

INFORMATION REPORT

Consequences of the damage to the Kakhovka dam on the Zaporizhzhya nuclear power plant

Date : 07/06/2023

The Kakhovka dam, located downstream of the Zaporizhzhya power plant, was severely damaged on the night of June 5-6, 2023, leading to a significant drop in the level of the Dnieper River upstream of the dam. The plant is currently cooled by water pumped into specially designed on-site basins. There is no short-term risk to the plant.

The Zaporizhzhya nuclear power plant site is located on the left bank of the Dnieper at the Kakhovka reservoir, bounded downstream by the Kakhovka dam and hydropower plant and upstream by the Dnipro dam and hydropower plant. The partial destruction of the Kakhovka dam on the night of June 5-6, 2023, around 150 km south of the power plant, will lead to flooding downstream of the dam and a drop in the water level of the river near the nuclear power plant. There is no risk of flooding the power plant or its surroundings.

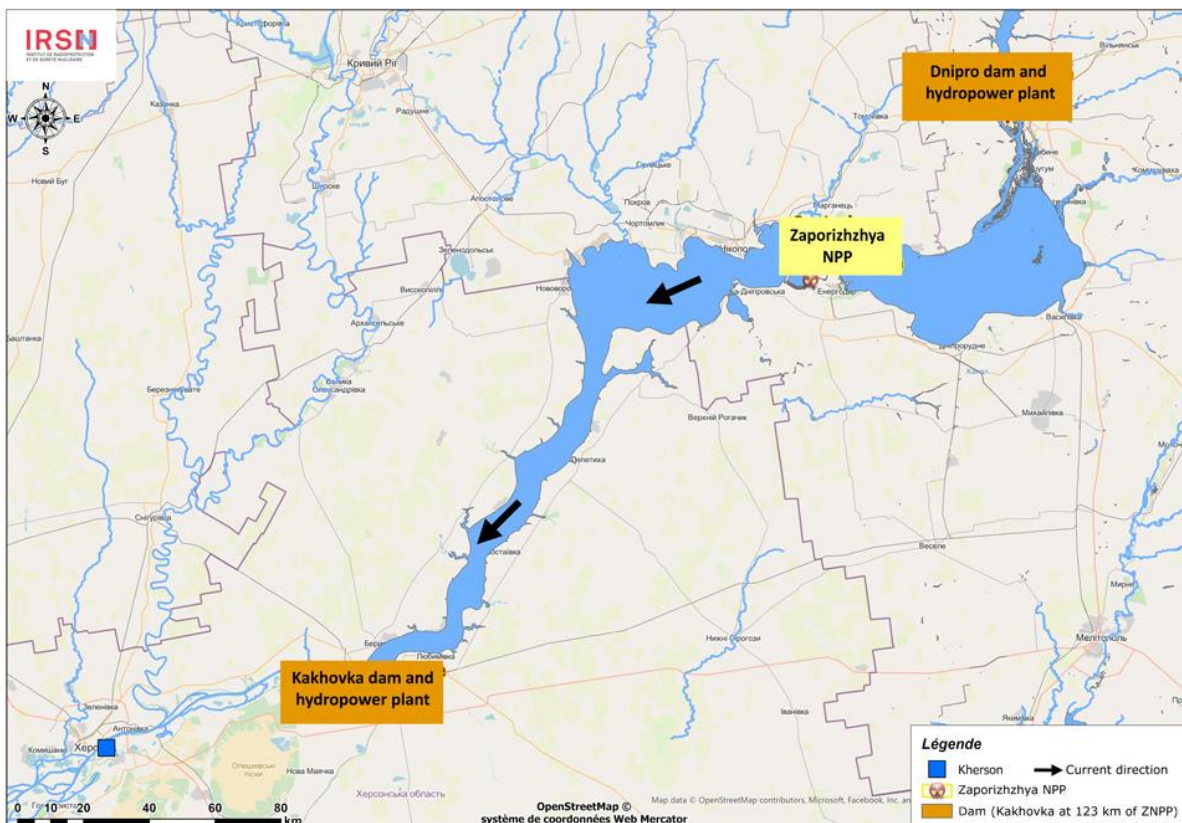


Figure 1 - Location of the Zaporizhzhya nuclear power plant

When the reactors are in operation, they are cooled by water pumped into a retention basin, isolated from the Dnieper, supplied by the Zaporizhzhya thermal power plant.

When the reactors are shut down, or in the event of an accident, cooling is provided by ponds equipped with sprinkler systems, known as spray ponds (Figure 2). As the plant's six reactors have been shut down for several months, the heat to be removed is limited, and the autonomy of these basins is therefore several weeks. Eventually, the spray ponds will need to be topped up to compensate for water lost through evaporation. Such top-ups can be made from the retention basin, which constitutes a very large water reserve (Figure 3).

A drop in the Dnieper's water level could lead to basin leakage, or even to the collapse of the surrounding dike, due to the pressure exerted by the water contained in the basin. As part of the post-Fukushima stress tests, the Ukrainian operator has estimated that the dike can withstand a Dnieper level of 10 m in the vicinity of the power plant. The stabilized level is determined by the position of the damage on the dam. This water level and the watertightness of the retention basin will be closely monitored over the coming days.

In the event of damage to the dike of the retention basin, pump trucks could be used to top up the spray ponds with the remaining water in the Dnieper.

Figure 2 - Spray ponds



Figure 3 - View of site

