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Norwegian Radiation Protection Authority

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Ukrainian Regulatory Threat Assessment

The «Ukrainian Regulatory Threat Assessment» report was one of the first activities in the framework of the bilateral cooperation in nuclear and radiation safety between the State Nuclear Regulatory Inspectorate of Ukraine (SNRIU) and Norwegian Radiation Protection Authority (NRPA). The main objective was to perform a comprehensive analysis of existing threats and challenges affecting the activities of the SNRIU, as the main executive authority for nuclear and radiation safety in Ukraine.

Fig. From top left: Zaporizhzhya NPP, Rivne NPP , Khmelnitsky NPP , South Ukraine NPP, Research nuclear reactor VVR-M of the Nuclear Research Institute of the National Academy of Sciences of Ukraine, Neutron source of the Kharkov Institute of Physics and Technology, Chernobyl NPP solid radioactive waste treatment plant, Chernobyl NPP Site, Oleksandriv hydroelectric power station, Chernobyl NPP solid radioactive waste treatment plant , General layout of radioactive waste management facilities at the Vektor site , Khmelnitsky NPP unit 3 (source: SNRIU).

The «Regulatory Threat Assessment» (TAR) report was carried out by the SNRIU with active support from NRPA experts. The initiative was financed by the Ministry of Foreign Affairs through the Norwegian government Action Plan for Nuclear Safety. The document includes a comprehensive analysis of the SNRIU's activities, as the central executive authority responsible for nuclear and radiation safety of the public and the environment. The report was prepared to provide an assessment of the significant nuclear and radiation threats

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which require the most urgent improvements regarding their regulatory supervision.

«Threat» in case of this document, is defined as the potential to do harm as a result of lack of regulation or outdated regulation on radiation exposure of humans and biota. The report does not include a full risk analysis and is limited to an overall description of the situation in relevant area and identifies the problems where NRPA support to SNRIU can be the most effective.

Additionally, in areas where threats are recognized as most significant or threats were, least understood or least supervised, are addressed measures for their elimination or minimization. Measures include more detailed radiological and environmental impact assessments, and related risk assessments.

SNRIU activities in the light of TAR

SNRIU as regulatory body addresses several activities, ones included into TAR, are the following.

Improvement of nuclear power plant (NPP) operational safety

Nuclear power is a strategic topic for Ukraine. Current and projected contribution of nuclear power in Ukraine, according to SNRIU, comprises approximately 50% of the electricity produced and consumed in the country. In this light, effective and sustainable nuclear power is one of the necessary conditions to ensure national safety and security.

Based on the plans of Ukrainian Government for the long-term operation of nuclear power plants and the results of post-Fukushima stress tests, SNRIU as regulatory body, is one responsible for carrying out a comprehensive assessment of the operator's safety justification and control associated calculations along with the implementation of safety improvement measures.

Safety regulation in the construction of new nuclear installations

Safety regulation and compliance with nuclear legislation during the construction of new

Fig. Nuclear installations in Ukraine (Source: SNRIU).

installations in Ukraine, are among the main objectives for SNRIU activities. There is a need for continuous regulatory control over compliance of design and technical documentation with regulations, standards and rules on nuclear and radiation safety and for a proper safety level in implementation of the construction projects.

Emergency preparedness and response

Maintaining emergency preparedness and abilities to respond to nuclear and radiation accidents is one of the top priorities of the SNRIU and other central executive authorities, including the State Emergency Service of Ukraine, local government bodies, operating organization, etc. The importance of this topic is caused by both a high concentration of radiation and nuclear facilities in Ukraine, and escalation of social, political and economic situation in the country. Social and political instability increases threats related to terrorist acts, while economic factors lead to additional risks related to increased load on Ukrainian NPPs.

Improvement of safety in uranium ore mining and milling

The objective of Ukrainian state regulation in the field of uranium ore mining and milling is to ensure regulatory control over uranium ore processing, including termination of these activities and comprehensive assessment of radiation safety of existing and «legacy» uranium plants to provide radiation safety of personnel, the public and the environment against hazardous radiological factors during operation of uranium plants and during their liquidation, preservation and conversion.

Radioactive material transportation

Regulatory activities in radioactive material transportation are aimed at protecting people, property and the environment against radiation and preventing accidents and ensure regulatory compliance during the transport of nuclear fuel, radioactive sources and radioactive waste as well as limiting individual doses associated with transportation.

Radioactive waste management and fabrication and use of radiation sources.

The Ukrainian safety regulation in the field of radioactive waste management covers licensing and oversight of operation of the existing radioactive waste management facilities, safety enhancement, liquidation and reclamation of existing «legacy» radioactive waste disposal facilities, and construction of new radioactive waste management facilities (for waste disposal, long-term storage, processing).

