

On approval of the Rules for the physical protection of nuclear materials and nuclear installations

Unofficial translation

Order of the Minister of Energy of the Republic of Kazakhstan dated February 8, 2016 No. 40 . Registered with the Ministry of Justice of the Republic of Kazakhstan on March 16, 2016 No. 13498.

Unofficial translation

In accordance with subparagraph 6) of Article 6 of the Law of the Republic of Kazakhstan dated January 12, 2016 “On the Use of Nuclear Energy” **I HEREBY ORDER:**

1. To approve the attached Rules for the Physical Protection of Nuclear Materials and Nuclear Installations.

2. The Committee for Atomic and Energy Supervision and Control of the Ministry of Energy of the Republic of Kazakhstan, in the manner prescribed by the legislation of the Republic of Kazakhstan, shall:

1) ensure state registration of this order in the Ministry of Justice of the Republic of Kazakhstan;

2) within ten calendar days after the state registration of this order with the Ministry of Justice of the Republic of Kazakhstan, send a copy hereof to the official publication in periodicals and to the legal information system "Adilet", as well as to the Republican State Enterprise on the Right of Economic Management "Republican Center of Legal Information" of the Ministry of Justice of the Republic of Kazakhstan for inclusion in the Reference Control Bank of Regulatory Legal Acts of the Republic of Kazakhstan;

3) ensure placement of this order on the official Internet resource of the Ministry of Energy of the Republic of Kazakhstan and the intranet portal of government bodies;

4) within ten working days after the state registration of this order with the Ministry of Justice of the Republic of Kazakhstan, submit to the Department of Legal Services of the Ministry of Energy of the Republic of Kazakhstan the information on the implementation of measures provided for in subparagraphs 2) and 3) of this paragraph.

3. Control over the execution of this order shall be assigned to the supervising Vice Minister of Energy of the Republic of Kazakhstan.

4. This order shall come into effect upon expiry of ten calendar days after the day of its first official publication.

*Minister of Energy of
the Republic of Kazakhstan*

V. Shkolnik

“AGREED”

Minister for Investment and
Development of the
Republic of Kazakhstan

A. Issekeshev

February 11, 2016

“AGREED”

Minister of Internal Affairs of the
Republic of Kazakhstan

K. Kassymov

February 19, 2016

“AGREED”

Chairman of the Committee of National
Security of the Republic of Kazakhstan

V. Zhumakanov

February 18, 2016

Approved by order
of the Minister of Energy of the
Republic of Kazakhstan
dated February 8, 2016 No. 40

Rules for the physical protection of nuclear materials and nuclear installations

Footnote. The Rules - as amended by order No. 247 of the acting Minister of Energy of the Republic of Kazakhstan dated 29.07.2021 (shall be enforced ten calendar days after the date of its first official publication).

Chapter 1. General provisions

1. These Rules for the physical protection of nuclear materials and nuclear installations (hereinafter - the Rules) have been developed in accordance with subparagraph 6) of Article 6 of the Law of the Republic of Kazakhstan "On the use of nuclear energy" (hereinafter - the Law) and establish the procedure for the physical protection of nuclear materials and nuclear installations.

2. These Rules shall apply to legal entities handling nuclear materials, natural uranium that is in their use and (or) in storage and (or) operating nuclear installations on the territory of the Republic of Kazakhstan.

The following terms and definitions shall apply in these Rules:

1) information collection and processing system - a system intended for centralized collection and analysis of data, assembling of physical protection subsystems into a single

integrated physical protection system in order to display and (or) transmit information in the required form and obtain an effective function of managing the system as a whole or a separate subsystem in particular;

2) information security system - a set of organizational, technical, technological and other means, methods and measures that reduce vulnerability of information about the physical protection system and its subsystems, preventing unauthorized access to such information, its leakage or loss;

3) detection tool - a technical tool designed to automatically issue a signal in case of unauthorized action in the coverage area of this tool;

4) critical area- an area located in the interior zone, containing equipment, systems or devices, or nuclear materials, sabotage of which can directly or indirectly lead to serious radiological consequences. The interior zone may have several critical areas;

5) the authorized body in the nuclear energy use (hereinafter - the authorized body) - the central executive body exercising management in the use of atomic energy;

6) response - implementation of a set of measures to suppress the actions of the offender (offenders) and eliminate their consequences;

7) the principle of two (three) persons - the principle of group work (including opening and placing of premises under protection), based on the requirement for the simultaneous presence at the workplace or in one room of at least two (three) persons to reduce the possibility of committing unauthorized actions;

8) situation assessment - determination of the reasons of an alarm signal issued by the detection tool;

9) operational environment - a set of circumstances and conditions for countering unauthorized actions of offenders;

10) local design threat - a document developed by the operating organization that describes the signs and characteristics of potential internal offenders and (or) external offenders who can attempt unauthorized seizure or sabotage, to counter which a physical protection system is created and evaluated;

11) engineering barriers - artificial obstacles and barriers, put up to impede the progress and maneuver of offenders, provide security and response forces with favorable conditions for blocking and detaining them, limiting the impact of animals and people on the linear part of the technical means of physical protection and exclusion zones;

12) security and response forces - units of state departments stationed on the territory of a nuclear facility or outside it, equipped and trained to counter an attempted unauthorized seizure or act of sabotage, and also non-departmental security units that perform such functions subject to existing licenses;

13) security post - a fixed place and (or) a terrain section where the security and response forces perform their functional duties;

- 14) access - permission for passage (passing), stay, performance of work in a protected area, receipt or familiarization with certain documents and information;
- 15) access delay - an element of the physical protection system, intended to increase penetration (advance) time of the intruder at the entrance (entry) and (or) exit (exit) from the protected area or of carriage (transportation) means;
- 16) central control point - the workplace of the physical protection systems operator, which provides full and continuous monitoring of alarms, evaluation of signals and maintaining communication with the security and response forces, management of the facility ;
- 17) vulnerability analysis - the process of identifying vulnerabilities of a nuclear facility, a and (or) handling enterprise, technological processes for the use and storage of nuclear materials, based on the accepted design threat, as well as determining probable methods for realization of threats;
- 18) self-protection - a set of organizational and technical measures conducted during working hours by the operating organization's personnel in order to exclude unauthorized access to guarded premises;
- 19) operating organization - a legal entity handling nuclear energy facilities;
- 20) nuclear facility of the operating organization (hereinafter -the nuclear facility) - a territory protected by security and response forces, on which nuclear materials are used or stored and (or) nuclear installations are located;
- 21) peripheral devices - remote technical means of physical protection;
- 22) admission - a permit issued in accordance with the established procedure for passage (passing) and stay in a protected area, carrying out certain work, obtaining certain documents and information or familiarization with them;
- 23) unauthorized action - committing or attempting to commit interference, sabotage, unauthorized removal of nuclear material, natural uranium, unauthorized access, carrying (transportation) of prohibited items, disabling of physical protection means;
- 24) unauthorized seizure - theft or other illegal seizure of nuclear material, natural uranium;
- 25) unauthorized access - access without a documented right to it;
- 26) categorized buildings, structures and premises - buildings, structures and premises with limited access, unauthorized actions in respect of which may lead to radiological consequences;
- 27) natural uranium - uranium containing in mass about 99.28% of uranium isotope -238, about 0.71% of uranium-235 isotope and about 0.01% of uranium-234 isotope;
- 28) offender - a person who has committed or is attempting to commit an unauthorized action, as well as a person assisting him in it;

29) neutralization of the offender - implementation of a set of actions of the physical protection system in relation to the offender, which deprive him of the opportunity to achieve his goals;

30) telecommunications system - a set of cable facilities and line-cable structures intended to ensure reliable exchange of information between systems that are part of the physical protection system;

31) performance evaluation - the process of analyzing the efficacy of a particular physical protection system as applied to design and local design threats;

32) physical protection - a unified system of organizational and technical measures to prevent unauthorized access to a nuclear facility;

33) physical protection personnel - persons whose job responsibilities include the performance of functions to ensure physical protection;

34) physical protection regime - a regime that includes legislative and regulatory frameworks governing the provision of physical protection of nuclear materials and nuclear installations; institutions and organizations responsible for implementation of the legislative and regulatory framework; as well as physical protection systems for nuclear installations, nuclear materials and nuclear materials transportation means;

35) a complex of physical protection technical means - a set of functionally related technical means of physical protection and systems based on them, united by a common task to ensure physical protection;

36) technical means of physical protection - structurally complete devices, performing independent hardware and software functions that are part of the physical protection system;

37) physical barrier - a protective engineering structure and (or) a means that provides access delay and supplements access control measures, also solving problems both independently and in conjunction with other components of the complex of engineering physical protection means;

38) functional tests - a check to determine that the physical protection measures and the physical protection system are provided and operate in accordance with the design, are adequate for the expected natural conditions, industrial environment and the situation in case of a threat, and comply with the established operational requirements;

39) internal offender - a person who has authorized access to nuclear materials and (or) nuclear installations, a natural uranium producing and (or) handling enterprise, who may attempt unauthorized seizure of nuclear materials, natural uranium or sabotage or assist an external offender in taking such actions;

40) a system for detecting carrying (transporting) of nuclear materials, metals, explosives - a set of technical means designed to detect unauthorized carrying (removal) and (or) smuggling in and (or) out the prohibited items and substances;

41) category of nuclear material - a characteristic of nuclear material in terms of its significance in the application of physical protection measures;

42) nuclear security plan - a document that establishes and describes the elements of the physical protection system, the system of managing organizational, technical components and procedures for the physical protection of the operating organization's nuclear facilities;

43) event related to nuclear security - an event that is assessed as having consequences for physical protection.

Other definitions used in these Rules shall be applied in accordance with the Law and the Code of the Republic of Kazakhstan "On Administrative Infractions".

Chapter 2. Procedure for the physical protection of nuclear materials and nuclear installations

3. Physical protection of nuclear materials, nuclear installations, natural 1 uranium producing and (or) handling enterprises shall be provided by the operating organization.

4. During the construction of a new nuclear installation, a natural 1 uranium producing and (or) handling enterprise, the provision of physical protection shall be taken into account when choosing a site and at the design stage.

5. The operating organization shall develop and apply the means and procedures for conducting assessments, including checking of the functioning, as well as maintaining operability of the physical protection system.

6. The operating organization shall take the necessary measures to protect information, the unauthorized disclosure of which could lead to a threat to nuclear security. It shall conduct procedures to limit access to such information, allowing it only to those persons who need this information to perform their official duties.

7. The operating organization shall take the necessary measures to ensure protection of computerized systems used to provide physical protection, accounting and control of nuclear materials, nuclear and radiation safety.

Paragraph 1. Local design threat

8. A local design threat shall be developed by the operating organization of a nuclear installation and reviewed at least 1 (one) time in 5 (five) years, or immediately if unforeseen threats to nuclear security arise.

9. When developing a local design threat by the operating organization, special attention shall be paid to insiders who can use their access rights, as well as their powers and knowledge for bypassing special elements of physical protection or other foreseen measures, such as security procedures.

10. The operating organization shall ensure the maintenance of physical protection systems, as well as measures for accounting and control of nuclear materials, in order to deter and detect the theft of nuclear material by an insider committed over a long time stretch.

Paragraph 2. System and measures of physical protection of nuclear materials and nuclear installations based on risk assessment

11. To ensure physical protection of nuclear materials and nuclear installations, the natural uranium producing and (or) handling enterprises, the operating organization shall ensure limitation and retention of the risks of unauthorized removal and sabotage through risk management, threat assessment and potential consequences of malicious actions.

12. Risk management shall be carried out by:

- 1) reducing threat through deterrence provided by strong physical protection measures and through preservation of classified information;
- 2) increasing the physical protection system efficacy through the use of defense in-depth;
- 3) reducing potential consequences of malicious acts by changing specific contributing factors, the amount and type of nuclear materials and installation design.

13. In determining physical protection requirements, account shall be taken of the results of the threat assessment, the relative attractiveness and nature of the nuclear material, and possible consequences of unauthorized removal of nuclear material or subversion of nuclear material or nuclear facilities.

14. A graded approach shall be applied to provide higher protection levels against events that could lead to more serious consequences.

15. To each threat its own risk level and protection level shall be applied, which is acceptable in each specific case.

16. Measures of physical protection against unauthorized removal shall be determined in accordance with the category of nuclear material. For protection against subversive actions, limits of unacceptable radiological consequences are established to determine the appropriate physical protection level, taking into account existing nuclear and radiation safety measures.

17. The protection levels defined by these Rules are based on the nuclear material category. The operating organization shall categorize its nuclear material in accordance with Appendix 1 to these Rules.

