EURAD Workshop

Ukrainian experience from exercising radioactive waste management under exceptional conditions

16 October 2023

During the workshop Ukrainian regulator and technical support organisation presented their challenges to manage and provide regulatory oversight of nuclear infrastructures during war conditions. The workshop was announced on the EURAD webpage and 105+ persons registered for participation (see graph). The actual number of participants during the workshop was ~70. The workshop activities were divided into 2 parts, starting with four presentations made by Ukrainian partners of EURAD and followed up with a Q&A session.

The four presentations described the handling and relaxations of regulations due to war circumstances, the actual challenges experienced, lessons learned and the solutions applied. In the workshop, representatives from the Ukraine's nuclear regulatory body (SNRIU) and its Technical Support Organization (SSTC NRS), shared their experiences regarding:

## 1. Maintaining Safety Principles and Provisions in Wartime Conditions

The SNRIU, in collaboration with the SSTC NRS and with support from the Norwegian regulatory body (DSA), has developed approaches and procedures for regulating the safety of facilities and activities within the Chornobyl Exclusion Zone during wartime. The core of this approach is to require licensees to operate facilities in modes with minimal risk of emergencies and accidents while limiting authorized activities. Based on this, the scope of application of the safety principles and general provisions has been determined.

## 2. Handling Licensing Matters During and After Liberation by the Hostilities

After regaining control of the Chornobyl Exclusion Zone by Ukraine, licensees of facilities within the zone faced challenges complying with safety requirements due to factors such as a shortage of personnel and uncertainty regarding the safety of the facilities following the uncontrolled presence of occupying troops. In response, the regulatory body temporarily suspended licenses and established conditions for their reinstatement. Before license restoration, facility operators had to ensure the facilities were in a safe state, capable of conducting authorized activities, and underwent comprehensive safety inspections. The SNRIU reinstated licenses following a thorough state review conducted with the assistance of the SSTC NRS, which assessed the acceptability of facility safety levels and the operators' ability to ensure safe operations.

## 3. Lessons Learned from Emergency Preparedness and Response in Wartime Conditions

Based on the Ukrainian experience, most recommendations, regulations and guidelines on emergency preparedness and response cannot be applied in the context of wartime. The probable events cannot be classified according to INES due to limitations established in the application area of the document for wartime. Also, divisive criteria for preparedness and emergency stages, such as event class declaration, are unclear. All these problems became obvious for the experts of the SNRIU Information and Emergence Centre during an assessment of the consequences of a potential accident at the occupied Zaporizhzhia NPP. Currently, experts are working on adapting standard calculations and procedures to the war conditions. Depending on the available time resources, the application of the assessment approaches referring to both, preparedness and response stages, is reasonable. Preparedness for an emergency resulting from military attacks at an NPP requires more information and knowledge about the potential military threats and the facility's response to hostilities. However, a group of postulated reference events can be considered based on an expert's view, the possible type of impact at the NPP, the ongoing situation at the site, and its potential evolution.

Some take-away facts:

* Ukraine has 15 operating reactors (and 3 under decommissioning and the Chornobyl NPP site)
* Ukraine faced the situation in which facilities licensed for the management of higher activity wastes (inc. spent nuclear fuel stores, laboratories handling radioactive waste and radioactive sources, units of the Chornobyl NPP under decommissioning, and new safe confinement and shelter buildings), were outside the full control of Ukraine licensees, due to the military occupation. Licensees were unable to fully perform permitted activities in compliance with safety requirements.
* There is no global experience or international recommendations on safety regulation under similar conditions.
* The Ukrainian regulator (SNRIU) faced the task of ensuring state regulation of the specified facilities in the conditions that developed after the liberation of the Chornobyl Exclusion Zone from the occupiers and restoration of control over the facilities.
* With the support of the Norwegian Radiation and Nuclear Safety Authority (DSA), the recommended approach to state regulation of the safety of nuclear and radiation facilities and recommended procedure for restoring the level of safety of nuclear and radiation facilities have been developed.
* Recommendations were developed regarding the scope of application of the safety principles, provisions and requirements.