



**Federal Environmental, Industrial and Nuclear
Supervision Service of Russia (Rostekhnadzor)**

**IMPLEMENTATION OF THE RISK INFORMED
APPROACH FOR THE DEVELOPMENT OF
REQUIREMENTS TO THE PHYSICAL
PROTECTION OF RADIOACTIVE MATERIAL
AND ASSOCIATED FACILITIES**

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**Vienna,
2020**



Rostekhnadzor

Rostekhnadzor is a federal executive body:

**exercising the functions
of shaping and
implementation
of the state policy**

AND

**establishing legal and
regulatory framework**

in the field of nuclear regulation

**Nuclear
Regulatory
authority**

**Competent
Authority**

**(FUNDAMENTAL
PRINCIPLE D)**

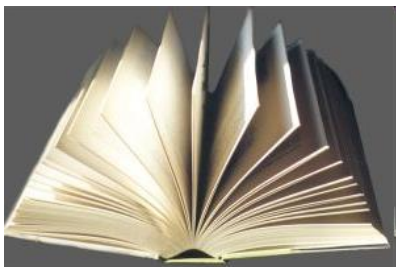
**Regulatory
Body**

(NSS 20)



Federal Law № 170-FZ «On the use of atomic energy» (continue)

Requirements



Federal Norms and Rules

Requirements for providing physical protection for radiation sources, storage points and radioactive substances are established in the **Federal Rules and Regulations** in the field of atomic energy (Article 50).

Ensuring of the physical protection of radioactive material, radiation sources in the Russian Federation is an essential condition for their usage.

Operation of storage facilities without insurance that the requirements for their physical protection are met is also prohibited.



Rostekhnadzor requirements for physical protection of radioactive material and associated facilities



Federal rules and regulations in the field of atomic energy

**“Regulations on physical protection of radioactive substances, radiation sources and storage facilities”
(NP-034)**





Evolution of Regulations on physical protection of radioactive substances, radiation sources and storage facilities

NP-034-01

The first edition of the “Regulations...” was approved in 2002

- *New International recommendations (Code of Conduct, RS-G-1.9, NSS 11...)*
- *New Rostekhnadzor’s methodology in safety of radioactive sources (NP-038-11, RB-042-07...)*
- *Wide experience in inspections and during licensing*
- *New terms in Regulations on physical protection of nuclear material and nuclear facilities*



NP-034-15

Approved by Rostekhnadzor’s Order № 280 dated July 21, 2015



Scope of the new Regulations

Objects for protection (potential adversaries' targets)

Radioactive sources
(sealed and unsealed)



Storage facilities
(except SF with NM)

Devices
with radioactive material

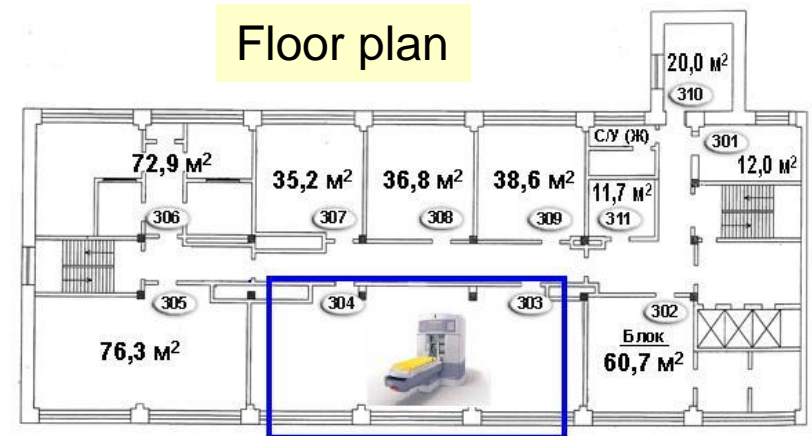
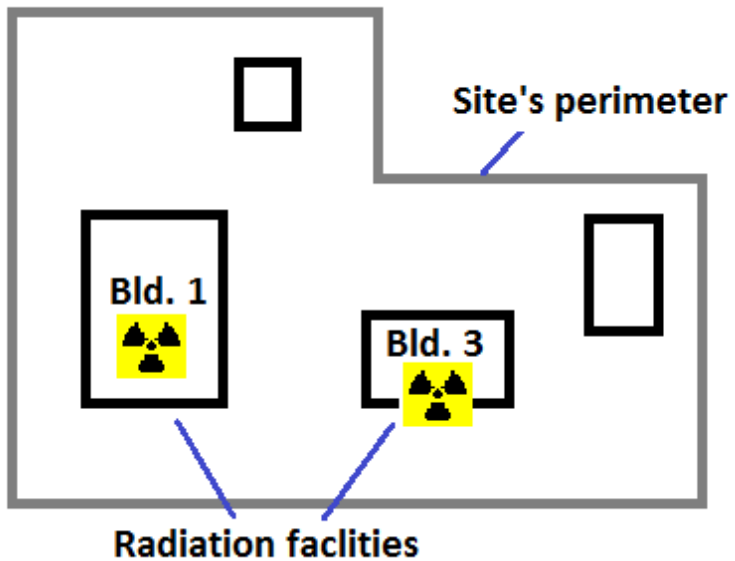