18. The operating organization shall perform analysis of each nuclear installation to determine the possibility of unacceptable radiological consequences in the event of an act of sabotage, regardless of the impact of physical protection or mitigation measures.

19. Levels of protection against sabotage shall be based on the definition of two thresholds: a low limit for unacceptable radiological consequences and a high limit for unacceptable radiological consequences that are serious radiological consequences.

20. The operating organization shall establish physical protection levels for all its nuclear materials, taking into account the quantity and characteristics of nuclear material, its location at the nuclear facility.

21. The operating organization shall implement protection measures against sabotage in accordance with the requirements of these Rules.

22. Physical protection requirements are based on the principle of defense in-depth and protection methods (structural, engineering, human and organizational) that an intruder needs

to overcome or circumvent in order to achieve his goals. The concept of physical protection provides for a combination of devices and procedures that ensure nuclear security, including the organization of the work of security and response forces, performance of their duties, and design elements of the installation, including their layout.

23. For each physical protection function - detection, situation assessment, penetration (advance) delay, response and intruder delay - the principle of defense in-depth shall be used and a graded approach is applied to ensure adequate protection.

24. When implementing the principle of defense in- depth, the ability of the physical protection system and the system of accounting and control of nuclear materials to provide protection against internal offenders and external threats shall be taken into account.

Paragraph 3. Access and site security regimes

25. The operating organization, together with the leadership of the security and response forces shall establish access and site security regimes.

26. The access and site security regimes of nuclear installations shall be organized in accordance with subparagraph 1) of paragraph 5 of the Requirements for the engineering and technical resistance of objects subject to state protection, approved by the Resolution of the Government of the Republic of Kazakhstan dated October 7, 2011 No. 1151 “Some issues of objects subject to state protection”.

27. Access control shall be directly performed by the security and response forces of the nuclear facility.

28. The organization and control over the implementation of access control procedures, as well as site security regime, in terms of the placing on guard and removal from guard of categorized and sensitive premises, buildings and structures, shall be assigned to the unit of physical protection of nuclear materials and nuclear installations.

29. The organization and control of implementation of the site security regime, as well as development of forms, passes and seals for access regime at nuclear installations, shall be assigned to the unit for the state secrets protection.

30. The organization of access and site security regimes shall concern all personnel of the operating organization, third-party organizations located on its territory, as well as for business travelers, visitors, security and response forces and specially appointed representatives of state supervisory authorities, financial and tax authorities, internal affairs and other law enforcement bodies and special services, energy sales organizations and other organizations directly related to the maintenance of the operating organization.

Paragraph 4. Nuclear security plan

31. The operating organization shall develop and approve a plan for ensuring nuclear security, as well as the necessary documentation developed by nuclear facilities in accordance with the List of documentation developed by nuclear facilities in Appendix 2 to these Rules.

32. The nuclear security plan for nuclear installations shall be based on design threat, and include sections on development, evaluation, implementation and maintenance of the physical protection system, as well as the emergency response plan.

33. The operating organization shall regularly review the nuclear security plan and make changes in accordance with the current operating conditions and existing physical protection system. Before making changes, the operating organization shall submit amendments to the nuclear security plan to the authorized body for consideration and approval.

Paragraph 5. Reporting a nuclear security event

34. In case of non-compliance with the requirements of these Rules, the operating organization shall:

- 1) take immediate action to remedy the non-compliance or failure;
- 2) notify the authorized body within 12 (twelve) hours of such an event;
- 3) within 72 (seventy-two) hours, conduct an investigation and determine the causes, circumstances and consequences;
- 4) within 5 (five) working days, report to the authorized body the reasons for non-compliance or failure, the circumstances and consequences, and also corrective measures taken or to be taken.

35. In case of an event associated with an attempt or actual unauthorized access, unauthorized seizure or sabotage, the operating organization shall:

- 1) take immediate action to remedy the situation;
- 2) within 1 (one) hour notify the authorized body, as well as other state bodies according to the emergency response plan;
- 3) within 72 (seventy-two) hours, investigate the event, its causes, circumstances and consequences;
- 4) within 5 (five) working days, report to the authorized body the reasons for non-compliance or failure, the circumstances and consequences, and also corrective measures taken or to be taken.

Paragraph 6. Requirements for physical protection against unauthorized removal of nuclear materials during their use and storage

36. The operating organization shall ensure detection of unauthorized entry into the protected area and appropriate actions of the security and (or) response forces in response to a nuclear security event.

37. The protected area perimeter shall be equipped with a physical barrier, means of intrusion detection and situation assessment to detect unauthorized access. Physical protection measures shall be designed to give time to evaluate the cause of an alarm and to provide sufficient delay for an adequate response under all operating conditions. The number of checkpoints (hereinafter - checkpoints) that control the access of personnel and other persons, as well as vehicles to the protected area, shall be limited to the required minimum.

38. Barriers to obstruct the passage of vehicles shall be installed at an appropriate distance from the protected area to prevent unauthorized entry of vehicles specified in the design threat, which can be used by an offender to commit a malicious act. Protective measures shall also be considered against any airborne threat identified in the design threat to the operating organization.

39. The interior area shall have marked boundaries, shall be located in premises and structures, whose elements of building structures and equipment, including doors, floor, ceiling, constitute a physical barrier of equal reliability. Access control and recording measures shall be applied to the interior area, including technical means of access control and recording. Additional procedures for the admission of personnel and other persons shall apply to the interior area compared to the protected area.

40. If it is not possible to equip the interior area of a nuclear installation in accordance with the technical strength requirements, a perimeter with additional physical barriers, security systems, video surveillance, access control and management, entrance gates and a local control point shall be additionally installed. The requirements for a local control point shall be similar to those for a central control point.

41. The number of access points (passages) to the interior and critical areas shall be limited to the minimum necessary. All points of possible access shall be equipped with an alarm and put under protection.

42. The critical area shall provide an additional line of defense to the interior and protected area for detection, access control, and delay of intrusion (advance) preventing unauthorized removal. Critical areas shall be put under protection and equipped with an alarm in case of absence of personnel in them.

43. The critical area shall provide delay, ensuring a timely and adequate response in the event of unauthorized removal. Delay measures shall envisage the potential opportunities of internal and external offenders, with a balanced consideration of all possible penetration points.

44. The operating organization shall make sure that only authorized persons have access to the interior and critical area. Efficient access control measures shall be applied to provide detection and prevention of unauthorized access. The number of authorized persons entering the interior and critical areas shall be limited to the necessary minimum.

45. Persons entering the interior area shall be checked and, if necessary, searched by security and response forces. Passes or identification cards in the interior area shall be worn conspicuously.

46. The operating organization shall keep a record of all persons who have access to keys, key cards and (or) other systems or have received them for use, including computer systems that control access to nuclear materials.

47. The operating organization shall protect the technical means and procedures for access control, such as keys and computerized lists of authorized persons, from manipulation and falsification or other form of compromise.

48. The operating organization shall determine the regulations on which vehicles, persons and packages are subjected to searches at the entrance or access way to the protected and interior areas, as well as at the exit or exit way, to detect and prevent unauthorized access and the carrying or delivery of prohibited items. For all types of vehicle inspections at the nuclear facility, instruments shall be used that are designed to detect nuclear material, metals and explosives.

49. The entry of vehicles into the protected area shall be strictly reduced to a minimum and limited to specially designated parking areas. Entry into the protected areas of private vehicles shall not be allowed, excepting the entry of vehicles for the delivery of goods (equipment, tools) in accordance with the concluded agreements.

50. To counter the threat of an inside offender, when personnel are present in a critical area, the operating organization shall ensure detection of unauthorized activities through continuous surveillance, application of the two (three) person principle, or compensatory measures.

51. The operating organization shall keep a record of all persons having access to interior and critical areas, and all persons having access to keys, key cards and (or) other systems, or who have received them for use, including computer systems that control access to nuclear materials or to interior areas.

52. The operating organization shall store category I nuclear materials in a hardened (safe) room or reinforced chamber (structure) in the critical area, which provide an additional detection line and delay preventing removal of the material. This security area shall be locked and alarm activated except when authorized access to material is granted. When nuclear material is in the work area without the presence of personnel outside the critical area, equivalent compensating physical protection measures shall be applied.

53. The operating organization shall establish procedures for the transfer of category I, II and III nuclear material under control of persons working with the nuclear material. Also, in accordance with these procedures, persons working with nuclear material, when starting work, shall make sure of the absence of outside interference or unauthorized removal of nuclear material.

54. With respect to the movement of nuclear materials between two protected areas, the operating organization shall apply measures that comply with the requirements for the physical protection of nuclear material during transportation, with regard to the existing physical protection measures.

55. For monitoring and evaluation of alarm signals, initiation of response and communication with the management of the operating organization, the unit of physical protection of nuclear materials and nuclear installations, and also, with the response forces outside the nuclear facility, a central control point shall be created, where security and response forces are present around the clock. Information entering the central control point is subject to safe storage. The central control point shall be located in a guarded area and protected by fortification of the premises or other means so that it can function under threat. Access to the central control point shall be strictly controlled and strictly limited.

56. Alarm equipment, communication channels of the alarm system and the central control point shall have uninterruptible power supply sources and protection against interference through unauthorized monitoring, manipulation and falsification.

57. Automatic backup power system shall be provided in the power supply system of the central control point ensuring instant transfer from the main power supply during emergencies

58. The operating organization shall provide special, redundant, protected and unequal signal transmission systems for two-way secure communication between the central control point and security forces located along the protected area perimeter and at local control points, between the central control point and response forces located outside the nuclear facility, and also between the central and local control points.

59. The central control point personnel and off-site security and response forces shall communicate with each other at set intervals.

60. The operating organization shall take measures, including backup measures, to ensure that the central control functions for monitoring and evaluating alarms, initiating a response and maintaining communications are sustained during an emergency.

61. The operating organization shall provide round-the-clock guarding and availability of response forces to ensure proper and timely response to prevent an unauthorized action of the offender.

62. The security and response forces shall selectively patrol security areas. The main functions of the patrols are:

- 1) containment of the violator;
- 2) penetration detection;
- 3) visual inspection of the constituent elements of physical protection;
- 4) addition to existing physical protection measures;
- 5) performing the initial response.

63. The operating organization shall regularly conduct assessments, including functional tests, of physical protection measures and physical protection systems, including the timeliness of response by security and response forces, in order to determine the reliability and efficacy of countering threats. These assessments shall be carried out with full cooperation of the operating organization and the security and response forces. The operating organization shall include the assessment results and the measures taken in the report.

64. At least once a year, the operating organization shall conduct functional tests of the system of physical protection of nuclear materials through exercises, including bilateral exercises, in order to determine the ability of the response forces to efficiently and timely perform the tasks of responding and preventing unauthorized removal of nuclear material.

65. When ensuring the physical protection of nuclear materials of category below III, the operating organization shall envisage measures against unauthorized removal and access to them.

Paragraph 7. Requirements for the physical protection of nuclear installations against sabotage

66. The operating organization shall develop a local design threat that includes plausible scenarios whereby offenders could sabotage nuclear material or a nuclear facility. The local design threat, developed in cooperation with the territorial bodies of the National Security Committee of the Republic of Kazakhstan and the territorial units of the internal affairs bodies of the Republic of Kazakhstan, shall be coordinated with the authorized body.

67. When defining scenarios, the operating organization shall take into account location of the nuclear facility in relation to population density, location of nuclear material in the same locality within the nuclear facility, and other factors that may have a radiological impact in the event of sabotage.

68. In sabotage scenarios, the operating organization shall take into account external and (or) internal offenders who may attempt to damage or tamper with nuclear or other radioactive material, or equipment, systems, structures, components or devices, including possible remote attacks in accordance with the design threat or local design threat.

69. The operating organization shall design a physical protection system able to effectively counter the fulfillment of certain sabotage scenarios and meet the required protection level of nuclear materials and nuclear installations.

70. The physical protection system shall be designed as an integral element of an integrated system to prevent potential consequences of sabotage acts, taking into account reliability of technical security means and operational features, as well as fire protection, radiation protection and emergency preparedness measures.

71. The physical protection system shall be designed to prevent unauthorized access by persons or delivery of equipment to targets, minimize possibilities of inside offenders, and protect targets from possible remote attacks in accordance with the design threat or local design threat. The response strategy shall be based on preventing the offenders from

accessing the sabotage targets or preventing the offender from performing his task at the location of the sabotage targets. Prevention of access to targets is achieved through implementation of the main physical protection functions:

- detection;
- delays;
- response.

Protection against remote attacks is achieved by the design of the installation, the design of the barriers that provide separation distance and separation measures.

72. To verify compliance of the physical protection system with the required nuclear security level, the operating organization shall conduct a nuclear security assessment, which includes assessment of the physical protection system design and its efficacy, the results of functional tests of the physical protection system component equipment, as well as assessment of the timely response of security and response forces.

