of a major power-source to the Ukrainian energy grid. Risk of agriculture and food contamination. Impact on public health will strain health services. Contamination of water systems leaves hundreds of thousands vulnerable to exposure.
 3. **Risk to Europe:** Prevailing winds are westwards. Poland, Romania, Hungary and Slovakia are exposed to potential radioactive fallout. Potential contamination of water across Europe. Trade and energy disruption are certain.
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V. Immediate Actions and Recommendations

1. **Immediate Restoration of Power to Khmelnytskyi Nuclear Power Plant:** Unit 2 remains reliant on onsite diesel generators. These generators contain enough fuel to last six days. Temperatures of spent fuel pools continue to rise and will reach dangerous levels in 3-5 days. The Rzeszów–Khmelnytskyi powerline is the most significant source of energy and has suffered extreme damage.
2. **Evacuation of Civilians and Temporary Ceasefire:** 500,000 civilians have been exposed to acute radiation. They must be safely evacuated and quarantined under a ceasefire. Medical aid is imperative to reduce long term health impacts.
3. **Containment of Remaining Radioactive Materials:** Contamination of soil and groundwater systems will spread across Ukraine and Europe unless contained. Risk to public health, infrastructure, agriculture and trade is high. It is essential to re-establish

cooling systems in Unit 1 to prevent damage to containment integrity and further release of radioactive material.

4. **Assessment of Local, National and Regional Exposure:** Prevailing westward winds leave Poland, Romania, Hungary and Slovakia at most risk of radiation exposure. Assessment of the necessary quarantines, export bans and monitoring systems necessary to mitigate impacts across Ukraine and Europe is essential.
 5. **Long Term Restoration of Ukrainian Energy Grid:** The Ukrainian energy grid is under significant strain due to Russian strikes. Further deals with neighbouring nations and the European Union to subsidise their national energy grid will mitigate the impact on civilian lives.
 6. **Investigation Into Russian Involvement and Potential Consequences:** The International Atomic Energy Association (IAEA) must play a leading role in the incident investigation. Legally binding nuclear protection zones in conflict must be established, along with expanded sanctions tied to nuclear endangerment.
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VI. Conclusion

The crisis in Ukraine, resulting from Russian missile strikes to the Ukrainian energy grid and the subsequent meltdown of the Khmelnytskyi Nuclear Power Plant, represents a grave threat to international security and nuclear safety in conflict zones. The United Nations must act swiftly to mitigate the effects of this disaster, protect civilian health, and ensure that international law is upheld. Diplomatic, military, and humanitarian efforts are needed to contain this situation and prevent further exposure in the region.

End of Report



Isabelle Jackson, Secretary-General