

LEGAL NOTICE NO.....

**THE NUCLEAR REGULATORY ACT
(NO 29 OF 2019)**

**IN EXERCISE of the powers conferred in the Nuclear Regulatory Act,
the Cabinet Secretary makes the following Regulations–**

**THE NUCLEAR REGULATORY ACT (SECURITY OF NUCLEAR
MATERIALS AND ASSOCIATED FACILITIES) REGULATIONS, 2021**

Date of Assent:

Date of Commencement:

ARRANGEMENT OF REGULATIONS

Regulation

PART I: PRELIMINARY

- 1 – Citation.
- 2 – Interpretation.
- 3 – Objectives
- 4 – Scope

PART II: GENERAL PROVISIONS

- 5 – Primary obligation
- 6 – Authorization
- 7 – Regulatory Inspection of Premises and Inspection
- 8 – Enforcement
- 9 – Offences and Appeal

PART III: GENERAL REQUIRMENTS FOR PHYSICAL PROTECTION

- 10 – Responsibility of the Operator
- 11 – Categorization of Nuclear materials
- 12 – System for Nuclear Material Accountancy and Control
- 13 – Design Basis Threat
- 14 – Basic Security Design Principles
- 15 – Graded Approach
- 16 – Defense in Depth
- 17 – Integrated Management System
- 18 – Protection of Information
- 19 – Information Security
- 20 – Computer Security
- 21 – Trustworthiness of Personnel
- 22 – Nuclear Security Culture
- 23 – Sustainability Program

PART IV: REQUIREMENT FOR NUCLEAR SECURITY INTERFACE FOR NUCLEAR MATERIAL IN USE AND STORAGE

- 24 – nuclear safety, radiation protection and nuclear material accountancy and control, and inventory control activities

PART V: SECURITY PLAN FOR NUCLEAR MATERIALS AND ASSOCIATED FACILITIES

- 25 – Security Plan for Nuclear Facilities and for Nuclear Material in Use and Storage
- 26 – Contingency Plan for Nuclear Facilities and for Nuclear Material in Use and Storage
- 27 – Compensatory Measures
- 28 – Corrective Actions

PART VI: REQUIREMENTS FOR PROTECTION AGAINST UNAUTHORIZED REMOVAL OF NUCLEAR MATERIALS IN USE AND STORAGE

- 29 – Threat

- 30 – Testing and Maintenance of Security Systems
- 31 – Security event reporting and Investigation
- 32 – Mitigation Measures
- 33 – Guards and Response Teams
- 34 – Evaluations of Physical Protection Measures and System
- 35 – Limited Access Area for Category III Nuclear Material
- 36 – Intrusion Detection and Response for Category III Nuclear Material
- 37 – Procedures for Handlers for Category III Nuclear Material levels
- 38 – Protection of Technical Means for Access Control for Category III Nuclear Material
- 39 – Movements of Nuclear Material within a Limited Access Area for Category III Nuclear Material
- 40 – Protected Area for Category II Nuclear Material
- 41 – Detection and Prevention of Unauthorized Access for Category II Nuclear Material
- 42 – Authorized Access to Protected Area for Category II Nuclear Material
- 43 – Procedures for Nuclear Material Handlers for Category II Nuclear Material
- 44 – On-Site Movements of Nuclear Material between Protected Areas for Category II Nuclear Material
- 45 – Central Alarm Station for Category II Nuclear Material
- 46 – Guards and Response teams for Category II Nuclear Material
- 47 – Evaluations of Physical Protection Measures and System for Category II Nuclear Material
- 48 – Inner Area for Category I Nuclear Material
- 49 – Detection and Prevention of Unauthorized Access for Category I Nuclear Material
- 50 – Authorized Access to Inner Areas for Category I Nuclear Material
- 51 – Continuous Surveillance of Activity in Inner Area for Category I Nuclear Material
- 52 – Access Control Records for Category I Nuclear Material
- 53 – Hardened Room or Enclosure for Category I Nuclear Material
- 54 – Procedures for Nuclear Material Handlers for Category I Nuclear Material
- 55 – On-Site Movements of Nuclear Material between Protected Areas for Category I Nuclear Material
- 56 – Central Alarm Station for Category I Nuclear Material
- 57 – Guards and Response teams for Category I Nuclear Material

58 – Evaluations of Physical Protection Measures and System for Category I Nuclear Material

PART VII: MEASURES TO LOCATE AND RECOVER MISSING OR STOLEN NUCLEAR MATERIAL

59 – Measures to Locate and Recover Missing or Stolen Nuclear Material

60 – Prudent Management Practice

61 – Integrated Protection against Unauthorized Removal and Sabotage

62 – Sabotage Scenarios

63 – Assessment of Consequences and Identification of Equipment, Systems, Devices, or Material to be protected

64 – Physical Protection System Design

65 – High Radiological Consequence Facilities including Nuclear Power Plants

66 – Unacceptable Radiological Consequence Facilities

67 – Measures to Mitigate and Minimize Radiological Consequences of Sabotage

68 – Less severe Radiological Consequences

PART VIII: REQUIREMENTS FOR NUCLEAR MATERIAL DURING TRANSPORT

69 – Aggregation

70 – Consignee authorization

71 – General Requirements for the transport of Nuclear Materials

72 – Application for Authorization

73 – Requirements for International Transportation

74 – Quality management Programme

75 – Training and Qualification.

76 – Reporting of events

77 – Contingency Plan during transport of Nuclear Materials

78 – General Requirements for Graded Approach during Transport

79 – Information Protection during Transport

80 – Keys Control

81 – Route Selection

82 – Transport scheduling

83 – Requirements for Response Team during Transport

84 – Transport Control Center

85 – Communication during Transport

86 – Provisions for Road Transport

87 – Provisions for Rail Transport

88 – Provisions for Air Transport

89 – Provisions for Maritime transport

PART IX: PROTECTION OF NUCLEAR MATERIAL DURING TRANSPORT

90 – Prudent Management Practices for the Protection of Nuclear Material below Category III.

91 – Arrangements Prior To Transport of Category II Nuclear Material

92 – Trustworthiness of Personnel engaged in transport of Category III Nuclear Materials

93 – Information Security for Category III Nuclear Material during Transport

94 – Written Instructions for Category III Nuclear Material during Transport

95 – Control for Category III Nuclear Material during Transport

96 – Locks and Seals for Category III Nuclear Material

97 – Communications for Category III Nuclear Material during Transport

98 – Checks upon receipt for Category III Nuclear Material during Transport

99 – Guards and Response Teams for Category III Nuclear Material during Transport

100 – Requirements for Category II during Transport

101 – Communications for Category II Nuclear Material

102 – Procedures for Category II Nuclear Material

103 – Information protection for Category II Nuclear Material

104 – Checks upon receipt for Category II Nuclear Material

105 – Mode of Transport for Category II Nuclear Material

PART X: ADDITIONAL MEASURES FOR PROTECTION AGAINST SABOTAGE

106 – Additional Measures for Protection Against Sabotage during transport.