73. In case of inefficiency of the physical protection system, determined on the basis of the assessment or inspection results by the authorized body, the operating organization shall make changes to the design of the physical protection system and conduct a new assessment of nuclear security.

74. Nuclear materials in quantities that, in case of their dispersion, can lead to serious radiological consequences, and the minimum set of equipment, systems or devices necessary to prevent serious radiological consequences, shall be placed by the operating organization inside one or several critical areas located in interior areas.

75. The operating organization shall take detection, access control and delay measures preventing unauthorized access at the boundary of a critical area. Delay measures must enable a timely and adequate response in the event of an act of sabotage in accordance with the design threat. Such measures are designed taking into account the potential capabilities of internal and external offenders, while considering all possible entry points in a balanced way.

76. Barriers to impede the passage of vehicles shall be installed at an appropriate distance from a critical area, sufficient to prevent the entry of unauthorized land and water transport, specified in the local design threat, which can be used by an intruder to commit a malicious act. Protective measures against any air threat defined in the local design threat shall also be taken into account.

77. To counter an internal threat, the operating organization shall ensure timely detection of unauthorized actions by persons located in critical areas.

78. Timely detection of interference with the operation or violation of the functions of equipment, systems or devices of the critical area shall be provided.

79. During suspension of the nuclear installation operation (during repairs), strict control of access to critical areas shall be maintained. Before launching the reactor, inspections and checks shall be conducted in order to detect any interference that could have been made during the suspension of the nuclear installation operation (repair work).

80. If the potential radiological consequences of sabotage are less severe than the unacceptable radiological consequences, the operating organization shall envision protection of safety-related devices and equipment through measures to control access to them and ensure their physical protection and safety of security forces.

Paragraph 8. Requirements for organizational measures of the physical protection system

81. The organization of the physical protection system shall include a set of measures at all stages of the creation (improvement) and operation of the physical protection system and departmental regulating documents.

82. A set of measures to ensure operation of the physical protection system shall comprise :

1) managing the functioning of the physical protection system, including work planning, organizing interaction of physical protection personnel with security and response forces, monitoring the state of the physical protection system;

2) organization of admission and access of persons to nuclear materials, nuclear installations, natural uranium, storage facilities and information on the physical protection system functioning;

3) organization of access and internal regimes;

4) vulnerability analysis and evaluation of the physical protection system efficacy and proposals for its improvement.

83. The operating organization shall develop executive documentation for the physical protection of nuclear materials and nuclear installations.

84. The following conditions shall apply to the selection and training of physical protection personnel:

1) compliance with the Qualification requirements for personnel employed at nuclear facilities, approved by order No. 37 of the Minister of Energy of the Republic of Kazakhstan dated February 5, 2016 (registered in the Register of State Registration of Regulatory Legal Acts under No. 13466);

2) the following types of professional training of physical protection personnel shall be established: initial training, advanced training, retraining.

84-1. With regard to personnel having access to nuclear materials and natural uranium, the operating organization shall run checks on them against the databases of state bodies at least once every 3 (three) years.

85. Personnel on whom the result of the checks against the state bodies' databases is negative shall not be admitted to work with nuclear materials and natural uranium.

86. Candidates selected for appointment to vacant positions and who meet the relevant qualifications shall be put on initial training.

87. Retraining and advanced training of physical protection personnel is a system of measures for senior staff and specialists in physical protection in order to improve their professional knowledge, skills and abilities.

88. Operation of the physical protection system shall be ensured by the time of the nuclear materials delivery to the nuclear facility.

89. At the stage of decommissioning a nuclear installation, storage facility, the physical protection system shall be maintained until the removal of nuclear materials from the nuclear installation, storage facility.

90. The physical protection system shall perform tasks in regular situations and in conditions in which, through an unauthorized action, the normal operating conditions of a nuclear facility are violated, damage to the health of the personnel (population) is possible, a threat to the life of the personnel (population), and damage to the environment is also possible

91. The physical protection system shall ensure protection of information, including classified information about organization, composition and operation of the physical protection system, its integrity and authorized accessibility, the violation of which may lead to a decrease in the operational effect of the physical protection system as a whole or its individual elements.

92. At a nuclear facility, systems, elements and communications unrelated to nuclear installations shall be protected, in respect of which, in the process of vulnerability analysis, the need to prevent unauthorized actions was identified.

93. If it is impossible to fully meet the requirements for the physical protection system established by these Rules, compensatory organizational and technical measures shall be applied.

Paragraph 9. Requirements for technical strength of nuclear installations

94. When designing building constructions, the following damaging factors shall be taken into account:

- 1) air shock wave from sabotage explosions;
- 2) ramming by possible vehicles.

95. Fulfillment of physical protection requirements under external influences is achieved by a set of measures and decisions.

96. Calculation of buildings' constructions and structures shall be made at a design pressure in the shock wave front of 30 kiloPascals (hereinafter - kPa) and a compression phase duration of up to 0.10 seconds (hereinafter - s) from all sides of the building, structure, which corresponds to an explosion of a device with equivalent power up to 30 kilograms (hereinafter - kg) of TNT not closer than 7 meters (hereinafter - m) to the building (structure) or an equivalent capacity of up to 3000 kg of TNT not closer than 30 m to the building (structure). These conditions determine dimensions of the local zones.

97. When placing buildings and structures on the territory of a nuclear facility, the following general requirements shall be taken into account:

1) buildings and structures equipped with systems important for the safety of a nuclear installation, including units with a reactor compartment, if possible, are located at a maximum possible distance from the protected area perimeter, taking into account the cover of other buildings and structures;

2) the number of communications on the earth surface must be minimal.

98. In the protected area, an interior area shall be allocated, which is a collection of individual buildings or structures. The boundaries of the interior area are made by the walls of buildings or a specially equipped fence.

99. The boundary of the critical area is defined by the walls of buildings and premises.

100. Underground and surface communications having entrances or exits in the form of wells, manholes, hatches, shafts, open pipelines, channels and other similar structures through which it is possible to penetrate into the territory of a nuclear facility, into protected buildings, shall be equipped with permanent or removable gratings, covers, doors with locking devices. Permanent devices shall be installed on all communications that may not be opened.

101. All openings with a diameter of more than 250 millimeters (hereinafter -mm) (with a cross section of more than 250x250 mm) must be equipped with gratings.

102. All entrances (exits) from buildings with premises of category "A, B and C", as well as the premises themselves, shall be equipped with metal or sheathed metal doors on both sides with reinforced door frames.

103. Premises of category "A, B and C" of the 1st and basement floors of critical area buildings must not have window embrasures.

104. Windows of the second floors, as well as windows of any other floor, if they open into adjacent non-categorized premises and corridors or are located near fire escapes and other structures, using which it is possible to enter categorized premises, shall be equipped with steel bars with a diameter of at least 15 mm and cell size no more than 150x150 mm.

105. The interior area premises shall be separated from the protected area premises by walls and partitions equivalent in strength to the category "C" premises.

106. The critical area premises shall be separated from the interior area premises by walls and partitions equivalent in strength to the category "B" premises.

107. Between the critical area premises and the protected zone, walls or partitions shall be provided equivalent in strength to category "A" premises.

108. Entrance doors to the premises of categories "A and B" shall have a strength equivalent to the following parameters:

1) wooden doors, reinforced on two sides with sheet steel at least 0.6 mm thick, with a bend of the sheet on the inner surface of the door or on the end of the sheet with an overlap, fastened along the perimeter and diagonals of the sheet with nails the diameter of 3 mm, the length of 40 mm and a pitch no more than 50 mm;

- 2) wooden doors with additional reinforcement of door panels with metal plates;
- 3) metal steel doors with at least 4 mm thick sheet;
- 4) doors with glass panels in metal frames or without them with protective glazing resistant to punching a hole in it sufficient for a person to penetrate, with a heavy metal object weighing 2 kg, in at least 30-50 strokes;
- 5) non-permanent doors with lattice steel doors (swinging, sliding or folding) additionally installed from the inside. Door frames shall be equipped with additional fasteners made of steel pins, and hinges must have end hooks. The protective glazing must be resistant to punching a hole by a heavy metal object weighing 2 kg, in at least 30-50 strokes.

109. Window openings of critical areas' rooms shall be equipped with metal grating, made of steel rods with a diameter of at least 16 mm, forming 150x150 mm cells. At the intersection the rods must be welded. The ends of the grating rods must be embedded at least 80 mm deep into the wall and filled with cement mortar or welded to metal structures. If this is not possible, the grating is framed with a corner no less than 30x30x5 mm in size and welded around the perimeter to steel anchors firmly embedded 80 mm deep into the wall, with a diameter of at least 12 mm and the length of at least 120 mm.

110. In the premises where all windows are grated, one of them must be sliding or swinging with a breaking-proof padlock.

111. Entrance doors to category "C" premises shall have a strength equivalent to the following parameters:

- 1) internal wooden doors with at least 40 mm thick solid filling of panels;
- 2) external wooden doors with a leaf thickness of at least 40 mm, blind and glazed with laminated glass resistant to a single impact, which can withstand 3 impacts of a steel ball weighing 4 kg dropped from a height of 3.5 m and higher;
- 3) doors with glass sheets in metal frames or without them, with safety glazing resistant to a single impact, which can withstand 3 hits of a steel ball weighing 4 kg, dropped from a height of 3.5 m and above.

112. The entrance door and vestibule door shall be equipped with electromechanical and (or) mechanical locks with at least 25,000 code (key) combinations for category "C" premises, and at least 100,000 for categories "A and B" premises.

113. As locking devices installed on doors, windows, hatches, elevator shafts, mortise non-self-latching locks, overhead, padlocks, internal hooks, latches, bolts, latch springs shall be used.

114. To lock the entrance doors, as well as the internal doors of category "A" premises, high-security locks shall be used, lever locks with double-wrench keys, cylinder pins of two or more rows. Lever locks must have at least six levers (symmetrical or asymmetrical).

115. To lock the interior doors of category "B" premises, locks with lower secrecy such as cylinder plate and cylinder single-row pin locks shall be used.

116. Overhead locks shall be used for locking interior premises of category "C".

117. Padlocks shall be used for additional locking of doors, gates, bars and shutters. The locks must have a hardened steel shackle and a massive case, and in places of their installation on lockable structures - protective covers, plates and devices that prevent the possibility of bending and sawing of the lugs and shackles of the locks.

118. Lock mechanisms shall be enclosed in casings that protect them from intentional damage with the use of fitter's hand tools, and shall be sealed.

119. Part of the mortise lock cylinder protruding beyond the door leaf from the outside of the door shall be protected from breaking off or knocking down by a safety pad, socket, shield. The protruding part of the cylinder after installing the safety pad, socket. The shield must be no more than 2 mm.

120. The doors of elevator shafts must be blocked by padlocks, struts and security alarm signals.

121. Window openings, front windows of the first floor in the premises of categories "A and B" must have a strength equivalent to the following parameters:

1) windows with ordinary glazing, additionally protected by roller shutters made of at least 1 mm thick steel sheet;

2) windows with ordinary glazing, additionally protected by metal bars (sliding, hinged) or blinds of appropriate strength;

3) windows of a special design with protective glazing, resistant to a single impact, withstanding 3 impacts of a steel ball weighing 4 kg, dropped from a height of 9.5 m and above.

122. In areas with a difficult operational situation, windows and fronts must be made of bulletproof protective glazing (protective film), resistant to punching a hole sufficient for a person to penetrate with a heavy metal object weighing 2 kg, in no less than at 30-50 strokes.

Paragraph 10. Requirements for the complex of engineering means of physical protection of a nuclear installation

123. A nuclear facility is regarded as a protected area, whose boundary runs along the outer fencing of the restricted area. The line of the main fence must be as straight as possible, without unnecessary bends and turns.

124. The width of the restricted area must be at least 15 m.

125. The restricted area must have minimum possible number of intersections with communications.

126. Intersection of the restricted area with communication racks shall be at an angle close to a straight line, above the fencing at a height of at least 5 m from ground level.

127. The external fencing is a permanent structure built according to standard designs. The most perfect and recommended type of external fencing is reinforced concrete fencing, with anti-digging concrete plinth 200-400 mm deep into the ground.

128. The external fencing of the territory of a nuclear facility shall be at least 2.5 m high made of reinforced concrete slabs or a metal sheet at least 2 mm thick, and in areas with a snow cover depth more than one meter - at least 3 m. Given the features of a nuclear facility, it is allowed to make fences of metal structures that correspond to the general ensemble of buildings adjacent to it (a metal lattice fence made of at least 18 mm thick rods, with a gap between the rods not exceeding 100 mm).

