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INSTITUT DE RADIOPROTECTION ET DE SÛRETÉ NUCLÉAIRE

INFORMATION REPORT

Situation of the Zaporizhzhya nuclear power plant in Ukraine after the shelling of August 5 and 6, 2022

Date : **2022/08/08**

On Friday, August 5, 2022, at 2:30 pm, the Zaporizhzhya nuclear power plant in Ukraine was subjected to shelling around a high-voltage 330 kV power line transformer. At that time, 3 reactors were in operation and 3 were shut down. The destruction led to the automatic shutdown of reactor n°3 and the start of its emergency power generators. These generators provide power to the reactor's cooling systems in the event of the loss of the plant's external power supply (cf. IRSN information report March 22, 2022[1]). The shelling also caused power outages in the town of Enerhodar, which is close to the plant.

A little later, on August 5, a second shelling damaged one of the nitrogen-oxygen stations near the radioactive effluent storage buildings. In normal operation, effluents from reactor circuits are treated and stored in liquid or gaseous form to allow their radioactive decay before release into the environment. On the reactors of this plant, nitrogen is used in particular by the gaseous effluent treatment system to inert tanks presenting a risk of hydrogen explosion[2]. In the short term, the supply of nitrogen to the gaseous effluent treatment systems is assured by reserve tanks.

On the evening of Saturday, August 6, 2022, a third shelling took place near the dry spent fuel storage facility, damaging walls, windows, and the roof of the facility, as well as three radiological monitoring sensors. The containers containing spent nuclear fuel assemblies were not damaged.

No radioactive release was observed by the operator on the site following these shelling. The available networks of measurements of radioactivity in the environment also showed no increase in radioactivity.

Actions to repair damaged equipment are necessary to restore the plant's lines of defense, especially at its external electrical sources.

[1] IRSN information report of March 22, 2022: Arrangements in the event of a total loss of external power supplies to the Zaporizhzhya power plant in Ukraine.

[2] Inerting consists in replacing the oxygen in the air with nitrogen.