SCHEDULES

SCHEDULE 1– CATEGORIZATION OF NUCLEAR MATERIAL

SCHEDULE II – UNACCEPTABLE AND HIGH RADIOLOGICAL CONSEQUENCES

SCHEDULE III– TRANSPORT SECURITY PLAN FOR NUCLEAR MATERIAL

SCHEDULE IV– PROTECTION OF SENSITIVE INFORMATION

SCHEDULE V– SAFEGUARD OF SENSITIVE INFORMATION

	PART 1: PRELIMINARY
Citation.	1. These Regulations may be cited as The Nuclear Regulatory Act (Nuclear Security of Nuclear Material and Associated Facilities) Regulations, 2021.
Interpretation.	2. In these regulations, unless the context otherwise requires- “Act” means The Nuclear Regulatory Act “Associated activity” means the possession, production, processing, use, storage, handling, disposal, or transport of nuclear material. “Associated facility,” means a nuclear material facility. “Authority” means the Kenya Nuclear Regulatory Authority. “Authorization” means the granting by the Authority of written permission for operation of an associated facility or carrying out an associated activity. “Carrier” means any person, organization or government undertaking the carriage of nuclear and material by any means of transport. “Central Alarm Station” means an installation, which provides for the complete and continuous alarm monitoring, assessment

and communication with guards, facility management and response teams.

“Consignee” means any person, organization or government that is entitled to take delivery of a consignment.

“Consignor” means any person, organization or government that prepares or offers a consignment of nuclear material for transport.

“Contingency Plan” means predefined sets of actions for response to unauthorized acts indicative of attempted unauthorized removal or sabotage, including threats thereof, designed to effectively counter such acts.

“Defense in Depth” the combination of multiple layers of systems and measures that have to be overcome or circumvented before physical protection is compromised.

“Delay” means the element of a security system designed to increase the time required, for an adversary to gain unauthorized access to or to remove or sabotage nuclear material, generally through barriers or other physical means.

“Design basis threat” means a comprehensive description of the motivation, intentions and capabilities of potential adversaries against which protection systems are designed and evaluated.

“Detection” means a process in a security system that begins with sensing a potentially malicious or other unauthorized act and that is completed with the assessment of the cause of the alarm.

“External Adversary (outsider)” means an adversary other than an insider.

“Graded approach,” means the application of nuclear security measures proportional to the potential consequences of a malicious act.

“Guard” means a person who is entrusted with responsibility for patrolling, monitoring, assessing, escorting individuals or transports, controlling access and or providing initial response within the facility.

“Import” means the physical transfer, into an importing State or to a recipient in an importing State, originating from an exporting State, of one or more nuclear source(s) covered by these Regulations.

“Inner Area” means an area with additional protection measures inside a protected area, where Category I nuclear material is used and/or stored.

“Insider” means one or more individuals with authorized access to nuclear facilities or nuclear material in transport who could

attempt unauthorized removal or sabotage, or who could aid an external adversary to do so.

“Integrated Management System” means a system that integrates all of an organization’s systems and processes into one complete framework, enabling the organization to work as a single unit with unified objectives.

“Licensee” means a person authorized under the Act

“Limited Access Area” means a designated area containing a nuclear facility and nuclear material to which access is limited and controlled for physical protection purposes.

“Management” means operating an associated facility or engaging in an associated activity, including transport.

“Malicious act” means an act or attempt of unauthorized removal of nuclear or other nuclear material or sabotage.

“Nuclear Facility” means a facility (including associated buildings and equipment) in which nuclear material is produced, processed, used, handled, stored or disposed of and for which a specific license is required.

“Nuclear material” means plutonium except that with isotopic concentration exceeding 80% in plutonium-238; uranium-233; uranium enriched in the isotope 235 or 233; uranium containing the mixture of isotope 235 or 233; uranium containing the mixture of isotopes as occurring in nature other than in the form of ore or ore-residue; any material containing one or more of the foregoing.

“Nuclear security” means the prevention and detection of, and response to, theft, sabotage, unauthorized access, illegal transfer or other malicious acts involving nuclear material, other nuclear material or their associated facilities.

“Nuclear Security Culture” means the assembly of characteristics, attitudes and behaviors of individuals, organizations and institutions, which serve as a means to support, enhance and sustain nuclear security.

“Nuclear security event” means an event that is assessed as having implications for nuclear security.

“Performance testing” means testing of security measures and the security system to determine whether or not they are implemented as designed; adequate for the proposed natural, industrial and threat environments; and in compliance with established performance requirements.

“Physical Barrier” means a fence, wall or similar impediment, which provides access delay and complements access control.

“Physical Protection Measures” means the personnel, procedures, and equipment that constitute a physical protection system.

“Protected Area” means area inside a limited access area containing Category I or II nuclear material and/or sabotage targets surrounded by a physical barrier with additional physical protection measures.

“Response” means the actions undertaken following detection to prevent an adversary from succeeding in unauthorized removal or sabotage. These actions, typically performed by onsite guards or by off-site law enforcement, security or military personnel, have the objective of interrupting and defeating an adversary while the attempted unauthorized removal or sabotage is in progress in order to prevent its completion.

“Response Team” means persons, on-site or off-site, who are armed and/or equipped and trained to counter an attempted unauthorized removal or an act of sabotage for Category I and II.

“Sabotage” means any deliberate act directed against an associated facility or an associated activity that could directly or indirectly endanger the health and safety of personnel, the public, or the environment by exposure to radiation or release of nuclear substances.

“Safety” means measures intended to minimize the likelihood of accidents involving nuclear or other nuclear material and, should such an accident occur, to mitigate its consequences.

“Security plan” means a document prepared by the operator that presents a detailed description of the security arrangements in place at an associated facility or in connection with an associated activity, including transport.

“Sensitive information” means information, in whatever form, including software, the unauthorized disclosure, modification, alteration, destruction, or denial of use of which could compromise nuclear security.

“Sensitive Information Assets” means any equipment or components that are used to store, process, control or transmit sensitive information, including control systems, networks, information systems and any other electronic or physical media.

“Single Failure Criterion” means a criterion (or requirement) applied to a system such that it must be capable of performing its task in the presence of any single failure.

“Storage” means the holding of nuclear material in a facility that provides for their containment with the intention of retrieval.

	<p>“System for Nuclear Material Accountancy and Control (NMAC)” means an integrated set of measures designed to provide information on, control of, and assurance of the presence of nuclear material, including those systems necessary to establish and track nuclear material inventories, control access to and detect loss or diversion of nuclear material, and ensure the integrity of those systems and measures.</p> <p>“Threat” means a person or group of persons with motivation, intention and capability to commit a malicious act.</p> <p>“Threat Assessment” means an evaluation of the threats - based on available intelligence, law enforcement, and open-source information - that describes the motivations, intentions, and capabilities of these threats.</p> <p>“Trustworthiness” means characteristics of an individual considered dependable in judgment, character, and performance such that unescorted access to nuclear material or a nuclear facility or access to sensitive information does not constitute an unreasonable security risk.</p> <p>“Two-Person Rule” means a procedure that requires at least two authorized and knowledgeable persons to be present to verify that activities involving nuclear material and nuclear facilities are authorized in order to detect access or actions that are unauthorized.</p> <p>“Unacceptable Radiological Consequences” means a level of radiological consequences, established by Authority, above which the implementation of physical protection measures is warranted.</p> <p>“Vital Area” means area inside a protected area containing equipment, systems or devices, or nuclear material, the sabotage of which could directly or indirectly lead to high radiological consequences.</p> <p>“Unauthorized removal” means the theft or other unlawful taking of nuclear material.</p>
Objective	<p>3. These regulations specifies the basic requirements for:</p> <ol style="list-style-type: none"> (1) the security of nuclear material and associated activities; (2) the protection of nuclear materials and associated facilities against security threats; (3) account for nuclear materials within its possession. (4) the measures and systems to minimize the radiological consequence of sabotage;