New term “Radiation facility”

Building

Room





IMPLEMENTATION OF THE RISK INFORMED APPROACH

Threats

**Radiation facilities
with RM**



Group of PP measures

Physical protection level



Physical protection levels

**Four physical protection levels of radiation facilities :
A (the highest), B, C, D (the lowest)**

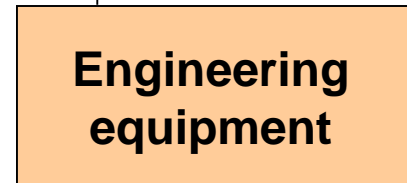
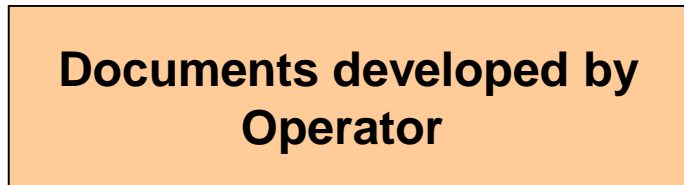
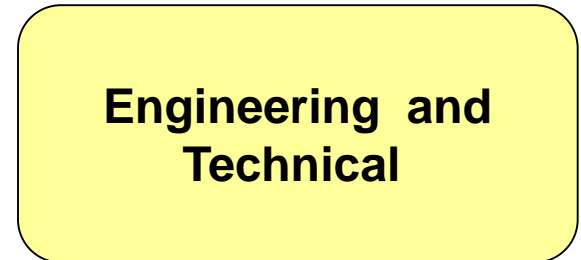
**a set of
requirements
for A**

