



FEDERAL ENVIRONMENTAL, INDUSTRIAL AND NUCLEAR
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Today's regulatory challenges in the field of atomic energy use

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Today's challenges of the regulation in the field of atomic energy use

Increase in the number of facilities being at the final stages of life cycle;
Ensuring safe decommissioning of such facilities

Universal and transparent regulation

New nuclear facilities construction projects become global;
Need for integration and cooperation in the international environment

Improvement of safety level of the nuclear facilities



Decommissioning

Regulator receives a significant number of documents for safety justification required for issuing the license:

- Decommissioning program
 - Safety Analysis Report
- etc.

The challenge:

long period of operation of the facilities; in many cases information is provided only in paper; loss of information due to long periods of submission; drain of experts who hold the knowledge



Decommissioning

Need for new instruments to support managerial decision-making of regulators:

- Simulation modelling,
- Simulation of the processes and the decommissioning program

Expected results:

- Improving safety of decommissioning the nuclear facility
- Creating consolidated information area between the regulator and operator (performer of the activities)



Increase in the volumes of information accumulated and processed

During all stages of the life cycle, there is experience (information) being accumulated, including:

- Design – unique and generic technical solutions,
- Construction – accumulation and analysis of information in course of construction of facilities; “knowledge” database on issues and ways to solve them
- Operation – accumulation of information on operational parameters of equipment, continuous update of maintenance & repair schedules, quality assessment of equipment in operation, information on irregularities and measures to eliminate them and etc.

However, information being accumulated during the life cycle has a different value for the regulator and operator in the context of a certain controlled facility



Increase in the volumes of information accumulated and processed

Potential ways to resolve it:

All necessary information is referred to a “standardized interface” – an informational model of the controlled facility to enable independent analysis, within the general paradigm, based on the objectives and purposes of each party in the process of ensuring nuclear facility safe operation



Universal and transparent regulation

The challenge:

- Concealment or distortion of information concerning operation of nuclear facility
- Lack of a single requirements management system

Potential ways to resolve it:

- Establish a requirements management system
- Informational modelling as a common interface between the regulator and operator (a demand to standardize not the management system itself but the interface i.e. informational model and set of attributes necessary and sufficient to fulfil the function)



Universal and transparent regulation

Potential ways:

- Transparent management of requirements and configurations, transition to remote methods of safety monitoring of nuclear facilities
- New opportunities for more efficient adaption of technologies in importing states on the account of the accumulated knowledge database and standardized approaches to management and operation on the part of all members



Globalization

Challenge:

Globalization of projects on NF construction

Potential ways to resolve it:

Unified requirements to the informational modelling along with availability of an implemented system of management of legal and technical requirements will enable conducting cross-analyses of compliance of all mandatory conditions and requirements regardless of the project country-member



Improving safety of nuclear installations

Challenge:

Three mile island NPP, Chernobyl NPP, Fukushima NPP: these accidents, which took place within last decades, raise a challenge of constant improving safety of nuclear facilities safety level

Potential ways to resolve it:

A potential for receiving digital data with the use of informational models will help to change the approach to ensuring safety of nuclear facilities:

- Improve accuracy of the mathematic modelling of physics in various initial conditions
- Improve accuracy of forecasts and estimations of nuclear facility safety conditions
- Provide continuous training and maintain knowledge and skills of the operating personnel at a due level
- Accumulation of operational knowledge in databases, monitoring of risks of incidents and irregularities in work
- Provide a consolidated information area with the regulator



Thank you for your attention!



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