129. On the upper edge of the outer fence, an additional "canopy" of Egoza wire must be installed.

130. Presence of non-lockable doors, gates, wickets, also manholes, breaks and other damages shall not be permitted in the external fence.

131. No extensions must adjoin the external fence, except buildings that are part of its perimeter, while the windows of the first floors of buildings, as well as subsequent floors, accessible from doorway canopies, fire escapes and roofs of adjoining buildings opening on to an unguarded territory, shall be equipped with technical means of protection and roller shutters, which, if necessary, are closed, or hung grates. Grates are made of steel rods with a diameter of at least 10 mm, forming 150x150 mm cells. The rods must be welded at the intersections. The grate must be framed with a corner no less than 30x30x5 mm in size and welded around the perimeter to steel anchors firmly embedded in the wall to a depth of 80 mm, with a diameter of at least 12 mm and a length of at least 120 mm.

132. To prevent ramming of vehicles, and also to delay the intruder for the time necessary to organize and carry out response measures by security and response forces, the entrances to the most vulnerable places of the restricted area must be equipped with additional physical barriers and technical means of physical protection outside the restricted area.

133. The main fence, as well as the area between the main and internal fences, shall have security lines, which are a set of technical means of physical protection.

134. The outer fence of the restricted area shall be located at a distance of at least 5 m from the main fence.

135. Forest plantations, buildings, structures, outbuildings, sites for storing equipment or materials shall not adjoin the main fence perimeter, both from the outside and from the inside.

136. An isolation strip shall be provided between the outer and main fences of the restricted area.

137. The isolation strip shall be carefully planned and cleared. No buildings and objects that impede the use of technical means of physical protection shall be allowed on it.

138. The width of the isolation strip shall factor in the possibility of placing a set of technical security equipment and must be at least 3 m.

139. The isolation strip is also used for guard dogs. In this case, an internal mesh or picket fence with a height of at least 2.5 m is installed parallel to the outer fence.

140. An exclusion strip must be made from the inside of the main fence.

141. The requirements for an exclusion strip are:

- 1) running unbroken along the entire nuclear facility perimeter;
- 2) sufficient width, excluding the possibility of jumping over it;
- 3) absence of objects on it that facilitate going on it without leaving traces;
- 4) the possibility of using mechanization means during its treatment along the entire route.

142. Exclusion strips can be artificial and natural. The width of artificial exclusion strip must be at least 3 m.

143. The natural exclusion strip may be wider, depending on the size of the restricted zones and location conditions of the nuclear facility. Areas where the required width is not possible shall be covered with engineering barriers.

144. The structure of a natural exclusion strip shall include the designation of its boundaries and preliminary preparation of the terrain to place it on.

145. An artificial exclusion strip shall be plowed or sprinkled with soil. The depth of plowing (height of soil filling) shall be at least 15 centimeters.

146. Plowed and bulk exclusion strips are brought into a loose-fluffy state by harrowing and applying a wave-like profile to their surface with a profiling tool.

147. Places of intersection of the prohibited zone with railways, highways and dirt roads shall be equipped with bulk control and track strips.

148. Bridges (floorings) shall be built in places where the restricted zone is crossed by streams, ditches, ravines to avoid gaps in the exclusion strip. The space under the bridges (floorings) must be covered with engineering barriers and equipped with detection tools.

149. To protect the exclusion strip from being washed away by rain and melt water, drainage work shall be carried out to prevent accumulation of water, and surface water shall be drained by arranging cuvettes (ditches), laying drainage and culvert pipes, closed with gratings and equipped with detection devices.

150. For the movement of security and response forces between the inner fence of the restricted area and the exclusion strip, a 0.8-1.0 m wide trail shall be laid. The trail shall be made in the following forms: mounds of soil, with wooden, asphalt, concrete or reinforced concrete covering.

151. To neutralize offenders and for the arrival of an alarm group to the section of the restricted area where the violation was recorded, a guard road shall be equipped, outside the technical security equipment zone, at least 3 m wide, with a hard surface.

152. Guard roads are built for one-way traffic of motor vehicles.

153. Passage of people and vehicles, entry (carriage), bringing in (bringing out) of materials and documents shall be carried out through checkpoints, which are sectioned into:

- 1) passage of people;
- 2) passage of road or rail transport.

154. Checkpoints for the passage of people are divided into external and internal. External checkpoints are installed for access control at the entrance to the protected area, internal - to control access at the entrance to the interior and critically important areas.

155. The capacity of the checkpoint is calculated based on the largest number of work shifts.

156. External enclosing structures (walls and ceilings) of buildings (structures) of the checkpoint must be resistant to external influences, including illicit actions, affording a good view and protecting the security and response forces from attack.

157. Depending on the access regime, special premises shall be provided at the checkpoint for storing passes or automatic cards.

158. Checkpoints for the passage of people shall be equipped with storage premises for personal belongings of workers and servicemen, inspection premises, premises for security and response forces, technical security systems (concentrators, consoles, CCTVs), control devices for opening of the passage (pass) and security lighting and a bathroom.

159. The checkpoint shall be equipped with automated or mechanical hand-held devices, turnstiles, gates, stationary and manual screening devices capable of recognizing various types of metals depending on the need or service needs. Also for inspection, detectors shall be used to identify explosives and radioactive materials, which detect alpha, beta and gamma radiation.

160. Checkpoints for vehicles shall be equipped with external and internal standard sliding or swing gates with electric drive and remote control, devices for their emergency stop and manual opening. Gates must be equipped with limiters or stoppers to prevent arbitrary opening (movement).

161. The main road transport checkpoint shall be located near the central checkpoint for the passage of personnel.

162. Sections of the road leading to a road checkpoint shall have a 90-degree turn at a distance of no more than 30 m from the gate; these areas are enclosed with concrete structures , preventing the possibility of crossing them. Another constructive solution of the anti-ram device is acceptable.

163. Checkpoints for the passage of road and rail transport may be combined. Transport checkpoints shall be equipped with special platforms for vehicle inspection.

164. A checkpoint for motor vehicles shall be equipped with viewing platforms or overpasses for their inspection, barriers, and for railway transport - with a tower and a platform for the inspection of rolling stock.

165. Entrances and exits are equipped with traffic lights and road signs.

The platform for the inspection of cars must be at least 20 m long and at least 3 m wide on each side exceeding the width of a truck. The platform for the inspection of cars shall be equipped with a pit for inspecting cars from below, towers or an overpass for inspecting cars from above and from the side, and shall be enclosed by a fence similar to the main fence.

166. Railway checkpoints shall be equipped with:

- 1) passage gate and a wagon inspection platform;
- 2) electromechanical drive and manual opening mechanism;

3) devices for forced stopping of transport (embedded bars, arrows-throwers, deadlock-catchers) to prevent unauthorized passage of vehicles to a nuclear facility (from the facility) and accidental bumping of rolling stock into the gate.

167. To inspect railway transport, along with viewing platforms, observation towers, gangways, observation platforms, step-ladders, and hanging footboards shall be used.

168. To check the top hatches and roofs of stationary carriages, mobile towers and ladders shall be used.

169. To ensure the controller's work safety when checking the vehicles standing on the observation deck, twin brake shoes shall be used.

170. Dimensions of the platform for wagons inspection shall be selected in length based on the simultaneous inspection of 3-4 wagons. The inspection site shall be equipped with a pit for inspection of wagons from below and towers or overpasses for inspection from the sides and from above.

171. On the carriageway of the site, a place for stopping vehicles for inspection shall be allocated, limited by two lines and the inscriptions "Stop" in the state and Russian languages, made in white paint. It is allowed to install "Stop" signs.

172. Before entering the observation deck, from the outside of the main and auxiliary gates, no closer than 3 m from them, a transverse line and the inscription "Stop" shall also be applied.

173. To ensure the traffic safety, at least 100 m from the gate on the right side or above the road, an indicator sign shall be installed - "Single-line traffic", and 50 m away - a speed limit sign of under 5 km / h (hereinafter – km/h).

174. The gate control panel shall be located in the checkpoint or on its outer wall, while access to the control panel by unauthorized persons shall be excluded.

175. The checkpoint room shall be equipped with means of communication, fire extinguishing and with an alarm system connected to the central control point.

Paragraph 11. Requirements for the complex of engineering means of physical protection of natural uranium mining and (or) handling enterprises

176. The facility, whose border runs along the fencing of the guarded area, is considered as a protected area. The fencing shall exclude unauthorized passage of people (animals), entry of vehicles and make it difficult for an intruder to enter the protected area, bypassing the checkpoint. The line of the outer fencing must be as straight as possible, without unnecessary bends and turns.

177. In the protected area, interior zones shall be made, which are a combination of individual buildings, structures, open areas. The boundaries of the interior zone are defined by the walls of buildings or a specially equipped fence.

178. The outer perimeter fence is a permanent structure and is built on standard designs. The fence must have a height of at least 2.5 m from a metal mesh "chain-link" made of wire

with a cross section of 1.4 mm with a cell of no more than 25x25 mm in a galvanized version or with a polymer coating. Reinforced concrete fence is allowed. The fence is reinforced by anti-digging reinforced concrete plinth, or a metal grate made of rod with a diameter of 15 mm and a cell size of 150x150 mm, at least 300 mm deep into with the ground.

179. On the upper edge of the outer fence on the Y-shaped brackets, an additional spiral security barrier of reinforced barbed tape ("visor") of "Egoza" type, with a diameter of 500-600 mm, with a distance between coils no more than 200 mm, shall be additionally installed.

180. Presence of non-lockable doors, gates, wickets, as well as manholes, breaches and other damages in the perimeter fence shall not be permitted.

181. The perimeter of the protected area border shall have the minimum possible number of intersections with communications. The intersection of the outer fencing with communication overpasses shall be at an angle close to a straight line, above the fence at a height of at least 5 m from the ground level. Intersections of communications below 5 m around the entire circumference at a distance of 1 m shall be protected by screens made of chain-link mesh, or a security barrier of reinforced barbed tape of Egoza type, with a diameter of 500-600 mm, with a distance between coils no more than 200 mm.

182. To the fence, both from the outside and from the inside, at a distance of 2.5 m, no buildings must adjoin, no structures, extensions, sites for storing equipment or materials, buildings, except for access ramps and facilities for pumping sulfuric acid, as well as buildings that are part of its perimeter. At the same time, the windows of the first floors of buildings, and also the next floors, accessible from the entranceway canopies, fire escapes and roofs of adjacent buildings overlooking the unguarded territory, shall be equipped with a hinged metal lattice made of rods with a diameter of 8 mm and cells of 150x150 mm, or metal roller shutters, which are closed if necessary, or with an armored film. On the roof of a one-story building, which is part of the perimeter, a spiral security barrier of reinforced barbed tape of Egoza type (diameter 500-600 mm, with a distance between coils no more than 200 mm) shall be installed.

183. In places of storage, pumping of acids, where exposure to vapors of an aggressive acidic environment is possible, throughout the entire site, as well as at a distance of 15 m to it, fence posts, mesh panels and a spiral safety barrier of Egoza type shall be used with a special polymer coating. At the junction of automobile overpasses, entrances for pumping acids into the territory, as well as 1.5 m to the sides of it, the external perimeter fence must be 3 m high.

184. To prevent ramming of vehicles, and to delay the intruder for the time necessary to organize and carry out response measures by security and response forces, entrances to the most vulnerable places of the perimeter, in terms of threat, may be equipped with additional physical barriers and technical means of physical protection outside the restricted area.

185. The fence shall be equipped with a security boundary, which is a complex of physical protection technical means.

186. On the inner side of the perimeter fence, with the exception of the place for pumping sulfuric acid, an exclusion zone shall be provided for the placement of a complex of technical means of physical protection, which shall be carefully planned and cleared. The isolation strip shall be 2.5 m wide. No buildings and objects impeding the operation of technical means shall be allowed on it.

187. Fencing of open areas of internal zones must be at least 2 m high made of a metal mesh "chain-link" with 1.4 mm wire cross section with a cell of not more than 25x25 mm in a galvanized version or with a polymer coating. The fencing line must be as straight as possible, without unnecessary bends and turns.

188. On the upper edge of the inner area fencing on Y-shaped brackets, an additional spiral security barrier of reinforced barbed tape ("visor") of Egoza type (diameter 500-600 mm, with a distance between coils no more than 200 mm) shall be additionally installed. It is allowed to install a visor made of barbed wire of the "thread" type in 3-5 rows with the bracket tilted to the outside.

189. It shall not be allowed to have non-lockable doors, gates, wickets, as well as manholes, breaks and other damages in the inner zone fencing.

