

INFORMATION NOTE

Situation at the Chernobyl site

Date: 10 March 2022

On 9 March at 11.22am, the Ukrainian nuclear safety authority SNRIU informed IAEA that the external power supplies of the Chernobyl plant facilities had been cut off. The site's emergency generators would be supplying power to the facilities, with enough fuel for 48 hours.

IRSN presents below an assessment of the risks associated with the loss of external power supplies for the site's various facilities, including the loss of emergency power supply, which is a potential situation that could come about rapidly if power is not restored to the site because the generator fuel reserves run out.

Reactors

Reactors 1, 2 and 3 at the Chernobyl site have been shut down for over 20 years. All the fuel assemblies of these reactors have been transferred to the site's storage facility (see below). There is no risk of releases from these facilities, which are not backed up by diesel generators.

Reactor 4, which was damaged in 1986, was initially covered by a temporary sarcophagus as an emergency measure. Uncertainties concerning the structural resistance of this sarcophagus led to the construction of a containment structure (NSC for New Safe Confinement), which was completed in 2017 (250 m wide, 160 m long, 100 m high). The temporary sarcophagus is being dismantled. The NSC ventilation system is backed up by two dedicated generators. In the event of total loss of electrical power, facility containment will be provided solely by the static containment of the structure. The dismantling of the sarcophagus of the damaged reactor has probably been suspended due to the conflict, so this containment should be sufficient to prevent releases into the environment.

Spent fuel storage facility

The facility consists of a storage pool (ISF-1) with approximately 20,000 assemblies and a dry storage facility (ISF-2). Spent fuel elements are gradually transferred from the pool to ISF-2.

- **Underwater storage pool ISF 1**

The safety systems of this facility are backed up by two diesel generators with fuel reserves to last 48 hours. The studies carried out after the accident at the Fukushima Daiichi plant on the consequences of total loss of the pool cooling systems indicate a slow rise in pool water temperature to a temperature of around 60°C but no dewatering of the assemblies and therefore no radioactive releases into the environment.

- **ISF 2 dry storage facility**

To date, about 2,000 assemblies have been transferred from ISF-1 to ISF-2.

This facility does not present a risk in the event of total loss of electrical power, as the power removal from the fuel assemblies is completely passive.

Loss of the facility's control systems

Although the loss of power at the Chernobyl site does not have consequences that could lead to environmental releases, it does imply the loss of the facility's command-control systems. Thus, all the technical data used by the site's real-time monitoring (water level, temperature, radioactivity, etc.) and alarm systems will cease to be available; this could delay the reactions of personnel if an incident occurs on the facility. The loss of power would also mean the loss of lighting, heating and certain communication systems, resulting in deteriorated working conditions for personnel, who are already suffering from the stress of the current situation.