The strategic objective for SNRIU in this area is to ensure proper safety of existing and new radioactive waste management facilities and to determine the capability of applicants and licensees to implement radioactive waste management activities in compliance with appropriate conditions and rules.

Findings of the TAR

Analysis carried out under project, revealed and identified the main threats to be eliminated and showed challenges for SNRIU to ensure effective regulatory functions.

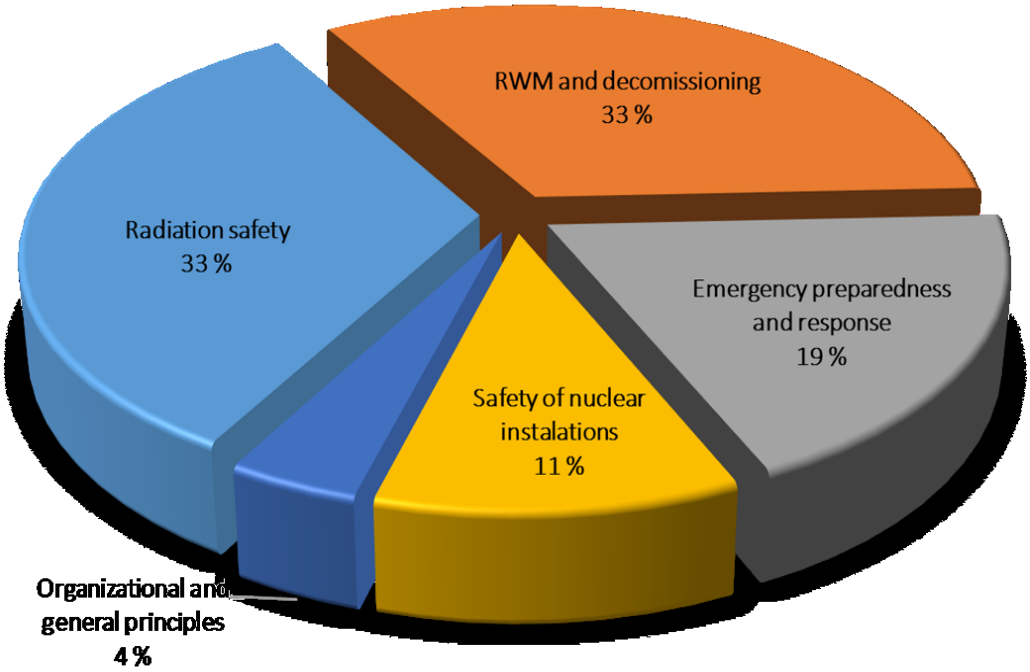

Fig. Structure of recognized threats in the areas of interest for SNRIU, according to the Regulatory Threat Assessment Report (TAR).

Altogether, the report describes 43 threats to be minimized or eliminated by development of new documents or including activities to be performed, 27 threats were classified as highest priority (have to be addressed within next two years) and 16 as high priority.

Common finding was outdated or unprecise regulatory and legal framework governing certain

activities. Thus, improvement of the Ukrainian legislation, including adaptation to the latest EU legislation, requires implementation of a number of measures, in particular:

- amend a number of legislative instruments,
- develop new regulatory documents,
- review regulatory documents in force including the former USSR documents that are still is many cases in force, taking into consideration international recommendations (IAEA Safety Standards).

Conclusion

The overall objective of NRPA's bilateral activities, is to reduce the safety and security related risk in Ukraine and Norway, as well as also to contribute to the safe management of nuclear legacy and technology applications through development of a robust and independent regulatory process supported by a broadly based and enhanced safety culture. This objective include capacity building through strengthening skills and competence of staff in the relevant regulatory authorities, as well as widening their access to experience and good practice in other countries.

The first step in regulatory cooperation between the NRPA and SNRIU was to focus on identifying priorities for enhanced regulatory documentation and on this basis to incorporate actions through joint regulatory projects in areas which need urgent intervention. TAR identified areas of interest and led to development of joint projects, aimed at preparing relevant drafts of the regulatory documents to solve burning issues of nuclear and radiation safety in Ukraine in the scope of SNRIU responsibility.

At the moment there are three projects aimed on development of 6 regulatory documents in areas of: waste management, uranium industry and using sources in medicine.

The following step is to work on the practical application of the documents developed in the frame of Norwegian- Ukrainian cooperation to provide effective and efficient regulatory supervision. The key features of this issue are planned to include the following.

- Regulation of the application of the principle of optimization to radiation hazards while also taking into account other physical and toxicity related hazards, so as to take a holistic view of the risks involved.
- Development and application of effective stakeholder engagement and communication strategies.
- Improvement and use of scientific information to support and build confidence in radiological and other assessments used to support regulatory decisions.
- Development of a common understanding of and willingness to apply the concept of safety culture.

It is necessary to mention that the success in all these areas among other, depends on coordinated actions with SNRIU and other Ukrainian regulatory authorities and governmental agencies.