190. The fencing of the interior area shall have the minimum possible number of intersections with communications. The existing intersection of the fence of the interior area with communication overpasses must be at an angle close to a straight line, above the fence at a height of at least 5 m from the ground level. The intersections of communications below 5 m along the entire circumference at a distance of 1 m shall be protected by screens of chain-link mesh, or a security barrier made of reinforced barbed tape "Egoza".

191. The fencing of the interior area shall be equipped with a security boundary, which is a set of technical means of physical protection.

192. On the inner side of the perimeter fence of the interior area, an exclusion zone shall be provided for the placement of the complex of technical means of physical protection, which shall be carefully planned and cleared. The isolation strip shall be at least 1 m wide. No buildings, trees, shrubs and objects impeding the use of technical means shall be allowed in it.

193. Entrance for vehicles to the open area of the interior zone shall be equipped with standard sliding (rolling) or swing gates. Gates shall be equipped with limiters or stoppers to prevent arbitrary opening (movement). The gates must be at least 2 m high, with filling of canvases by analogy with the fence. A clearance of no more than 150 mm is allowed between the road surface and the gate. A barbed wire barrier or a spiral security barrier of flat reinforced barbed tape of Egoza type (diameter 500-600 mm and distance between coils 200 mm) shall be installed on top of the gate.

194. To organize the passage of people and vehicles, entry (removal), import (export) of materials and documents, checkpoints shall be established on the perimeter:

- 1) for the passage of people;
- 2) for the passage of road or rail transport.

The throughput of the checkpoint is calculated based on the largest number of work shifts.

195. The main transport checkpoint shall be located near the central checkpoint for the passage of people.

196. External enclosing structures (walls and floors) of buildings (structures) of the checkpoint must meet the requirements of equal strength, resistance to external influences, including unlawful actions, have a good overview and protect the security and response forces from attack.

197. Depending on the access regime, special premises shall be provided at the checkpoint for storing and recording passes, contactless electronic identifiers and duplicate keys for mechanical locks. Access to the special premises shall be restricted and under security personnel's control.

198. To store passes, contactless electronic identifiers and duplicate keys to mechanical locks, it is allowed to use a safe cabinet in the checkpoint room.

199. Checkpoints for the passage of people must have a storage room for personal belongings of workers and servicemen, a service room for security and response forces, technical security systems (concentrators, consoles, video control devices for security video surveillance), control devices for opening the passage (pass) and security lighting and bathroom.

200. To prevent unauthorized passage of people to the checkpoint, half-height blocking devices such as tripod turnstiles, gates, with the possibility of manual and automated control, shall be installed.

201. The checkpoint shall be equipped with stationary and manual detectors for inspection, capable of recognizing various types of metals, radioactive substances. Checkpoints for vehicles shall be additionally equipped with hand torches and inspection mirrors with illumination.

202. The checkpoint premises shall be equipped with means of telephone and radio communication, fire extinguishing and an alarm and call signaling system connected to the central control point.

203. Checkpoints for motor vehicles shall be equipped with external standard sliding (rolling) or swing gates with electric drive and remote control, devices for their emergency stop and manual opening. Gates shall be equipped with limiters or stoppers to prevent arbitrary opening (closing), as well as devices for a padlock and a sealing device.

204. Gates must be made of metal with a height of at least 2.5 m. A clearance of no more than 150 mm is allowed between the road surface and the gate. A barbed wire barrier or a flat spiral security barrier of reinforced barbed tape of the Egoza type shall be installed on top of the gate (diameter and distance between coils are similar to the main fencing).

205. Emergency car gates in the outer perimeter fence must be of swinging type, not lower than the main fence in height. Gates shall be equipped with locking devices to prevent arbitrary opening (closing), as well as devices for a padlock and a sealing device.

206. On the upper edge of the emergency gate leaf, a flat spiral security barrier of reinforced barbed tape (“visor”) of the “Egoza” type shall be additionally installed on the brackets (diameter and distance between coils are similar to the main fencing).

207. Checkpoints for motor vehicles shall be equipped with special inspection platforms, overpasses (pits) for the inspection of vehicles, from the inside - with a barrier with an electric drive and remote control.

208. The site for the inspection of cars shall be provided with a flyover for inspecting cars from above and from the side, installed no closer than 2.5 m to the perimeter of the outer fence.

209. For traffic safety, road signs shall be put up at entrances and exits to the checkpoints.

210. On the roadway of the site, markings shall be applied indicating the place where vehicles stop for inspection, limited by two lines and “Stop” inscriptions in the state and Russian languages, made in white paint. It is allowed to install “Stop” signs.

211. Before entering the inspection site, from the outside of the main and auxiliary gates of the checkpoint, no closer than 3 m from them, a transverse marking with the inscription “Stop” is also applied, or a “Stop sign” is installed. At least 100 m from the gate on the right side or above the road, an indicator sign is installed - “Single-line traffic”, and 50 m - speed limit under 5 km / h sign.

212. The checkpoint for railway transport shall be equipped with external standard sliding (retractable) or swing gates with electric drive and remote control, devices for their emergency stop and manual opening. Based on the intensity of the checkpoint use, it is allowed to install swing gates with manual opening. Gates must be provided with limiters or stoppers to prevent arbitrary opening (closing), as well as devices for a padlock and a sealing device.

213. Gates shall be made of metal with a height of at least 2.5 m. A gap is allowed between the railway bed and the gate, excluding unauthorized entry of people (animals). A barbed wire barrier or a flat spiral security barrier of reinforced barbed tape of the Egoza type shall be installed on top of the gate leaf (diameter and distance between coils are similar to the main fence).

214. To prevent unauthorized passage of railway transport, checkpoints shall be equipped with devices for forced stopping of vehicles (embedded bars, arrow-throwers, deadlock catchers).

215. Checkpoints for railway transport shall be equipped with special inspection platforms, a tower for inspecting rolling stock from the sides and from above. Dimensions of the platform for the inspection of railway cars (locomotive) are selected: in length, based on simultaneous inspection of 3-4 cars and in width, not less than 1.5 m on each side of the car (locomotive). To inspect the upper hatches and roofs of railway vehicles, along with inspection platforms, observation towers, overhead bridges, observation platforms, stepladders, and hanging footboards can be used.

216. To ensure the controller's work safety when checking the railway transport standing on the inspection platform, twin brake shoes are used.

Paragraph 12. Requirements for the complex of technical means of physical protection

217. The complex of technical means of physical protection shall meet the following tasks :

- 1) ensuring operational, sustainable and continuous management of the physical protection system;
- 2) ensuring the established regime of personnel access to nuclear materials, to a nuclear installation, to a storage facility;
- 3) issuing signals to the control points of the physical protection system about unauthorized entry into protected areas, buildings, structures, premises or into the cargo compartments of vehicles transporting nuclear materials;
- 4) determination on the perimeters (borders) of protected zones of the time and place of unauthorized intrusions, and on the perimeter (border) of the protected area - the violators' movement direction;
- 5) delaying (slowdown) of penetration (progress) of violators;
- 6) creation of favorable conditions for the protection and response forces to perform official tasks and enabling actions to detain violators;
- 7) overview of protected areas, guarded buildings, structures, premises in order to assess the situation;
- 8) registration (recording) of signals from technical means of physical protection, orders and commands given by the management bodies of the physical protection system, and reports of operators of control points of the physical protection system.

218. The complex of technical means of physical protection shall carry out:

- 1) collection, processing, analysis and control of all the incoming information;
- 2) providing the possibility of evaluating an alarming situation in real time;
- 3) formation and transmission of messages (set signals) to security forces, response and control bodies of the physical protection system;
- 4) ensuring information interaction between the central and local control points;
- 5) development of control actions on controlled physical barriers and means of ensuring the physical protection system operation;
- 6) monitoring of the state and operability of technical means of physical protection;
- 7) control of the actions and location of personnel during their work with nuclear materials, at nuclear installations and at storage facilities;
- 8) storage and issuance of information on the physical protection system functioning, attempts to overcome it and unauthorized actions in relation to the nuclear facility and to the technical means of physical protection themselves;

9) the need for and order of the information interaction of the complex of technical means of physical protection with the systems of nuclear, radiation, environmental, technical, fire safety of a nuclear facility is established in the terms of reference for the creation (improvement) of the physical protection system;

10) in the event of a power outage, the operability of the physical protection technical means is maintained by backup power supplies and automatic switching of the main power supply to the backup one. At the same time, information about transition to backup power is displayed and recorded at the corresponding local and central control point.

219. Technical means of physical protection consist of the following main functional systems:

- 1) security alarm system;
- 2) access control and management system;
- 3) video surveillance and situation assessment system;
- 4) operational communication and alert system, including means of wire communication and radio communication;
- 5) telecommunications system;
- 6) information security system;
- 7) a system for detecting the carrying (transportation) of nuclear materials, metals, explosives (detectors) into the territory of nuclear installations;
- 8) providing systems with power supply, lighting.

220. Failure or inactivation of any element of the complex of technical means of physical protection shall not interfere with the operation of the physical protection system. For this, compensatory measures shall be provided.

221. Management of technical means of physical protection shall be performed by operators of the central or local control points.

222. Operators of central and local control points shall be informed about the features of the technological process to the extent necessary to fulfill their duties.

223. In order to organize management in the physical protection system, the following shall be applied:

- 1) a two-way communication system between central and local control points, as well as between control points and security units;
- 2) radio communication means for the security and response forces and the physical protection unit.

224. The central control post and the local control post shall be located directly in the interior zone.

225. The security alarm system shall be designed to detect attempts and facts of unauthorized actions and inform the security and response forces about these events. Other

functional systems included in the security alarm system shall be designed to perform appropriate adequate actions, and also automatically supply the necessary control commands to actuators and controlled physical barriers.

226. The security alarm system shall provide:

- 1) detection of unauthorized access;
- 2) signal about the operation of detection means to the central or local control points and recording of this event;
- 3) archiving of all the events occurring in the physical protection system, fixing all the necessary information for their subsequent unique identification (device type and number, type and cause of the event, date and time of its occurrence);
- 4) exclusion of the possibility of uncontrolled withdrawal from protection and putting under protection;
- 5) receipt (withdrawal) of detection tools (groups of detection tools) under control (from control).

227. The security alarm system shall include:

- 1) means of detection;
- 2) alarm call signaling system;
- 3) information collection and processing system.

228. According to the nature (working conditions) and purpose, all detection tools are divided into two groups:

- 1) protection of the guarded area perimeter;
- 2) protection inside the buildings (premises).

229. When choosing the type of detection means to protect the guarded area perimeter, the following factors shall be taken into account:

- 1) type and size of the perimeter fencing;
- 2) presence of squad trail;
- 3) the number of required alarm system loops;
- 4) natural and weather conditions in the given climatic zone;
- 5) power lines (voltage, distancing in height, horizontally, angle of intersection with the perimeter, switching frequency);
- 6) proximity of roads and railways;
- 7) terrain;
- 8) soil type and freezing depth;
- 9) additive interference (influence of radio channels, radio transmitters, electromagnetic radiation);
- 10) the effect of discharges and other atmospheric phenomena.

230. Perimeter detection means shall provide:

- 1) continuity of action;
- 2) tracking of the violation location and, if necessary, the violator's movement direction.

231. The linear part of the perimeter detection tools shall be divided into sections with a separate number assigned to each.

232. An alarm call signaling is intended for an emergency call to the security and response forces, informing local and central control points about the unauthorized actions, issuing a signal of coercion by the offender, for monitoring of the vital activity of the security forces and responding directly at the guard posts and when patrolling a predetermined route by them.

233. Alarm-call signaling shall:

- 1) inform the security and response forces about the operation of the devices;
- 2) determine the place of the call;
- 3) provide the installation secrecy and convenience of using the calling device;
- 4) make the removal from control impossible;
- 5) distinguish the difference between the trigger signals from the trigger signals of the alarm system devices;
- 6) monitor the vital activity of local and central control points' operators, security and response forces directly at security posts, when they patrol a predetermined route, as well as controllers who carry out access control to a nuclear facility.

234. Information coming to control points from alarm and call signaling devices shall be presented to the operator in priority order, before other signals.

235. When choosing alarm and call signaling devices and their installation locations, the following shall be taken into account:

- 1) accessibility for security and response forces and dispersal at security posts;
- 2) impact on security and response forces resulting from threats.

236. Alarm and call signaling devices shall be installed at security posts, checkpoints, along the protected zone perimeter every 100-150 m, at the entrances to buildings, structures and premises of critical zones.

237. The system for collecting and processing information shall be a stationary set.

238. To fulfill the requirements of physical protection and ensure efficiency of the security and response forces' actions, the information collection and processing system shall provide an indication of the following situations:

- 1) operation of each detection means;
- 2) malfunction of detection means;
- 3) communication line failure;
- 4) power failure;
- 5) changing of the communication line parameters and attempts to block the detection means;
- 6) attempts to open electronic equipment.