Scope	<p>4. These Regulations apply to:</p> <p>(1) the following material, facilities and activities:</p> <ul style="list-style-type: none"> (a) Nuclear material; (b) Facilities associated with nuclear material; (c) Activities associated with nuclear material, specifically its use, storage and transport. <p>(2) persons authorized (operators) and persons intending to obtain authorization (applicant) to:</p> <ul style="list-style-type: none"> (a) use, store and/or transport nuclear material; (b) operate nuclear facilities and related facilities <p>(3) These Regulations do not apply to nuclear material or facilities within military or defense programs or any other national security organ, agency or service.</p>
	<p>PART II: GENERAL PROVISIONS</p>
Primary obligation	<p>5. (1) No person shall engage in the management of nuclear material except in compliance with these Regulations.</p> <p>(2) Responsibilities of the operator:</p> <ul style="list-style-type: none"> (a) The operator shall bear the responsibility for establishing and implementing required security measures and for compliance with all applicable requirements of these regulations. (b) The operator may appoint suitably qualified persons to carry out particular actions and tasks related to these responsibilities, but the operator shall retain the primary responsibility for security. The operator shall document the names and responsibilities of persons so designated. (c) The operator shall notify the Authority of any intention to introduce modification to associated facilities or activities for which they are authorized and which could affect the security of nuclear material, and shall not carry out any such modification unless exempted by the Authority.
Authorization	<p>6. The operator shall:</p> <ul style="list-style-type: none"> (1) submit an application requesting for an authorization from the regulatory body prior to commencing any activity with

	<p>nuclear material, unless the practice has been exempted from regulatory control.</p> <p>(2) contain information with sufficient clarity and specificity to facilitate adequate review and assessment by the regulatory body prior to granting authorization.</p>
Regulatory Inspection of Premises and Inspection	<p>7. The operator shall:</p> <p>(1) permit representatives of the Authority immediate access to premises, transport mean and facilities in order to obtain information about the status of security, and verify compliance with these Regulations and other applicable legal requirements and licensing/authorization conditions.</p> <p>(2) make available to the Authority information and records regarding security as required.</p>
Enforcement	<p>8. An authorization may be revoked, suspended or modified, or the possession of nuclear material may be prohibited upon finding by the Authority:</p> <p>(1) non-compliance with these Regulations;</p> <p>(2) false or misleading information provided by an operator.</p>
Offences and Appeal,	<p>9. (1) A person who contravenes any of the provisions of these Regulations commits an offence and is liable on conviction to the penalties stipulated under the Act and any other law or guidelines made pursuant to the Act.</p> <p>(2) Any person or organization may appeal to the Governing Board of the Authority against any decision made by the Authority pursuant to these Regulations</p>
	<p>PART III: GENERAL REQUIRMENTS FOR PHYSICAL PROTECTION</p>
Responsibility of the Operator	<p>10. The operator shall:</p> <p>(1) have the prime responsibility for the implementation of security of nuclear material and associated facilities.</p> <p>(2) cooperate and coordinate with the Authority, and other competent authorities as appropriate, and all other State entities having physical protection responsibilities.</p> <p>(3) ensure that physical protection measures are integrated and effective against unauthorized removal and sabotage and designed based on the more stringent applicable requirements.</p>

	(4) ensure that physical protection measures are based on the principle of defense in depth in Regulation 16 and the graded approach Regulation 15.
Categorization of Nuclear materials	<p>11. (1) The operator shall identify the category of its nuclear material in accordance with Table 1 in the Schedule 1.</p> <p>(2) The categorization shall consider the practice in which the material is used, the attractiveness of the material for unauthorized removal and the potential consequences of sabotage.</p> <p>(3) Material used or stored within the same area, or transported together shall be aggregated for the purpose of categorization.</p>
System for Nuclear Material Accountancy and Control	<p>12. (1) The operator shall:</p> <p>(i) maintain control of, and be able to account for all nuclear material at all times.</p> <p>(ii) Report internally and externally, as specified by the Authority, all confirmed accounting discrepancies immediately, but not later than 24hrs;</p> <p>(2) Information from the operator's system for Nuclear Material Accountancy and Control that indicates possible unauthorized removal of nuclear material shall be communicated as soon as possible to the senior manager responsible for physical protection.</p>
Design Basis Threat	13. The licensee shall evaluate its physical protection systems and develop design basis threat or threat assessment consistence with identified threats.
Basic Security Design Principles	<p>14. The operator shall:</p> <p>(1) Design the nuclear security system to perform nuclear security functions in;</p> <p>a) Deterrence,</p> <p>b) Detection,</p> <p>c) Delay, and</p> <p>d) Response</p> <p>in an effective combination to achieve the requirements stipulated in paragraph (2)-(7);</p>

	<ul style="list-style-type: none"> (2) Ensure control of, and be able to account for all nuclear material used, stored or transported under its authorization; (3) Ensure that the nuclear security system provides adequate delay after the detection of a potentially malicious or otherwise unauthorized act and alerting the response team to allow them to interrupt malicious acts before the adversary successfully completes such an act or timely pursuit following unauthorized removal; (4) Ensure that the nuclear security system minimizes the chance of sabotage committed by an insider and to prevent unauthorized removal of material by an insider; (5) Ensure that nuclear security measures are integrated and effective against unauthorized removal and sabotage, and designed based on the more stringent applicable requirements; (6) Ensure that the nuclear security system preserves its effectiveness under every weather condition, in every part of the day and in every phase of use, processing, storage and transport; (7) Ensure that the detection and response function of the nuclear security system complies with the single failure criterion.
Graded Approach	<p>15. The operator shall:</p> <ul style="list-style-type: none"> (1) categorize nuclear material in accordance with Schedule 1 of this Regulation. (2) establish, subject to approval by the Authority, the required levels of protection for all nuclear materials, taking into account the quantity and the characteristics of the nuclear material and its location within the facility. (3) perform analysis, validated by the Authority, of nuclear facility to determine whether the nuclear inventory has the potential to result in consequences exceeding the threshold for unacceptable radiological consequences in accordance with Table 2 in Schedule II. (4) implement measure for protection against sabotage commensurate with the appropriate sabotage consequence level.
Defense in Depth	<p>16. The Operator shall:</p> <ul style="list-style-type: none"> (1) ensure that combination of successive layers of nuclear security measures for the protection of targets from nuclear security threats are put in place;

	<p>(2) base physical protection functions of detection, delay, and response on defense-in-depth principle applied with a graded approach; and</p> <p>(3) take into account the capability of the physical protection system and the system for nuclear material accountancy and control to protect against insiders and external threats.</p>
<p>Integrated Management System</p>	<p>17. The operator shall establish an integrated management system, including a quality assurance program, which ensures that:</p> <p>(1) Nuclear security is given a high priority;</p> <p>(2) The nuclear security system is designed, implemented, operated and maintained in a condition capable of effectively protecting against the threats identified;</p> <p>(3) Assurance is given that the components of the nuclear security system are of a quality sufficient for their tasks;</p> <p>(4) Quality control mechanisms and procedures are established for reviewing and assessing the overall effectiveness of the nuclear security system;</p> <p>(5) Priority is given to development and maintenance of a nuclear security culture;</p> <p>(6) Clear lines of authority for decisions on nuclear security are defined;</p> <p>(7) Organizational arrangements and lines of communication are established that result in an appropriate flow of information on security at and between the various levels in the entire organization;</p> <p>(8) A Nuclear Security Officer having appropriate seniority, independent of facility operations, is designated as having overall responsibility for administering the nuclear security system;</p> <p>(9) Responsibilities for each individual with a nuclear security role are clearly identified and each individual is appropriately trained, qualified and adequately equipped;</p> <p>(10) There is adequate financial and human resource capacity to operate and maintain the nuclear security system; and</p>
<p>Protection of Information</p>	<p>18. The operator shall:</p> <p>(1) identify sensitive information, the disclosure of which could compromise nuclear security;</p>

