Western European
WENRA
Nuclear Regulators Association

The 23rd of March 2022

WENRA position on the safety situation of Zaporizhzhya NPP with regards to the partial loss of external power supply

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On March 16th, the Ukrainian Nuclear Safety Authority (SNRIU) informed the IAEA of the loss of three out of four 750 kV electrical power lines to Zaporizhzhya nuclear power plant (ZNPP) as a result of hostilities in the region. One of these lines was repaired on March 18th. During this short timeframe, the last 750 kV power line was still in operation, while the auxiliary 330 kV line was also damaged and unavailable for about 6 hours.

WENRA highlights that a fundamental safety function of nuclear power reactors is to ensure continuous cooling of the reactor cores and the spent fuel pools, which requires reliable and diverse sources of electrical power supply. In normal conditions, electricity is provided by an external grid. If the external grid is lost, electricity is produced by installed on-site capability, such as emergency diesel generators.

During the short timeframe between March 16th and 18th, a number of alternative means of providing the required power supplies to ZNPP were still available had a total loss of offsite power occurred, specifically:

- the option of switching to house-load operation (using one out of the six NPP units to provide electricity to the whole site);
- on-site emergency diesels generators; and
- ultimate mobile pump trucks and mobile diesel generators.

Given the situation, and based on the information currently available, WENRA formed a technical group[1] that has focused on assessing the safety level of ZNPP.

Based on this assessment, WENRA is satisfied that the cooling of the facility has always been maintained. Furthermore, the availability of all the alternative means gave confidence that, even if all external power supply sources would have been lost, the situation would not have presented an immediate safety concern.

However, since the war around the site can have an unexpected and additional consequences on the facility or its infrastructures at any time, WENRA considers that such a partial loss of external power supply, whilst hostilities continue, significantly weakens the robust electricity supply arrangements to the site that support the continued safety of ZNPP.

[1] This technical group was composed of experts from WENRA and some of their technical support organizations (National Radiation Protection Institute from Czech Republic and Institut de Radioprotection et de Sûreté Nucléaire from France). It included also experts from the Directorate General for Energy and the Joint Research Centre from the European Commission.

Hence, WENRA considers necessary that:

- the two damaged 750 kV power lines of ZNPP should be promptly repaired;
- the physical integrity of the electrical power supply lines of all four Ukrainian NPPs be guaranteed; and
- the integrity of supplies of fuel and other consumables or spare parts for the on-site emergency diesel generators of all four Ukrainian NPPs be guaranteed.

Finally, considering the current war in Ukraine and its effects on the Chornobyl site[2] and subsequently on Zaporizhzhya nuclear power plants, WENRA highlights that it is imperative to exercise the utmost restraint and vigilance to prevent any direct or indirect impact of military operations on the safety of all nuclear installations in the country.

[2] See WENRA statement of March 11th on the total loss of power supply at Chornobyl site