239. Information is displayed on the information board (displays) and has an alphanumeric form.

240. The information collection and processing system shall ensure:

- 1) constant automatic monitoring of the serviceability of communication lines and operability in any state of the detection means (on, off);
- 2) remote switching (shutdown) of detection means;
- 3) authorized shutdown of detection means directly at the nuclear facility;
- 4) authorized access to protected premises;
- 5) organization of control over the work of (line) security personnel;
- 6) remote control of lighting;
- 7) priority of alarming situations;
- 8) archiving of events;
- 9) capacity reserve of at least 20% of the maximum capacity of the information collection and processing system or the possibility of continuous capacity extension;
- 10) management of peripheral devices;
- 11) remote control of the power supply of detection tools.

241. The access control and management system is intended to control and ensure access of personnel, business travelers and visitors to categorized premises, buildings, structures and protected areas, as well as entry (exit) of vehicles to the territory (from the territory) of a nuclear facility in accordance with the established access mode.

242. The access control and management system shall ensure:

- 1) exclusion (or creation of the maximum possible obstacle) of unauthorized entry into the territory, into protected premises, buildings, structures and zones. In case of detected attempts of unauthorized entry, and also detected facts of force impact on structural elements of access devices and terminals, the relevant information shall be communicated to the operator of local and central control points;
- 2) storing of information about all the facts of passage and violations of the requirements for the passage of personnel, business travelers and visitors;
- 3) production of passes, archiving of produced and issued passes.

243. The design of access control devices of the control and management system (human and transport checkpoints) shall provide the possibility of their emergency manual opening.

244. The passes used in the access control and management system shall not contain information, the knowledge and use of which may lead to unauthorized access (personal identification numbers, characteristics and values of biometric indicators and features, other reference data).

245. The video surveillance and situation assessment system is intended to provide visual control of the situation and (or) automatic image analysis (automatic recognition of faces, state numbers) at the facility equipped with it, in order to assess the current situation, monitor the actions and progress of offenders, coordinate the actions of security and response forces, and also archive video information.

246. The video surveillance and situation assessment system shall ensure:

- 1) provision of the operator with the necessary and sufficient information about the situation at the nuclear facility and in its protected areas, buildings, structures and premises;
- 2) provision of information to assess the situation in case of detected fact of an unauthorized action and video confirmation of the fact of its commission;
- 3) display, recording and archiving of information to the extent necessary for the subsequent analysis of arising emergency situations;
- 4) operability under all conditions of its operation, defined in regulatory documents;
- 5) monitoring for the presence of malfunctions (loss of video signal, tampering with equipment, attempts to access communication lines), informing the control points' operators about this and archiving this information.

247. The information provided by the video surveillance and situation assessment system to the control posts' operators must enable distinguishing intruders and animals in the field of view.

248. The video surveillance and situation assessment system must monitor all detection areas of technical means of physical protection.

249. Ways of providing video information:

- 1) permanent operational video review from the scene of the event in real time;
- 2) video review from the scene on a previously installed program or by a one-time command;
- 3) planned scenario video review - transfer of archival materials;
- 4) collection of transmitted video information is carried out via cable communication lines or other channels in accordance with the requirements for the classified information transmission.

250. Functions of video surveillance system and situation assessment:

- 1) observation;
- 2) collection and transmission of video information;
- 3) display of video information;
- 4) processing and recording of video information;
- 5) archiving of video information.

251. When organizing video control over the protected area perimeter, video cameras in each section shall be installed in such a way that they are in direct line of sight of at least one of the video cameras of neighboring sections. The height, the spectrum of the received radiation and the installation location of the video cameras shall be selected during the design.

252. Video cameras shall be installed in a manner making an unauthorized access to them difficult.

253. The transition time of a video surveillance system and assessment of the situation from standby to working mode shall not exceed 2 s.

254. The operational communication and warning system is intended to organize the exchange of voice information between security forces in order to ensure coordinated actions to protect a nuclear facility in regular and emergency situations.

255. The operational communication and warning system shall provide:

1) reliable and uninterrupted operation throughout the entire territory of the nuclear facility and at the nearest approaches to it, in all its buildings, structures and premises in all permissible operating modes, including during internal transportation of nuclear materials in the operating organization;

2) accounting and recording of ongoing negotiations with an indication of the time and their duration with a frequency determined by taking into account the operational situation at the nuclear facility;

3) exclusion of unauthorized connection of other subscribers and, if possible, identification, localization and recording of such facts;

4) organization of communication channels between the management of the operating organization, the physical protection unit of nuclear materials and nuclear installations, security and response forces, as well as territorial structural units of state bodies providing nuclear security.

256. The operational communication system shall consist of the following communication types:

1) direct telephone communication;

2) loud speaker communication;

3) radio communication.

257. If it is impossible to establish radio communication in protected areas, structures and premises of a nuclear facility due to technological features, alternative means of two-way communication shall be provided.

258. To ensure reliable operation in the operational communication and alert system, at least two different connection technologies between subscribers shall be used. Alternative communication methods must be available as soon as the main communication method fails.

259. The following types of direct telephone communication shall be organized in the system of physical protection of nuclear installations:

1) the operator of the central control point with the guard commander (shift commander), with the checkpoint, as well as with the necessary structural units and administration of the operating organization;

2) the guard commander (shift commander) with security posts.

260. The direct telephone communication of the central control point operator shall be autonomous, enabling circular communication with subscribers, as well as connection to the city automated telephone communications.

261. Direct telephone communication of the guard commander (shift commander) with the posts shall also be autonomous and enable issuing of instructions (orders) to all security posts.

262. To organize communication around the perimeter, except for subscriber sets installed at all posts, including the guard post, socket outlets shall be installed along the squad trail every 100-150 m for negotiations with mobile squads and alarm groups.

263. Loudspeaker communication shall be used as operational communication of the operator of the central control post and the guard commander with the posts.

264. The radio communication system is intended for operational communication of the guard commander (shift commander) with mobile units and alarm groups in the conditions of performing operational tasks by them.

265. A warning system at a nuclear facility and its territory shall be established to promptly notify people about an alarm or an emergency (accident, fire, natural disaster, attack, terrorist act) and coordinate their actions.

266. The operating organization shall develop a warning plan, which generally includes:

- 1) call-up scheme for the staff whose responsibilities include participation in measures to prevent or eliminate the consequences of emergency situations;
- 2) instructions for the actions of employees in emergency situations;
- 3) evacuation plans;
- 4) warning signal system.

267. The warning system shall ensure fulfillment of the following functional requirements (characteristics):

- 1) transmission of sound and (or) light signals to buildings, premises, to areas of the nuclear facility with permanent or temporary stay of people;
- 2) transmission of speech information about the nature of the danger, the need and ways of evacuation, other actions aimed at ensuring the people's safety.

268. Evacuation of people through the warning system shall go with:

- 1) switching of emergency and security lighting;
- 2) transmission of specially designed texts aimed at preventing panic and other phenomena complicating the evacuation process (accumulation of people in the aisles, vestibules, stairwells and other places);
- 3) switching of light indicators of directions and evacuation routes;
- 4) remote opening of doors of additional emergency exits (for example, equipped with electromagnetic locks).

269. The warning system shall differ from signals for other purposes.

270. The number of alarms, their power shall provide the necessary audibility in all places of permanent or temporary stay of people.

271. Loudspeakers shall be used along the perimeter of the restricted area of a nuclear installation. They are installed on lighting poles, walls of buildings and structures.

272. The correct placement and number of loudspeakers along the restricted area perimeter is determined and adjusted on the spot experimentally by intelligibility of the transmitted voice messages.

273. Annunciators shall not have volume controls and detachable connections.

274. Communications of warning systems in some cases are designed to be combined with the radio broadcasting network of a nuclear facility.

275. The telecommunications system shall be intended to ensure a reliable exchange of information between the systems that are part of the physical protection system.

276. The equipment of the telecommunications system shall be used if the standard equipment that is part of the functional systems does not meet the requirements for the transmission of information circulating in the physical protection system, and also for aligning and coordinating various systems that are part of the physical protection system.

277. The telecommunications system shall provide:

- 1) transfer of reliable information;
- 2) continuity of operation;
- 3) tactically acceptable message delivery time;
- 4) systematization, documentation and archiving of information about the functioning;
- 5) exchange of information with system elements of various types of security.

278. The telecommunications system shall provide for backup and alternative transmission channels of information that is functionally significant for the performance of the complex (channels reservation, use of routers). Reserve channels shall be laid along routes physically spaced from the main channels.

279. The telecommunications system shall ensure formation of a closed information transmission system, providing operability of individual protected areas. To interact with the rest of the elements of the set of technical means of physical protection, one or more well-protected and inaccessible to an offender communication channels shall be used.

280. The need to protect information in the physical protection system is due to the presence in this system of information that reveals the physical protection system of a nuclear facility and (or) determines its operation mode.

281. An information security system is a necessary component of an automated physical security system. At all levels of management and operating stages of the physical protection system (transmission, collection, processing, analysis, storage of data, transmission of control commands), information protection shall be ensured by using a set of tools and taking measures to prevent information leakage or to exclude the impact on it through technical channels, to prevent accidental or intentional software and hardware impacts with the aim of violating the integrity (destruction, distortion) of information during its processing, transmission and storage or disrupting the performance of technical means.

282. An information security system is a set of organizational, technical, technological means, methods and measures that reduce vulnerability of information and prevent unauthorized (illegal) access to information, its leakage or loss.

283. Predicted threats to information security of the physical protection system of a nuclear facility:

1) distortion (substitution) of information transmitted in the system, imposition of false or previously transmitted messages with the specific purpose of preventing transmission of true information;

2) influence through communication channels on the technical means of the system for collecting data from the sensors of the nuclear facility perimeter, aimed at disorganizing the functioning of the elements of the system and disrupting information exchange in the system;

3) an attempt by an intruder to obtain the entire volume of secret information circulating in the system;

4) an attempt to violate authentication of information sources;

5) an attempt to select access codes.

284. Key elements of information security:

1) determination of information subject to protection;

2) appointment of persons who are officially allowed access to classified information;

3) measures to protect classified information.

285. Information protection measures:

1) providing control points with protected equipment;

2) use of licensed system software in computer facilities;

3) preventing unauthorized actions of service personnel, as well as other persons;

4) checking of application software for the absence of undeclared capabilities;

5) the use of a set of protecting information means during its transmission via wire, radio communication channels (shielding, noise, masking, organizational measures to restrict access, the use of cryptographic information protection tools).

286. Technical means of inspection shall be used when the personnel and visitors or vehicles pass through the checkpoint of a nuclear facility to detect prohibited items and substances.

287. The list of technical means of inspection shall include:

1) metal detectors;

2) detectors of explosives in nuclear installations;

3) radiation detectors;

4) inspection endoscopes and mirrors.

288. Technical means of inspection may be stationary and portable (manual).

289. Metal detectors shall ensure the detection of cold steel and firearms, metal-containing explosive devices (grenades), various types of metal-containing production products prohibited from carrying.

290. Technical means of inspection shall ensure fulfillment of the following functional requirements (characteristics):

1) stationary metal detectors with:

high probability of detection, selectivity in relation to metal objects allowed to be carried to a nuclear facility;

the ability to maximize functional adaptation to the environment (including metal-containing);

high interference resistance to external electromagnetic radiation sources; homogeneous detection sensitivity throughout the controlled space;

ability to easily reconfigure to detect various masses of metal;

permissible level of influence on implantable pacemakers and magnetic media carriers;

2) portable (manual) metal detectors with:

detection and, if necessary, recognition of ferrous and non-ferrous metals and their alloys;

ability to reconfigure to detection of various masses of metal; possibility of using when working with stationary metal detectors;

3) inspection endoscopes and mirrors that are used to facilitate visual inspection of hard-to-reach places and identify explosive devices, firearms and cold steel, smuggling and means of covert removal of information in them. Technical endoscopes and videoscopes that are used for visual inspection of various cavities, channels and other places, access to which is possible only through relatively small openings, and providing:

access at a distance of at least 1500 mm with at least 40 degrees angle of view for flexible and semi-rigid structures and 90 degrees for rigid structures;

the possibility of highlighting the inspection site, adjusting the lighting conditions;

video recording of inspection results;

environmental safety and electromagnetic compatibility;

4) equipment for the detection of explosive, narcotic and hazardous chemicals that is used to detect the presence of them or their traces, and providing:

identification of substances based on the use of modern physical and chemical methods of analysis;

sensitivity, enabling a reliable detection of the presence of regular explosives such as trotyl, hexogen;

express detection of traces of explosives on the surface of objects (analyzers of traces of explosives).