	(2) protect the sensitive information referred to in paragraph (1).
Information Security	<p>19. The operator shall:</p> <p>(1) identify, classify, and protect sensitive information and sensitive information assets, in accordance with the Authority's requirements specifying what information needs to be protected.</p> <p>(2) limit access to such information to those individuals whose trustworthiness has been established in accordance with Regulation 21, taking into account the sensitivity of the information, and who need to know it for the performance of their duties.</p>
Computer Security	<p>20. The operator shall protect computers and computer systems used for physical protection, nuclear safety, and nuclear material accountancy and control against compromise consistent with the threats identified in the threat assessment or design basis.</p>
Trustworthiness of Personnel	<p>21. The operator shall:</p> <p>(1) establish and maintain a program to ensure the trustworthiness of persons for the purpose of granting authorized access to sensitive information, or to unescorted access to nuclear material</p> <p>(2) Implement measures to determine and periodically review the trustworthiness of authorized individuals with access to sensitive information, using graded approach, and unescorted access to nuclear materials and associated facilities</p>
Nuclear Security Culture	<p>22. The operator shall:</p> <p>(1) Develop appropriate management structures, allocate sufficient resources and put in place appropriate management systems for motivating personnel to adopt strict and prudent approach to, and seeking continuous improvement in nuclear security;</p> <p>(2) Provide:</p> <ul style="list-style-type: none"> (a) a commitment to quality of performance in all nuclear security activities; (b) a high priority to nuclear security, even overriding operational demands; (c) a clear process to resolve any conflict regarding the relative priorities of safety, security and operations;

	<p>(3) Communicate and sensitize everyone affected to give due priority to nuclear security culture;</p> <p>(4) Develop a self-assessment program to assess the nuclear security culture in its organization as a basis for identifying ways to strengthen that culture.</p>
Sustainability Program	<p>23. The operator shall:</p> <p>(1) Develop and implement means and procedures for maintenance of Physical Protection Systems, including preventive and corrective measures; and</p> <p>(2) Establish sustainability program for its physical protection system that encompasses:</p> <ul style="list-style-type: none"> (a) operating procedures (instructions); (b) human resource management and training; (c) equipment updating, maintenance, repair, and calibration; (d) performance testing and operational monitoring; (e) configuration management; and (f) resource allocation and operational cost analysis.
Nuclear Security Interface	<p>24. The operator shall:</p> <p>(1) ensure that nuclear security interface with nuclear safety, radiation protection and nuclear material accountancy and control, and inventory control activities is managed in a manner such that these functions are mutually supportive and do not adversely affect each other;</p> <p>(2) Assess and address the safety and security interfaces in the design of its nuclear security system;</p> <p>(3) Ensure that consultation and coordination are established and maintained between those responsible for nuclear safety, nuclear material accountancy and control, inventory control, radiation protection, management of crisis situations and working and operational conditions, in order to ensure that regulatory requirements are met in a mutually supporting way;</p> <p>(4) Ensure that the nuclear security system is operated effectively in cooperation with, and mutual support to the requirements for nuclear safety, industrial safety, nuclear material accountancy and control, inventory control, radiation protection, management of crisis situations and nuclear and conventional emergency management;</p>

	<p>(5) That the nuclear security system and its components are independent of the systems, structures and components important to nuclear safety and radiation protection, in order to ensure that the safety critical systems, structures and components remain fully functional during the operation or failure of the nuclear security system;</p> <p>(6) Safe operation during the modification of the nuclear security system in a way that:</p> <p style="padding-left: 40px;">a) The systems, structures and components important to nuclear safety or radiation protection remain fully applicable to fulfil their functions during the implementation of the modification works; and</p> <p style="padding-left: 40px;">b) The persons working in nuclear safety or radiation protection related duties can perform their activity without being impeded;</p> <p>(7) That the nuclear security system is assisted by nuclear material accountancy and control, and inventory control measures to deter and detect the unauthorized removal of material.</p>
	<p>PART IV: SECURITY PLAN FOR NUCLEAR MATERIALS AND ASSOCIATED FACILITIES</p>
<p>Security Plan for Nuclear Facilities</p>	<p>25. (1) The applicant for an authorization to the Authority and/or other competent authorities, as appropriate, shall prepare a security plan as part of its application to obtain an authorization to conduct an activity involving nuclear material in use and storage or for a related facility;</p> <p>(2) The security plan shall be based on the threats identified in the threat assessment or design basis threat, and shall include sections addressing design, evaluation, implementation, and maintenance of the physical protection system, and the contingency plan.</p> <p>(3) The operator shall ensure there is an approved security plan in place at all times for each nuclear facility.</p> <p>(4) The operator shall implement the approved security plan.</p> <p>(5) The operator shall review the security plan at least once every 2 years, to ensure it remains up to date.</p> <p>(6) Before making modifications that affect the ability of the physical protection system to protect against unauthorized removal or sabotage, the operator shall submit a proposed new or amended security plan for approval by the Authority and other relevant agencies, as appropriate.</p>

<p>Contingency Plan for Nuclear Facilities and for Nuclear Material</p>	<p>26. (1) The applicant for an authorization shall establish a contingency plan, which shall be submitted for approval by the Authority as part of the security plan.</p> <p>(2) The operator shall:</p> <ul style="list-style-type: none"> (a) implement the contingency plan to effectively counter the threats identified in the threat assessment or design basis threat. (b) conduct exercise at least once every 2 years in accordance with the contingency plan, in collaboration with the Authority, including coordination between the guards and response teams. (c) assess the interface of the contingency plan with the facility emergency plan through periodic joint exercises. (d) ensure that during emergency conditions and exercises the effectiveness of the physical protection system is maintained.
<p>Compensatory Measures</p>	<p>27.(1) Whenever the operator or the Authority identifies circumstances that prevent the physical protection system from providing the required level of protection, the operator shall immediately implement compensatory measures to provide a commensurate level of protection.</p> <p>(2) The operator shall identify measures to compensate for degraded or inoperable equipment, systems, and components and for physical protection equipment that is temporarily taken out of service.</p> <p>(3) Compensatory measures shall provide a level of protection that is equivalent to the protection that was provided by the equipment, system, or components before degradation or inoperability.</p> <p>(4) Compensatory measures shall be implemented as identified in security plan. However, any design change in physical protection system that affects system performance shall require approval from the Authority before implementation.</p>
<p>Corrective Actions</p>	<p>28. Whenever the operator or the Authority identifies deficiencies in the physical protection system, the operator shall immediately, submit a corrective action plan for review and approval by the Authority, and implementation by the operator.</p>

	PART V: REQUIREMENTS FOR PROTECTION AGAINST UNAUTHORIZED REMOVAL OF NUCLEAR MATERIALS IN USE AND STORAGE
Threat	<p>29. (1) Whenever the Authority notifies the operator of new threat information requiring modifications in the physical protection system to provide the required level of protection, the operator shall, submit proposed modifications for review and approval by the Authority.</p> <p>(2) The operator shall include in the security plan, short-term measures that can be activated when the Authority, or other security agencies, provides notification of a specific increased threat or elevation in the threat level.</p>
Testing and Maintenance of Security Systems	<p>30. The operator shall establish a sustainability program, develop and implement means and procedures for evaluations, including testing, and maintenance of the nuclear security system.</p>
Security event reporting and Investigation	<p>31. (1) The Operator shall immediately report the following events to the Authority:</p> <ul style="list-style-type: none"> (a) any failure to comply with any applicable requirement of this Regulation; (b) inability to fulfill its functions because of failure of a single component or physical protection system or general failure; (c) inability of the personnel on physical protection to fulfill their duties; (d) natural disasters, industrial accidents, fires and catastrophes; and (e) other cases related to infringement of physical protection system functioning. <p>(2) The operator shall, in the case of occurrence of any of the events referred in Regulation 31(1), take prompt action to remedy the failure and within:</p> <ul style="list-style-type: none"> (a) 24 hours initiate the process to investigate the failure and its causes, circumstances and consequences, and (b) 72 hours submit a report to the Authority on the causes of the failure, its circumstances and consequences, and on the corrective actions taken or to be taken in accordance with Regulation 28. <p>(3). The Operator shall report to the Authority in case of actual or attempt to:</p>

