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# The Ways of Risk-Based Approach Development in Supervision over Accounting and Control of Nuclear Materials in the Russian Federation



# SUPERVISION IN THE RUSSIAN FEDERATION

In the Russian Federation supervision is determined by Federal Law № 170-FZ

Supervision includes:

- scheduled
- unscheduled
- constant

Constant supervision allows for presence of inspector on the nuclear facility at any time

Most of nuclear facilities are under constant supervision in the Russian Federation



# SUPERVISION IN THE RUSSIAN FEDERATION

Scheduled supervision is conducted according to a specific plan compiled by Rostekhnadzor

Unspecific inspections may be carried out on the basis of irregular situations

Constant supervision allows for presence of inspector on the nuclear facility at any time

In the Russian Federation most of nuclear facilities are under constant supervision



# RISK-BASED APPROACH (RBA) IN SUPERVISION

Models of risk assessment in RBA:

- Static model. Inspection frequency depends on risk levels
- Dynamic model. Inspection frequency depends on constant factor (risk levels) and security status

At the moment there exists an approved list of nuclear facilities under constant supervision

Security includes control and accounting of nuclear materials (MC&A)



# STATIC MODEL OF RISK ASSESSMENT

Risk in MC&A area is the possibility to violate the nuclear non-proliferation regime

To assess risk levels a differentiated approach is used

Differentiated approach consists of categorization of nuclear materials (1 – 4 category)

Differentiated approach is described in the following documents:

- INFCIRC/225/Rev.5
- NP-030-12

## COMPARING INFCIRC/225/Rev. 5 AND NP-030-12

In contrast NP-030-12 there is no distinction between metallic and non-metallic products in INFCIRC/225/Rev. 5; the quantity of nuclear materials in non-metallic product (high concentration and low concentration) is also irrelevant

INFCIRC/225/Rev.5 provides nuclear materials category for Pu with the concentration of Pu-238 less than 80 %, while NP-030-12 - with the concentration of Pu-238 less than 60 %

The category III (INFCIRC/225/Rev.5) is divided into category 3 and category 4(NP-030-12)

# DYNAMIC MODEL OF RISK ASSESSMENT

MC&A system status is determined by the detected violations and their significance. The lack of violations or their irrelevance will lead to fewer inspections when it comes to constant supervision or lower intensity when it comes to scheduled supervision

The main problem: to determine the significance of detected violations

SEC NRS determines the significance of detected violations as a part of violation analysis



# METHODOLOGY OF VIOLATION ASSESSMENT

Government Decree № 280 determines gross violations license conditions

Code of Administrative Offences determines gross violations of federal regulatory requirements

Methodology of Violation Assessment defines:

- Low-level (lest significant) violation
- Medium-level (significant) violation
- High-level (gross) violation



# METHODOLOGY OF VIOLATION ASSESSMENT

In order to evaluate the violation significance the following parameters are used:

- Assessment of violation nature
- Assessment of the extent of violation
- Identification of violation causes
- Assessment of potential consequences of violation

# METHODOLOGY OF VIOLATION ASSESSMENT

Based on violations significance analysis the MC&A system status:

- compliances with the regulatory documents (violations absence)
- does not fully comply with the regulatory documents (gross violation availability)
- does not comply with the regulatory documents (2 or more gross violation availability)

MC&A system status is measured by the amount of violations detected within a particular period of time



# CONCLUSION

- In the field of oversight activity the elements of static model of risk assessment are implemented as constant supervision and the categorization of nuclear facilities by the potential damage
- In the area of supervision over MC&A a particular approach was developed (methodology of violation assessment). It may be used in implementing the dynamic model of RBA

## CONCLUSION

- Considering that supervision over MC&A is only a part of federal supervision the using risk assessment models in practice may be only a part of RBA in the field of federal supervision in general
- Further implementing of RBA in regulatory activity in the field of nuclear energy may only be possible with the further improvement of the legislation



Thank you for your attention!