291. Functional characteristics (requirements) for inspection systems and methods for testing them shall be established in operational and departmental documents.

292. According to the degree of reliability of power supply, power receivers of the physical protection system belong to category 1. The electrical receivers are powered from two independent AC sources, for example, from two sections of normal operation with mutual redundancy. Power lines shall be autonomous.

293. As the main source of power, the power source of the nuclear facility's own needs shall be used.

294. Transition to backup power supply shall be automatic, without interruption in power supply.

295. Backup (emergency) power is supplied from diesel generators and batteries, which are located in close proximity to the central control posts, and also which are under constant control of the security forces. Switching to backup power is automatic.

296. Information about transition to backup power shall be displayed on the appropriate local or central control points with the necessary registration.

297. Batteries shall be installed in special premises on racks or in special battery cabinets equipped with exhaust ventilation. In everyday conditions, constant recharging and monitoring of batteries shall be provided.

298. Redundancy of direct current power shall be provided by the installation of mutually redundant sets of rectifiers.

299. A power reserve of at least 20% shall be provided. The cables cross section is calculated depending on the maximum allowable voltage drop at the maximum current consumption. The maximum allowable voltage drop must not exceed 5% of the supply voltage.

300. Power supply devices (rectifiers, charging and discharging boards, group power distribution boards) shall be installed in specially equipped premises with limited access.

301. Power supply devices and cable networks shall be protected from unauthorized actions aimed at their destruction.

302. Security lighting is an auxiliary means that facilitates protection of the nuclear facility perimeter in the dark.

303. Security lighting of a nuclear installation shall provide:

1) the necessary uniform illumination of the restricted areas up to the squad trail, as well as the checkpoint;

2) camouflage of security posts;

3) automatic switching on of lighting in certain sections of the fence perimeter when an intruder alarm is triggered;

4) manual switching on of lighting of the perimeter sections and protected areas from the guardhouse;

5) lighting of entrances to buildings of internal and critical areas.

304. Floodlights, incandescent lamps shall be used as security lighting devices. To save energy consumption, LED lamps are used.

305. Lighting devices shall be located in such a way as not to blind the security and response forces directly at the guard posts and checkpoints.

306. Guard posts, squad trail, guard roads and guard blinders shall not be placed in the lighting strip.

307. The distance between the torches, their power and design shall be purposed to creation of a continuous, uniform strip of light required by the illumination standards.

308. Security lighting of the perimeter shall be divided into separate sections corresponding to sections of the perimeter security alarm system and the video surveillance and situation assessment system.

309. The security lighting network shall be independent and complying with safety requirements. The main and distribution (group) networks of security lighting shall be by a cable laid in the ground or boxes. To control security lighting, independent control cables must be provided. Control cables must be laid along the same route with the power networks of the security alarm.

310. Power boards shall be installed in the restricted area (in a metal cabinet), next to the squad trail and in the premises at the checkpoint.

311. Illumination of inspection sites of automobile and railway checkpoints shall be at least 150 lux, for the passage of people - at least 200 lux.

312. When using a video surveillance system and assessing the situation, the illumination shall comply with the requirements of the technical specifications for the types of video cameras installed.

313. Illumination standards for security office premises shall be determined in accordance with the Law of the Republic of Kazakhstan “On architectural, urban planning and construction activities in the Republic of Kazakhstan”.

314. The premises of the security and response forces, checkpoints, entrances to buildings, corridors of categorized premises shall be additionally equipped with emergency lighting. Transition of working lighting to emergency and back is automatic.

315. Lighting of road and rail checkpoints shall ensure the inspection of vehicles and transported goods. Lighting devices shall be located in a way enabling uniform illumination of the inspected transport, including from below. Where necessary, it is possible to use portable lighting.

316. Electrical wiring for power supply of physical protection system means shall be installed with a separate cable.

317. It is not allowed to combine low-current and high-current circuits in one pipeline.

318. Series-produced power and signal cables shall be used as supply wiring, selected with regard to the conditions of their laying.

319. The cross section of the conductors of the power cables of the distribution network is calculated based on the maximum allowable voltage drop at maximum current consumption.

320. Protective grounding and “zeroing” of the means of the physical protection system shall comply with the Rules for installing electrical installations, approved by order of the Minister of Energy of the Republic of Kazakhstan dated March 20, 2015 No. 230 (registered in the Register of State Registration of Regulatory Legal Acts under No. 10851).

Paragraph 13. Requirements for the operation of technical means of physical protection

321. Operation of technical means of physical protection includes technical operation and intended use.

322. The technical operation of technical means of physical protection is a set of organizational and technical measures enabling conservation, maintenance in good condition and constant readiness for use, restoration of their operability and resource.323. Technical operation of technical means of physical protection shall include:

- 1) professional selection and admission of physical protection personnel to the operation of engineering and technical means of physical protection;
- 2) planning of technical operation;
- 3) functional check, maintenance and repair;
- 4) material, technical and metrological support;
- 5) maintenance of operational and accounting documentation;
- 6) accounting, storage, transportation and conservation;
- 7) collection, accounting and analysis of operational data on reliability and stability of the operation of engineering and technical means of physical protection;
- 8) control and assessment of the technical condition and organization of operation;
- 9) organization of work to ensure and comply with safety requirements during operation.

324. The following personnel shall be allowed to operate technical means of physical protection at a nuclear installation:

- 1) who has undergone special training and internship, has practical skills in the operation of engineering and technical means of physical protection in the scope of functional duties;
- 2) who passed the test of the qualification commission in knowledge of the material part of the engineering and technical means of physical protection, regulations for the organization of operation, safety requirements, having the appropriate qualification group for safety;
- 3) who were given a permit to operate engineering and technical means of physical protection, issued by the operating organization.

325. In the selection of personnel operating and carrying out maintenance of engineering and technical means of physical protection, their medical contraindications, educational level, and professional skills in working with engineering and technical means shall be taken into account.

326. The frequency of testing the knowledge of the regulations for the operation of physical protection systems for personnel operating physical protection systems shall be established.

327. The plans for the operation and maintenance of engineering and technical means of physical protection shall provide for the following activities:

- 1) maintenance;
- 2) repair and storage;

- 3) logistical support of the operation;
- 4) collection, accounting and analysis of data on interference resistance and operational reliability of engineering and technical means of physical protection;
- 5) safety protection;
- 6) control of the technical condition and organization of the operation of engineering and technical means of physical precautions.

328. Maintenance and repair of engineering and technical means of physical protection is a set of organizational and technical measures aimed at maintaining physical protection equipment in good condition.

329. Maintenance of technical means of physical protection shall include:

- 1) scheduled maintenance;
- 2) unscheduled maintenance;
- 3) maintenance during storage;
- 4) control over the performance and timely gauging of measuring instruments.

The basis of technical maintenance of technical means of physical protection is routine maintenance.

330. The main tasks of maintenance of engineering and technical means of physical protection shall be:

- 1) assessment of the technical condition;
- 2) elimination of consequences of adverse climatic and other conditions;
- 3) instrumental testing and bringing the equipment, line-cable and switching gear to the established electrical parameters;
- 4) detection and elimination of faults, prevention of failures;
- 5) preparation for spring-summer and autumn-winter operation;
- 6) checking the completeness of mechanisms, equipment and availability of tools, replenishment of spare tools and devices.

331. Maintenance of technical means of physical protection shall be carried out according to the planned preventive system that provides for the following frequency of routine maintenance:

- daily;
- weekly;
- monthly;
- quarterly;
- semi-annual;
- annual maintenance.

332. The performance of maintenance shall be determined by the operational documentation for the engineering and technical means of physical protection.

333. Logistical support for the operation of engineering and technical means of physical protection shall be provided.

334. Control of the logistics of the operation of engineering and technical means of physical protection shall include:

- 1) checking the availability, quality condition and completeness of engineering and technical means of physical protection in warehouses, units and workshops;
- 2) compliance of data on the availability of technical means of physical protection with the main accounting;
- 3) verification of the organization of accounting of technical means of physical protection;
- 4) checking the presence of a verification mark on the measuring technical equipment of technical means of physical protection;
- 5) development of measures to eliminate the identified shortcomings.

335. Maintenance of operational documentation for engineering and technical means of physical protection shall be ensured in units operating technical means of physical protection. The main operational documentation shall be supplied together with the specific equipment.

336. Accounting for engineering and technical means of physical protection, their short-term or long-term maintenance in established places in good condition, movement within the nuclear facility and conservation shall comply with the requirements of operational documentation for a specific product.

337. Accounting for technical means of physical protection shall reflect the correct and timely documenting of their actual availability. Accounting shall be made on cards and books. Technical means of physical protection that have become unusable shall be written off.

338. All technical means of physical protection that are in long-term storage (over a year) shall be conserved. Conservation consists in carrying out work on temporary protection of technical means of physical protection stored in adverse conditions from the harmful impact of external factors (primarily humidity and air pollution). Preservation means must be sealing, applying protective coatings or a combined method.

339. Control and assessment of the technical condition and organization of operation of technical means of physical protection shall be carried out in accordance with the plan for checking the technical condition and operability by persons directly involved in the management of the physical protection system, and also by the authorized body in order to check:

- 1) efficacy of application;
- 2) performance;
- 3) compliance with the operating regulations;
- 4) readiness of the security and response forces to perform tasks using technical means of physical protection.

340. The work to ensure and comply with safety requirements during the operation of technical means of physical protection shall be organized in strict accordance with the operational documentation requirements.

341. The use of technical means of physical protection for their intended purpose shall comply with the requirements established in the operational documentation.

Paragraph 14. Requirements for the selection and placement of equipment elements of the physical protection system

342. The perimeters of protected zones shall be equipped with technical means of physical protection detecting unauthorized actions, ensuring an emergency call of response forces and provision of information to assess the situation, and also delay the violators' progress.

343. Border sections of protected areas that are inaccessible for observation shall be excluded. Detection means shall be placed in a way leaving no uncontrolled areas.

344. The perimeter of the protected zone of a nuclear installation shall include:

- 1) restricted area;
- 2) checkpoint for the passage of people;
- 3) a checkpoint for the passage of motor vehicles;
- 4) checkpoint for the passage of railway transport.

345. The perimeter of the protected area of a natural uranium producing and (or) handling enterprise shall include:

- 1) checkpoint for the passage of people;
- 2) a checkpoint for the passage of motor vehicles;
- 3) checkpoint for the passage of railway transport.

346. The restricted area of a nuclear installation shall be provided with:

- 1) the main fence;
- 2) internal and external fencing;
- 3) a squad trail;
- 4) control and trace strip;
- 5) security lighting;
- 6) technical means of physical protection;
- 7) means of communication;
- 8) observation towers;
- 9) guard blinders, shelter trenches.

347. To mark the restricted zone boundaries, along the entire perimeter every 50 m, warning signs shall be installed with clearly visible inscriptions "PROHIBITED ZONE. NO TRESSPASSING!" in Kazakh and Russian.

348. The perimeter of the protected zone of a nuclear installation shall be equipped with at least two physical barriers and detection means placed on them, based on different physical principles.

349. The perimeter of the protected zone of a natural uranium mining and (or) handling enterprise shall be equipped with at least one physical barrier and detection means placed on it.

350. The restricted area shall be equipped with engineering means of protection, as well as means of communication and warning.

351. Video surveillance and situation assessment systems shall be installed in the restricted area. Installation sites and their type depend on the tasks (surveillance, detection, evaluation).

352. The boundaries of the interior and critical areas shall be equipped with:

- 1) means of detection;
- 2) an automated system for access control and management, personal identification;
- 3) video surveillance and situation assessment system;
- 4) means of detecting the carrying (transportation) of nuclear materials, metal products and explosives;
- 5) working and emergency lighting.

353. If necessary, to ensure control of the passage through the cabins, the work station of the controller of the security and response forces and its protection from a sudden attack and firing from small arms shall be equipped.

354. If the internal zone is allocated locally, then its perimeter shall be equipped with:

- 1) a fence of metal mesh or barbed wire with a height of at least 2.5 m;
- 2) an automated access control and managing system for the passage of people, passage of road and rail transport.

355. All entrances to categorized buildings, structures, premises and exits from them shall be equipped with detection tools, an access control and management system and, if necessary, a video surveillance and situation assessment system.

356. Emergency exits ensure unhindered exit of people in emergency situations.

357. All emergency exits in each protected area shall be closed and equipped with:

- 1) detection means;
- 2) locks and locking devices with remote control and the possibility of their manual unlocking;
- 3) an alarm button at nuclear installations;
- 4) working lighting;
- 5) emergency lighting.

358. Emergency exits of nuclear installations shall be equipped with a direct telephone communication with the central control point operator.