	<ul style="list-style-type: none"> (a) Threaten, steal, rob, or carry out other illegal activities with the use of nuclear materials, including individual or entity, international organization, to carry out such activity; (b) Misappropriate or possess nuclear material substances by deception; (c) Blackmail to obtain nuclear material, including use of force or threat; (d) Sabotage or cause threat to life or personal injury to one or more individual or material damages by use of nuclear materials; and (e) Carry out activities threatening the site security and safety by using an aircraft in the air-protected area. <p>(4). The Operator shall in case of occurrence of any of the events referred in Regulation 31 Paragraph (3), take immediate action to remedy the situation and immediately notify the Authority and other relevant security agencies in writing and within:</p> <ul style="list-style-type: none"> (1) 24 hours investigate the event and its causes, circumstances, and consequences; and (2) 72 hours provide the Authority with a report on the causes of the event, its circumstances, and on the corrective actions taken in accordance with Regulation 28.
Mitigation Measures	<p>32. The Operator shall:</p> <ul style="list-style-type: none"> (1) Establish within the contingency plan, measures to prevent further damage from a sabotage event, secure the nuclear facility and protect emergency equipment and personnel; (2) Ensure that the nuclear facility personnel are prepared to act in full coordination with guards, response team, law enforcement agencies and safety response teams, as appropriate, in implementing the contingency plans; (3) On detection of malicious act, assess whether the act could lead to radiological consequences; and (4) Notify the Authority and other relevant organization of sabotage or attempted sabotage.
Guards and Response Teams	<p>33. (1) The operator shall provide a 24-hour guarding service and liaise with appropriate response teams to effectively counter any attempted unauthorized removal. The central alarm station personnel shall communicate with response teams at scheduled intervals. The guards and response teams</p>

	<p>shall be trained and adequately equipped for their functions in accordance with the Act.</p> <p>(2) The operator shall ensure that guards conduct random patrols of the protected area. The main functions of the patrols shall include:</p> <ul style="list-style-type: none"> (a) deter an adversary, (b) detect intrusion, (c) inspect visually the physical protection components, (d) supplement the existing physical protection measures, and (e) provide an initial response.
<p>Evaluations of Physical Protection Measures and System</p>	<p>34. (1) The operator shall regularly conduct evaluations including:</p> <ul style="list-style-type: none"> (a) performance testing of the physical protection measures and of the physical protection system. (b) timely and efficient response of the guards and response teams, where appropriate. (c) conduct table-top exercises, modeling and simulation to determine reliability and effectiveness against the threats identified in the threat assessment or the design basis threat. <p>(2) The operator shall carry out evaluations with full cooperation of the response teams, where appropriate.</p> <p>(3) The operator shall report to the Authority, any deficiencies identified together with the actions taken to correct them in accordance with Regulation 28.</p>
<p>Limited Access Area for Category III Nuclear Material</p>	<p>35. The operator shall use or store Category III nuclear material within a limited access area.</p>
<p>Intrusion Detection and Response for Category III Nuclear Material</p>	<p>36. The operator shall make provision for detecting unauthorized intrusion into the limited access area and for appropriate response action to address a nuclear security event.</p>
<p>Procedures for Handlers for Category III Nuclear Material</p>	<p>37. The operator shall:</p>

	<p>(1) establish procedures required for transferring custody of Category III nuclear material among nuclear material handlers.</p> <p>(2) Ensure the procedures established in (1) shall also require nuclear material handlers on reporting for duty to determine whether interference with or unauthorized removal of nuclear material has taken place.</p>
Protection of Technical Means for Access Control for Category III Nuclear Material	38. The operator shall protect technical means for access control, such as keys and computerized access lists, against manipulation, falsification or other form of compromise.
Movements of Nuclear Material within a Limited Access Area for Category III Nuclear Material	39. The operator shall apply prudent and necessary measures to be approved by the Authority and other competent authorities, as appropriate, for movements of Category III nuclear material within a limited access area.
Protected area for Category II Nuclear Material	<p>40. (1) The operator shall use or store Category II nuclear material within the protected area located inside a limited access area.</p> <p>(2) The operator shall ensure that:</p> <ul style="list-style-type: none"> (a) the protected area perimeter is equipped with a physical barrier, intrusion detection and assessment to detect unauthorized access. (b) The protection measures shall be configured to provide time for assessment of the cause of alarms, and provide adequate delay for an appropriate response, under all operational conditions. (c) Alarms generated by intrusion detection sensors shall be promptly and accurately assessed and appropriate action taken. <p>(3) The operator shall ensure that the number of access points into the protected area is kept to the minimum necessary and that all points of potential access are appropriately secured and fitted with alarms.</p>
Detection and Prevention of Unauthorized Access for Category II Nuclear Material	<p>41. The operator shall:</p> <p>(1) establish measures under which vehicles, persons and packages entering and leaving the protected area are searched for detection and prevention of unauthorized access and for introduction of prohibited items or removal of nuclear material, as appropriate.</p>

	<p>(2) Ensure that entry of vehicles into the protected area shall be strictly minimized.</p>
<p>Authorized Access to Protected Area for Category II Nuclear Material</p>	<p>42. The operator shall:</p> <p>(1) establish measures under which only authorized persons have access to the protected area.</p> <p>(2) ensure effective access control measures are taken for the detection and prevention of unauthorized access.</p> <p>(3) ensure the number of authorized persons entering the protected area is kept to the minimum necessary.</p> <p>(4) ensure persons authorized for unescorted access to the protected area are limited to individuals whose trustworthiness has been determined.</p> <p>(5) ensure persons whose trustworthiness has not been determined such as temporary repair, service or construction workers and visitors are escorted by persons authorized for unescorted access.</p> <p>(6) verify the identity of authorized persons entering the protected area, and ensure that passes or badges are issued and visibly displayed at all times inside the protected area.</p> <p>(7) keep a record of all persons who have access to or possession of keys, key cards and/or other systems, including computers or computer systems, that control access to nuclear material.</p> <p>(8) protect technical means for access control, such as keys and computerized access lists, against manipulation, falsification, or other form of compromise.</p>
<p>Procedures for Handlers of Category II Nuclear Material</p>	<p>43. The operator shall:</p> <p>(1) establish procedures required for transferring custody of Category II nuclear material among nuclear material handlers.</p> <p>(2) ensure the procedures established in (1) shall also require nuclear material handlers on reporting for duty to determine whether interference with or unauthorized removal of nuclear material has taken place.</p>
<p>On-Site Movement between Protected Areas for Category II Nuclear Material</p>	<p>44. The operator shall establish measures under which on-site movements of nuclear material between two protected areas are conducted in compliance with the requirements for nuclear material during transport, taking into account existing physical protection measures at the facility.</p>