**a set of
requirements
for D**

**Physical protection level
is established
for **each radiation facility**
at a Site**



Sets of physical protection measures = Levels



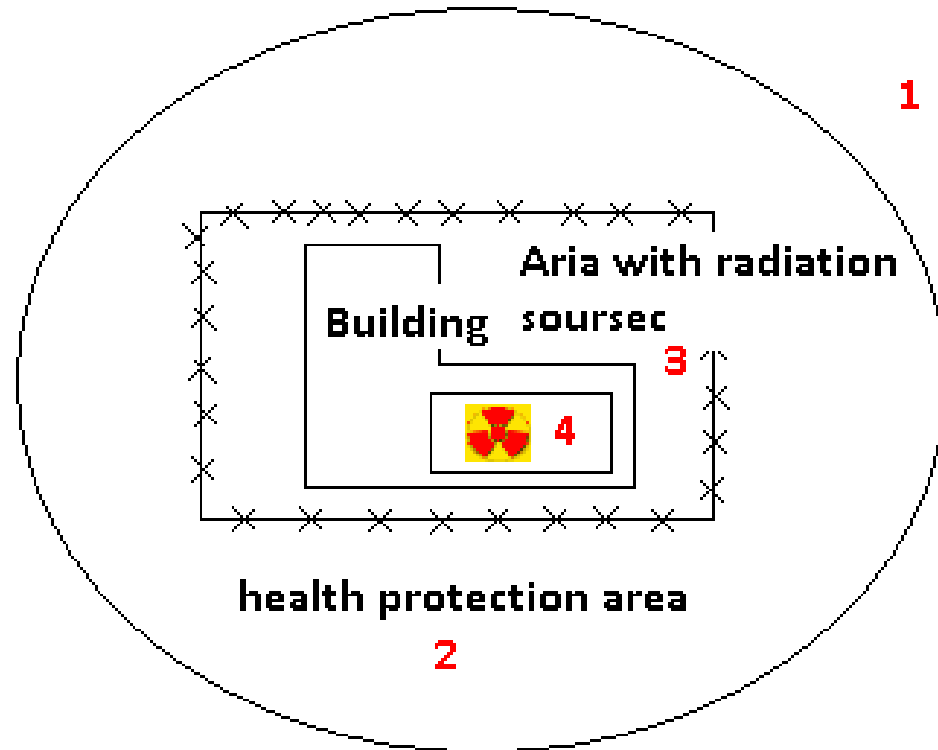
Fences
Doors
Barriers

Alarm sensors
CCTV
Access control devices



Establishment of Physical protection Level (1)

Step 1
Possible
consequences
of sabotage



To establish base physical protection level



Categories of consequences due to sabotage at Radiation Facility

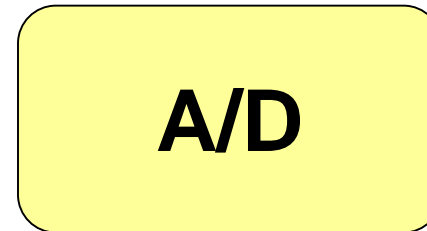
Scale of consequence due to sabotage by adversaries from Model of adversaries	Category of consequences due to sabotage at Radiation Facility
Potential for exposure of the public to radiation may require protective measures	1
Radiation exposure is limited to a health protection area	2
Radiation exposure is limited to the organization territory but not limited with rooms containing radiation sources, storage points, and radioactive substances	3
Radiation exposure is limited to rooms containing radiation sources and radioactive substances, as well as storage facilities	4



Establishment of Security Level (2)

Step 2

Possible
consequences
of unauthorized removal



Additional criteria

“Possibility or Impossibility of radioactive sources theft”

To increase base physical protection level



Establishment of Security Level (3)

category of sabotage consequences at a radiation facility	a reasonable conclusion of the possibility or impossibility of the radioactive sources theft	Physical Protection Level
III	theft of cat. 1 or cat. 2 is possible	B
	theft of cat. 1 or cat. 2 is impossible	C



Table with requirements

Required measures	Physical protection Level			
	A	B	C	D
Doors must be locked after work	+	+	+	+
“Two person rule” for access and working	+	-	-	-

- **Administrative measures**
- **Engineering and Technical measures**
- **Physical protection personnel**



Administrative measures. General requirements.

- The list of radiation facilities at the Site should be describe in separate document;
- Document with threats and possible adversaries descriptions (“Adversaries Model”);
- A set of documents to justify establishment of Security Levels;
- The person responsible for physical protection at the Site shall be nominated;
- Special security measures should be applied by personnel during work-time;
- Special journal to registration access to rooms and buildings’ keys is used;
- Administrative control over implementation of the PP requirements;
- Staff education;
- etc.



Engineering and Technical measures. Level D general requirements

- Rooms (places) where radioactive material is located have firm walls to delay adversaries;
- A special construction should be used to protect installation (devices) with radioactive sources against unauthorized removal of radioactive element;
- Doors to the rooms (buildings) with radioactive sources and radioactive facilities (devices) should be locked up and sealed up when work is finished.



RECOMMENDATIONS ON SECURITY OF RADIOACTIVE MATERIAL AND ASSOCIATED FACILITIES

Supporting of Rostekhnadzor Staff



- A standard program for inspection at radiation facilities
- Textbook on physical protection of radioactive material and associated facilities inspection

Recommendations for Operators



- Recommendations on the structure and content of documents developed at a site for physical protection of radioactive sources, radioactive devices and storage facilities
- Assessment of the physical protection system at a site with radiation facilities
- Recommendations on the security measures for portable radioactive devices

Thank you for attention!

Questions?