359. Exits to the roof shall be closed and equipped with detection means and an alarm button.

360. The lower fire staircase flight shall also be equipped with detection means.

361. Procedures shall be developed at a nuclear facility for accounting, storage and control of locks and keys used in the physical protection system.

362. The procedure of accounting, storage and control of locks and keys shall provide for:

- 1) registration of all persons who have gained access to the keys;

- 2) recording the issuance and delivery of keys;
- 3) checking the availability of keys and measures to prevent their unauthorized use;
- 4) replacement of locks and keys as soon as possible upon discovery of the fact or upon suspicion of unauthorized use of locks and keys.

363. Each lock and key shall be assigned an inventory number according to the logbook of locks and keys. Each key shall be stamped with its inventory number. Keys shall remain within the corresponding secured area.

364. The central control point premises shall be provided with:

- 1) equipment of the system for collecting and processing information with working and backup computers;
- 2) a mnemonic scheme of protected, interior and critical areas, equipped with sound and light alarms;
- 3) video control devices of the video surveillance and situation assessment system;
- 4) a direct telephone switch;
- 5) speakerphone switch;
- 6) peripheral devices of the local point of physical protection point, monoblocks and other individual sections of the physical protection system;
- 7) means of duplicated communication and emergency signaling with the guard commander (shift supervisor);
- 8) equipment for automated activation of security lighting;
- 9) a device for manual activation of security lighting.

Paragraph 15. Requirements for the physical protection during nuclear materials transportation

365. Transportation of nuclear materials by all means of transport by land, air and waterways through the territory of the Republic of Kazakhstan is subject to their physical protection.

366. Physical protection during the transportation of nuclear materials shall be carried out within the framework of ensuring nuclear security in accordance with the requirements of the Law referred to in paragraph 1 of these Rules, the Law of the Republic of Kazakhstan "On the accession of the Republic of Kazakhstan to the Convention on the Physical Protection of Nuclear Material" (hereinafter referred to as the Convention) and Law of the Republic of Kazakhstan "On Ratification of the Amendment to the Convention on the Physical Protection of Nuclear Material".

367. When transporting nuclear materials, the levels of physical protection applicable in the international transportation of nuclear material by categories of nuclear materials shall be established in accordance with Appendix 3 to these Rules.

368. The tasks of physical protection of nuclear materials during their transportation shall correspond to the tasks specified in paragraph 217 of these Rules.

369. To ensure the physical protection of nuclear materials during their transportation, it is necessary to:

- 1) protect nuclear material during transportation and during temporary storage in accordance with the category of nuclear material;
- 2) maximally limit the total time of nuclear materials in transit;
- 3) minimize the number and duration of transfers of nuclear material (transshipment from one carrier vehicle to another, transfer of nuclear material for temporary storage and receipt of nuclear material after storage, as well as temporary storage operations awaiting the arrival of the carrier vehicle);
- 4) draw up a schedule, timetable and route for the vehicles movement, taking into account the conveyance conditions;
- 5) conduct mandatory preliminary due diligence of all persons involved in the nuclear material transportation;
- 6) ensure that the number of persons who have prior information about the transportation is minimized;
- 7) use material transportation systems with passive and (or) active physical protection measures in accordance with the performed threat assessment or design threat;
- 8) determine routes that exclude crossing the areas of natural disasters, riots or zones with a known threat;
- 9) exclude the possibility of leaving packages and (or) conveying vehicles without the presence of personnel (supervision) for longer than is absolutely necessary;
- 10) ensure that the persons driving a vehicle, escorting and guarding nuclear materials have an appropriate permit;
- 11) exclude the application of signs and inscriptions on the vehicles and making entries in the transportation documents indicating the nature of the cargo and the purpose of the vehicles;
- 12) dispatch nuclear materials only after receiving from the consignee of a written confirmation of readiness to accept nuclear materials, and in case of nuclear materials transportation by the consignee - also a license for nuclear materials transportation;
- 13) use means of coding and special communication channels for transmission of messages on nuclear materials transportation;
- 14) provide notification of the consignee about the dispatch of the cargo and the consignor about the receipt of the cargo;
- 15) organize interaction, no later than 30 calendar days, of the consignor or consignee with the relevant national security and internal affairs bodies of the Republic of Kazakhstan in order to jointly determine additional measures to ensure protection and safety of transported nuclear materials, repel a possible attack on the vehicle en route or in the event of emergency along the route;

16) ensure that vehicles are inspected before loading and dispatching nuclear materials for the absence of devices capable of disabling the vehicle, damaging the transported nuclear materials and (or) facilitating unauthorized actions in relation to nuclear materials.

370. The consignor, before dispatching each cargo of nuclear materials, and the carrier, together with the security and response forces, during any transfer of this cargo associated with the use of various modes of transport, shall check the integrity of the locks and seals on the packaging, vehicle, compartment or cargo container.

371. The consignor, together with the consignee, shall ensure continuous monitoring of the vehicle location and the state of its physical security, as well as alerting the response forces in the event of an attack and maintaining at least two methods of two-way communication based on different physical principles, with cargo escort and response forces.

Personnel responsible for this monitoring shall be suitably qualified and have access to confidential information.

372. Transportation of nuclear materials shall be performed by a carrier holding a license issued by an authorized body in accordance with the Law of the Republic of Kazakhstan "On Permits and Notifications".

373. For physical protection during the nuclear materials transportation, the carrier shall ensure:

- 1) provision of technically sound and specially equipped vehicles;
- 2) equipment of vehicles with engineering and technical means of physical protection;
- 3) driving of vehicles by highly qualified drivers, crews or teams who have undergone special training and have a relevant work permit.

374. The responsibility of the carrier for ensuring physical protection during the nuclear materials transportation shall arise from the moment of nuclear materials loading onto (into) vehicles until unloading of nuclear materials from vehicles in accordance with the concluded contract for the transportation of goods in accordance with the Civil Code of the Republic of Kazakhstan.

375. Drivers of vehicles, members of crews or teams involved in providing physical protection during transportation, as well as security personnel and accompanying persons, before each trip, shall be duly briefed and undergo a medical examination for the respective modes of transport.

376. Protection during the transportation of categories I and II nuclear materials shall be carried out by the protection and reaction forces.

377. Cargo compartments of vehicles transporting nuclear materials and that are under guard shall not be opened if the seals are intact and the imprints on the seals correspond to the samples of seals for the cargo transportation period.

378. When transporting nuclear materials of categories I and II by road, continuous protection of the cargo shall be provided along its entire route and escort by representatives of the territorial units of the internal affairs bodies of the Republic of Kazakhstan.

379. Physical protection during the transportation of category I or II nuclear materials by rail shall be carried out in special wagons.

During the transportation of category I or II nuclear materials, the escorting and security and response forces shall be accommodated in service premises isolated from the cargo or in separate wagons specially equipped for these purposes.

380. Physical protection during the transportation of category I or II nuclear materials by air shall be carried out on board an aircraft intended only for cargo transportation, in a secure locked and sealed compartment or container.

Cargo transportation by air shall be carried out by aircraft, intended solely for carrying cargo in which nuclear material will be the only cargo.

381. Physical protection during the transportation of category I or II nuclear materials by sea and inland waterway transport shall be carried out on a specialized transport vessel.

Nuclear materials shall be placed in a secure locked and sealed compartment or container.

382. Transportation of nuclear materials in international traffic shall be carried out by the sender state and the recipient state, as well as other states through whose territory the transportation will be carried out, subject to the requirements of the Convention.

To ensure physical protection during the nuclear materials transportation in international traffic, the organizational and technical measures shall be provided, as required by the legislation of the transportation participating states.

Transportation of nuclear materials in international traffic shall be carried out only in the presence of obligations of the authorized state bodies of all states involved in the transportation that, during transportation through the territory of their states, the nuclear materials will be provided with physical protection measures at a level not lower than the level established by the Convention.

383. The parties responsible for physical protection, when transporting nuclear materials in international traffic through the territory of the Republic of Kazakhstan, shall notify, in accordance with the emergency response plan, the authorized body, as well as other state bodies, in accordance with subparagraph 2) of paragraph 35 of these Rules, about unauthorized acts or attempts to perform such acts during transportation for appropriate action

384. Customs operations and customs control of nuclear materials moved across the state border of the Republic of Kazakhstan shall be performed in accordance with the Law of the Republic of Kazakhstan “On Ratification of the Treaty on the Customs Code of the Eurasian Economic Union”.

Appendix 1
to the Rules for the
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materials and nuclear installations

Material	Form	Categorization		
		I	II	III
Plutonium	Non-irradiated	2 kg or more	less than 2 kg, but more than 500 g	500 g or less, but more than 15 g
Uranium -235	Non-irradiated			
	- uranium with uranium-235 enrichment of 20% or more	5 kg or more	less than 5 kg, but more than 1kg	1 kg or less, but more than 15 g
	- uranium with uranium-235 enrichment of 10%, but less than 20%		10 kg or more	less than 10 kg, but more than 1 kg
	- uranium enriched in uranium-235 higher than natural, but less than 10%			10 kg or more
Uranium - 233	Non-irradiated	2 kg or more	Less than 2 kg, but more than 500 g	500 g or less, but more than 15 g
Irradiated fuel (Categorization of irradiated fuel given in the table takes into account the requirements of international carriage (transportation)).			Depleted or natural uranium, thorium or low enriched fuel (containing less than 10% fissile isotopes) d,e	

Note:

a) all plutonium with the exception of plutonium, the isotopic concentration of which exceeds 80% for plutonium-238;

b) material not irradiated in the reactor, or material irradiated in the reactor, but with a radiation level equal to or less than 1 Gy/h (100 rad/h) at a distance of 1 m without protection (biological);

c) although this protection level is recommended, based on assessment of specific circumstances, a different category of physical protection may be applied;

d) other fuel which, by its original content of fissile isotopes, is classified as category I or II before irradiation, may be downgraded by one category if the radiation level of the fuel exceeds 1 Gy/hour (100 Rad/hour) at a distance of one meter without protection (biological).

Appendix 2
to the Rules for the
physical protection of nuclear
materials and nuclear installations

List of documentation developed by nuclear facilities

№ п/п	Title of the document

1	Nuclear security plan
2	Emergency response plan
3	Regulations on nuclear security culture
4	Regulation on provision of physical protection measures for nuclear materials and nuclear installations
5	Regulation on permit system for access and admission to nuclear materials, nuclear installations and storage facilities for nuclear materials, to information on the physical protection system functioning
6	Act of the interagency commission for the organization of protection
7	Quality assurance program for the physical protection of nuclear materials and nuclear installations
8	Agreement on mutual obligations of the parties
9	Access control regulations
10	Intra-facility mode regulations
11	Regulations on the unit of physical protection of nuclear materials and nuclear installations (security service)
12	Regulations on departmental security unit (if any)
13	Plan for the site security and defense
14	Regulations on the organization of operation of the complex of engineering and technical means of physical protection systems
15	Regulations on organizing the design of a complex of engineering and technical means of physical protection systems
16	Plan for checking the technical condition and operability of engineering and technical means of the physical protection system
17	Personnel due diligence assurance program

Appendix 3
to the Rules for the
physical protection of nuclear
materials and nuclear installations

Levels of physical protection applicable in the international transportation of nuclear material by category of nuclear materials

1. Levels of physical protection of nuclear material during storage associated with the international transport of nuclear material shall include:

- 1) for Category III materials - storage within an area to which access is controlled;
- 2) for Category II materials - storage within an area under permanent guard or electronic surveillance surrounded by a physical barrier with a limited number of entry points under appropriate control, or within any area with a similar physical protection level;
- 3) for category I materials, storage within a protected area, in accordance with subparagraph 2) of this paragraph for category II materials, access to which, in addition, is

allowed only to persons with assured due diligence, and which is under the supervision of guards maintaining a constant close communication with the respective response forces. The purpose of the specific measures taken in such cases is to detect and prevent any attack, unauthorized access or unauthorized removal of the material.

2. Physical protection levels for nuclear material during international transport shall include:

1) for category II and III materials, transportation is subject to special precautions, which include a prior agreement between the sender, recipient and carrier and a preliminary agreement between individuals or legal entities under the jurisdiction and guided by the regulatory legal acts of the exporting and importing states, which determines the time, place and procedures for the transfer of responsibility for transport;

2) for materials of category I - transportation is carried out with observance of special precautions, in accordance with subparagraph 1) of this paragraph for the transportation of categories II and III materials, and, in addition, under constant supervision of guards and in conditions that ensure close communication with the relevant response forces;

3) for natural uranium in a form other than the form of ore or ore residues, protection for the transport of quantities in excess of 500 kilograms shall include advance notification about transportation, indicating the type of transport, the expected time of arrival and confirmation of receipt of the cargo.