<p>Central Alarm Station for Category II Nuclear Material</p>	<p>45. (1) The operator shall establish a permanently staffed central alarm station for monitoring and assessment of alarms, initiation of response, and communication with the guards, response teams, and facility management.</p> <p>(2) The operator shall locate the central alarm station in a protected area, or other area with commensurate protection, that is protected by hardening or other means so that its function can be continued in the presence of the threat.</p> <p>(3) The operator shall that access to the central alarm station shall be strictly minimized and controlled.</p> <p>(4) The operator shall provide alarm equipment, alarm communication paths, and the central alarm station with an uninterruptible power supply and tamper-protection against unauthorized monitoring, manipulation and falsification.</p> <p>(5) The operator shall:</p> <ul style="list-style-type: none"> (a) provide dedicated, redundant, secure and diverse transmission systems for two-way voice communication between the central alarm station and the response teams for activities involving detection, assessment and response. (b) dedicated two-way secure voice communication shall be provided between guards and the central alarm station.
<p>Guards and Response teams for Category II Nuclear Material</p>	<p>46. The operator shall:</p> <ul style="list-style-type: none"> (1) provide a 24-hour guarding service and response teams to effectively counter any attempted unauthorized removal. (2) ensure the central alarm station personnel communicates with response teams at scheduled intervals. (3) ensure the guards and response teams are trained and adequately equipped for their functions. (4) ensure that guards conduct random patrols of the protected area, to among other things: <ul style="list-style-type: none"> (a) deter an adversary, (b) detect intrusion, (c) inspect visually the physical protection components, (d) supplement the existing physical protection measures, and (e) provide an initial response.

<p>Evaluation of Physical Protection Measures and System for Category II Nuclear Material</p>	<p>47. The operator shall:</p> <ol style="list-style-type: none"> (1) conduct continuous evaluations of protection measures and systems including: <ol style="list-style-type: none"> (a) performance testing of the implemented physical protection measures and integrated physical protection system, and (b) timely response of the guards and response teams, to determine their reliability and their effectiveness against threat or to detect equipment malfunction as the case may be; and (2) ensure that evaluations under this regulation are carried out with the cooperation of the response teams, and that significant deficiencies and actions taken to remedy them are reported to the Authority, in accordance with Regulation 28.
<p>Inner Area for Category I Nuclear Material</p>	<p>48. The operator shall:</p> <ol style="list-style-type: none"> (1) use or store Category I nuclear material within an inner area inside a protected area. (2) The operator shall ensure that the inner area provides a layer in addition to the protected area for detection, access control and delay against unauthorized removal. (3) ensure that inner areas are appropriately secured and fitted with alarms when unattended. (4) ensure that inner areas provide sufficient delay against unauthorized access to allow for a timely and appropriate response to an unauthorized removal. (5) ensure delay measures in (4) are designed considering both insiders' and external adversaries' capabilities, and shall take into account and be balanced for all potential points of intrusion. (6) keep the number of access points into the inner areas to the minimum necessary and all points of potential access are appropriately secured and fitted with alarms. (7) install vehicle barriers at an appropriate distance from the inner area to prevent the penetration of unauthorized land and waterborne vehicles specified in the threat assessment or design basis threat that could be used by an adversary for committing a malicious act.
<p>Detection and Prevention of Unauthorized</p>	<p>49. (1) The operator shall establish measures under which vehicles, persons and packages are searched on entering and</p>

<p>Access for Category I Nuclear Material</p>	<p>leaving inner areas to detect and prevent unauthorized access and the introduction of prohibited items.</p> <p>(2) The operator shall ensure vehicles, persons and packages leaving the inner area are searched to detect and prevent unauthorized removal.</p> <p>(3) The operator shall use instruments for the detection of nuclear material, metals, and explosives for such searches as appropriate.</p> <p>(4) The operator shall prohibit private vehicle access to inner areas.</p>
<p>Authorized Access to Inner Areas for Category I Nuclear Material</p>	<p>50. The operator shall:</p> <p>(1) take effective access control measures to ensure the detection and prevention of unauthorized access through the following measures:</p> <ul style="list-style-type: none"> (a) allow only authorized persons to have access to an inner area; (b) keep to the minimum the necessary number of authorized persons entering an inner area; (c) limit persons with authorized access to an inner area to those whose trustworthiness has been determined; (d) provide access to persons whose trustworthiness has not been determined, only when escorted by persons authorized for unescorted access, for a limited period and in exceptional circumstances. <p>(2) Keep a record of all persons who have access to or possession of keys, key cards and/or other systems, including computer systems that control access to nuclear material.</p> <p>(3) Protect technical means for access control, such as keys and computerized access lists, against manipulation, falsification, or other form of compromise.</p>
<p>Continuous Surveillance of Activity in Inner Areas for Category I Nuclear Material</p>	<p>51. The operator shall ensure detection of unauthorized action by constant surveillance, through the two-person rule or other equivalent means, to counter the insider threat, whenever an inner area is occupied.</p>
<p>Access Control Records for Category I Nuclear Material</p>	<p>52. (1) The operator shall maintain a record of all persons having access to inner areas and of all persons who have access to or possession of keys, key cards and/or other</p>

	<p>systems, including computers and computer systems, which control access to nuclear material or to inner areas.</p> <p>(2) The operator shall retain the records in (1) for a period of thirty years.</p>
Hardened Room or Enclosure for Category I Nuclear Material	<p>53. (1) The operator shall store Category I nuclear material in a hardened room (“strong room”) or hardened enclosure inside the inner area that provides an additional layer of detection and delay against unauthorized removal.</p> <p>(2) The operator shall ensure the hardened room or enclosure is locked and alarms activated except during authorized access to the material.</p> <p>(3) The operator shall ensure that when Category I nuclear material is temporarily kept in an unoccupied work area outside this hardened room, equivalent compensatory physical protection measures shall be established.</p>
Procedures for Handlers of Category I Nuclear Material	<p>54. The operator shall:</p> <p>(1) establish procedures required for transferring custody of Category I nuclear material among nuclear material handlers.</p> <p>(2) Ensure Such procedures also require nuclear material handlers on reporting for duty, to determine whether interference with or unauthorized removal of nuclear material has taken place.</p>
On-Site Movements between Protected Areas for Category I Nuclear Material	<p>55. (1) The operator shall establish measures under which on-site movements of nuclear material between two protected areas are conducted in compliance with the requirements for nuclear material during transport, taking into account existing physical protection measures at the facility.</p>
Central Alarm Station for Category I Nuclear Material	<p>56. (1) The operator shall establish a permanently staffed central alarm station for monitoring and assessment of alarms, initiation of response, and communication with the guards, response teams, and facility management.</p> <p>(2) The operator shall:</p> <p>(a) Locate the central alarm station in a protected area [or other area with commensurate protection] that is protected by hardening or other means so that its function can be continued in the presence of the threat.</p> <p>(b) Ensure access to the central alarm station shall be strictly minimized and controlled.</p>

	<p>(3) The operator shall provide alarm equipment, alarm communication paths, and the central alarm station with an uninterruptible power supply and tamper-protection against unauthorized monitoring, manipulation and falsification.</p> <p>(4) The operator shall:</p> <ul style="list-style-type: none"> (a) Provide dedicated, redundant, secure and diverse transmission systems for two-way voice communication between the central alarm station and the response teams for activities involving detection, assessment and response. (b) Provide dedicated two-way secure voice communication between guards and the central alarm station. <p>(5) The operator shall establish a back-up alarm station to ensure that the central alarm station's functions in monitoring and assessment of alarms, initiation of response and communication can continue during an emergency.</p>
<p>Guards and Response teams for Category I Nuclear Material</p>	<p>57. (1) The operator shall provide a 24-hour guarding service and response teams to effectively counter any attempted unauthorized removal. The central alarm station personnel shall communicate with response teams at scheduled intervals. The guards and response teams shall be trained and adequately equipped for their functions.</p> <p>(2) The operator shall ensure that guards conduct random patrols of the protected area, to among other things:</p> <ul style="list-style-type: none"> (a) deter an adversary, (b) detect intrusion, (c) inspect visually the physical protection components, (d) supplement the existing physical protection measures, and (e) provide an initial response. <p>(3) The operator shall ensure that guards and response teams provide an effective and timely response to prevent an adversary from completing the unauthorized removal.</p> <p>(4) The operator shall ensure that, at least annually, performance testing of the physical protection system shall include appropriate exercises, such as force-on-force exercises, to determine if the guards and the response teams can reach this objective.</p>
<p>Evaluations of Physical Protection</p>	<p>58. The operator shall:</p>

<p>Measures and System for Category I Nuclear Material</p>	<p>(1) regularly conduct evaluations, including performance testing of the physical protection measures and of the physical protection system,</p> <p>(2) ensure timely and efficient response of the guards and response teams and conduct table-top exercises, modelling and simulation to determine reliability and effectiveness against the threats identified in the threat assessment or the design basis threat.</p> <p>(3) ensure that evaluations are carried out with full cooperation between the operator and response teams. Any deficiencies identified together with action taken to remediate the deficiencies shall be reported in accordance with Regulation 28 and 31.</p> <p>(4) conduct performance testing of the physical protection system for Category I nuclear material at least annually, through appropriate exercises, such as force-on-force exercises or other equivalent exercises, to determine if the response teams can provide an effective and timely response to prevent the unauthorized removal of nuclear material.</p>
	<p>PART VI: MEASURES TO LOCATE AND RECOVER MISSING OR STOLEN NUCLEAR MATERIAL</p>
<p>Measures to Locate and Recover Missing or Stolen Nuclear Material</p>	<p>59. The operator shall:</p> <p>(1) ensure that the system for nuclear material accountancy and control and the physical protection system detect in a timely manner that any nuclear material is missing or stolen.</p> <p>(2) immediately determine by means of a rapid emergency inventory whether any nuclear material is missing or stolen.</p> <p>(3) ensure that following a nuclear security event the system for nuclear material accountancy and control is capable of providing accurate information about the potentially missing nuclear material in the facility.</p> <p>(4) Within 24 hours notify the Authority, and other relevant authorities, of missing or stolen nuclear material.</p> <p>(5) Take all appropriate measures to locate, as soon as possible, any declared missing or stolen nuclear material on site, or collaborate with security agencies for off-site search and recovery of the missing or stolen nuclear material.</p> <p>(6) Within 24 hours after missing or stolen nuclear material has been located and identified, secure this material in situ and return it to the facility or to another facility authorized by the Authority.</p>

	<p>(7) Provide any other necessary assistance to the Authority, and other relevant authorities to locate and recover nuclear material and shall cooperate during subsequent investigations and prosecution.</p> <p>(8) Include measures to locate and recover missing or stolen nuclear material in its contingency plan, prepared in accordance with Regulation 26, and shall be regularly tested and evaluated. Appropriate joint exercises shall be held with the Authority and other competent authorities, as necessary.</p>
Prudent Management Practice	<p>60. (1) The operator shall secure other nuclear material against unauthorized removal and unauthorized access, in accordance with prudent management practices which may include the following measures:</p> <ul style="list-style-type: none"> (a) Access to the nuclear material is restricted to authorized persons; (b) When not under the operating control of authorized persons, the nuclear material is physically secured; and (c) to detect unauthorized removal within and procedures put in place to report such losses.
Integrated Protection against Unauthorized Removal and Sabotage	<p>61. The operator shall:</p> <ul style="list-style-type: none"> (1) when implementing the requirements for protection of nuclear material and nuclear facilities, apply the requirements for protection against unauthorized removal and sabotage; and (2) Ensure that the required physical protection system is based on the more applicable requirements and implemented for both sets of requirements in an integrated manner.
Sabotage Scenarios	<p>62. The operator shall cooperate with the Authority and other competent authorities, as appropriate, to define credible scenarios by which adversaries could sabotage its nuclear facility or nuclear material, based on the threat assessment or design basis threat.</p>
Assessment of Radiological Consequences	<p>63. (1) The operator shall determine the consequence level for its nuclear facility and shall provide the physical protection measures required for that consequence level, based on the thresholds for unacceptable radiological consequences and high radiological consequences in accordance with Schedule II.</p>

	<p>(2) The operator shall identify equipment, systems or devices, or materials, the sabotage of which could directly or indirectly lead to consequences that exceed the threshold of radiological consequences applicable to its facility.</p>
<p>Physical Protection System Design</p>	<p>64. The operator shall:</p> <p>(1) design a physical protection system to be effective against the defined sabotage scenarios and consequence level applicable to its facility.</p> <p>(2) evaluate the effectiveness of the physical protection system design and submit this evaluation to the Authority and other competent authorities, as appropriate, to verify that it provides the required level of protection.</p> <p>(3) implement the physical protection system design, upon approval by the Authority and other competent authorities.</p>
<p>High Radiological Consequence Facilities</p>	<p>65. For High Radiological Consequences facilities, the operator shall:</p> <p>(1) Locate nuclear material within one or more vital areas, located inside a protected area, inside a limited access area in amounts which if dispersed could lead to high radiological consequences, as defined by the Authority and other competent authorities, as appropriate.</p> <p>(2) Locate a minimum set of equipment, systems or devices needed to prevent high radiological consequences within one or more vital areas, located inside a protected area, inside a limited access area.</p> <p>(3) Ensure vital areas meet the same requirements for inner areas specified in Regulation 48, as well as each of the following additional requirements:</p> <ul style="list-style-type: none"> (a) Provide timely detection and reporting to the Authority and other competent authorities, as appropriate, of tampering or interference with vital area equipment, systems or devices. (b) During a shutdown/maintenance period, maintain strict access control to vital areas. (c) Prior to reactor start-up, conduct searches and testing to detect any tampering that may have been committed during shutdown/maintenance. (d) Provide delay against unauthorized access to allow for a timely and appropriate response to an act of sabotage consistent with the threat assessment or design basis threat and shall design such measures

	<p>considering both insiders' and external adversaries' capabilities and be balanced for all potential points of intrusion.</p>
Unacceptable Radiological Consequence Facilities	<p>66. The operator shall implement measures specified by the Authority and other competent authorities, as appropriate, which shall include measures in Regulations 63-66 applied in a graded manner.</p>
Measures to Mitigate and Minimize Radiological Consequences of Sabotage	<p>67. (1) The operator shall establish within the contingency plan measures to prevent further damage from a sabotage event, maintain physical protection of the nuclear facility and protect emergency equipment and personnel;</p> <p>(2) The operator shall ensure that facility personnel are prepared to act in full coordination with guards, response teams, law enforcement agencies and safety response teams for implementing the contingency plan;</p> <p>(3) On detection of an act of sabotage or attempted sabotage, the operator shall assess whether this act could lead to radiological consequences;</p> <p>(4) On detecting of a malicious act, the operator shall assess whether the act could lead to radiological consequences; and</p> <p>(5) Immediately following an act of sabotage, the operator shall take the measures specified in the contingency plan for mitigating and minimizing the radiological consequences of sabotage.</p>
Less severe Radiological Consequences	<p>68. The operator shall protect safety - related equipment and devices by prudent management practice, if the potential radiological consequences of sabotage are less severe than unacceptable radiological consequences.</p>
	<p>PART VII: REQUIREMENTS FOR NUCLEAR MATERIAL DURING TRANSPORT</p>
Aggregation	<p>69. A licensee or consignor shall:</p> <p>(1) use the total quantity of nuclear material on or in a single conveyance to determine an aggregate categorization for both unauthorized removal and potential radiological consequences associated with sabotage and identify the appropriate protection arrangements for the conveyance; and</p>

	(2) Ensure that when different types of nuclear material are transported on the same conveyance, aggregation formula is used to determine the category of the consignment.
Consignee authorization	70. Prior to shipping nuclear material, the Licensees/consignors shall verify with the Authority that the consignee is authorized to possess the nuclear material
General Requirements for Transport of Nuclear Materials	<p>71.(1) Before commencing shipment of nuclear material, consignors shall prepare and submit a transport security plan for approval by the Authority at least 7 days prior to the expected shipment date.</p> <p>(2) The consignors shall adopt, implement and comply with the approved transport security plan.</p> <p>(3) The transport security plan shall include at least the following elements:</p> <p>(a) Specific allocation of security responsibilities of organizations and persons engaged in the transport of nuclear material, with provision of appropriate authority to carry out their responsibilities;</p> <p>(b) Provisions for keeping records of nuclear material packages or types of nuclear material transported;</p> <p>(c) Provisions for review of current operations and vulnerability assessment, including intermodal transfer, in-transit storage, handling and distribution as appropriate;</p> <p>(d) Clear statements of security measures, including: training, policies including response to conditions of a higher-level threat, verification of new employees and employment, operating practices (such as the choice and use of routes where known, use of guards, access to nuclear material packages requiring the enhanced transport security level in temporary storage, proximity to vulnerable infrastructure), equipment and resources that are to be used to reduce security related risks;</p> <p>(e) Effective procedures and equipment for timely reporting and dealing with security related threats, breaches of security or security related incidents as provided in the contingency plans;</p> <p>(f) Procedures for evaluating and testing security plans and procedures for periodic review and update of the plans;</p> <p>(g) Measures to protect sensitive information;</p> <p>(h) Measures to ensure that the distribution of sensitive transport information is limited, to maintain security of the</p>

	<p>information. Such measures should not preclude the provision of transport documents and consignor's declaration as required by the applicable dangerous goods regulations;</p> <p>(i) Measures to monitor the location of the shipment; and where appropriate, details concerning agreements on the point of transfer of responsibility for security</p> <p>(3) If left unattended, the conveyance shall be secured by locking the vehicle and cargo compartment, as applicable. (Areas within temporary storage terminals, temporary storage sites, vehicle depots, berthing areas and marshaling yards used for the temporary storage during carriage of nuclear material shall be properly secured, well-lit and, where possible and appropriate, not accessible to the general public). Security measures shall be applied to the material consistent with the measures applied during use and storage.</p> <p>(4) If the conveyance makes an unexpected extended stop, the security measures appropriate for that category of nuclear material or radioactive material during in-transit storage shall be maintained</p>
Application for Authorization	<p>72. A licensee shall:</p> <p>(1) seek authorization from the Authority for each shipment not later than 7 days prior to commencing transport and the issuance of the authorization shall be conditional on the receipt of safely report based on current threat assessment and intelligence gathering;</p> <p>(2) when directed by the Authority, conduct a detailed route surveillance to observe the current environment based on the threat assessment or intelligence available; and</p> <p>(3) comply with all specific limitations and conditions relating to the circumstances peculiar to the given shipment as specified by the Authority.</p>
Requirements for International Transportation	<p>73. (1) Before commencing a shipment, the operator, consignor and/or carrier shall ensure that all arrangements are in accordance with the Authority's physical protection requirements and shall also meet requirements of other countries through which the material will be transited.</p> <p>(2) If a shipment of nuclear material will transit through any country which is not a party to the Convention on the Physical Protection of Nuclear Material (CPPNM) then the operator, consignor and/or carrier shall sign a formal agreement with that country prior to shipment to protect the material while in transit.</p>

<p>Quality management programme</p>	<p>74. The operator, consignor and/or carrier is responsible for:</p> <p>(1) Establishing a quality management program that provide:</p> <ul style="list-style-type: none"> (a) assurance that the specified requirements relating to nuclear security are satisfied; (b) assurance that the components of the nuclear security system are of a quality sufficient for their tasks; (c) quality control mechanisms and procedures for reviewing and assessing the overall effectiveness of security measure. <p>(2). Ensuring that the quality management program shall include the following:</p> <ul style="list-style-type: none"> (a) operating procedures and instructions to personnel (specific to role); (b) human resources management and training; (c) equipment maintenance, updating, repair and calibration; (d) performance testing and monitoring of operating systems; (e) Configuration management for security systems (including computer systems); (f) Resource allocation to ensure continued performance of the security system
<p>Training and Qualification.</p>	<p>75. (1) The operator, consignor and/or carrier shall provide persons engaged in the transport of nuclear material with appropriate training upon employment. It should be periodically supplemented by retraining as deemed appropriate by the Authority.</p> <p>(2) Security training and programs shall be evaluated and updated either based on the experiences of the operator, consignor and/or carrier or requirements of the Authority.</p> <p>(3) When necessary, the operator, consignor and/or carrier shall submit the training program to the Authority for review and approval.</p> <p>(4) This training shall cover the following items:</p> <ul style="list-style-type: none"> (a) the need for transport security; (b) the nature of security-related threats; (c) methods to address security concerns and actions to be undertaken if a nuclear security event occurs; (d) awareness of transport security plans when appropriate, commensurate with the responsibilities

	<p>of individuals and their roles in implementing transport security plans;</p> <p>(e) weaponless self-defense where appropriate;</p> <p>(f) use of weapons for response teams.</p> <p>(5) Records of security training and program undertaken shall be kept by the operator, consignor and/or carrier and made available, upon request, to the employee and to the Authority.</p>
Reporting of Events	<p>76. (1) The operator, consignor and/or carrier shall report the following types of nuclear security events:</p> <p>a) attempted or actual unauthorized intrusion into the conveyance;</p> <p>b) attempted or actual unauthorized removal, loss of nuclear material, whether involving external adversaries or insiders;</p> <p>c) attempted or actual acts of sabotage, including tampering with containers, packages, equipment, systems, or devices;</p> <p>d) loss or unauthorized disclosure of sensitive information;</p> <p>e) discovery of prohibited items;</p> <p>f) deviation from the approved transport security plan.</p> <p>(2) In case of detection of the above listed events, the authorized person shall:</p> <p>a) take immediate action, consistent with this regulation to report said event and take remedial action when possible;</p> <p>b) notify the Authority, law enforcement agency, or response force promptly;</p> <p>c) conduct investigation on the event and its causes, circumstances, and consequences;</p> <p>d) submit a report to the Authority about the results and the compensatory measures or corrective actions taken to remedy the situation;</p> <p>e) Prepare and submit a corrective action plan to prevent a recurrence of similar situations, in accordance with this regulation to the Authority for review and approval.</p>
Contingency Plan during transport of Nuclear Materials	<p>77. (1) The operator, consignor and/or carrier shall develop and implement a contingency plan to ensure appropriate response to unauthorized removal of nuclear material or sabotage, or attempts thereof during transport.</p> <p>(2) The plan shall, as appropriate, give consideration of the following aspects:</p>

	<ul style="list-style-type: none"> (a) infrastructure for coordination and operational interfaces for emergency and contingency response between the authorized person or other relevant agencies; (b) organization and staffing; (c) understand roles and responsibilities of responding organizations, assign positions with sufficient numbers of qualified and trained personnel, who shall be able to promptly respond to notifications, mitigation, protective actions and other response actions; and (d) establish and document the organizational relationship and interfaces between all major responding organizations. <p>(3) The contingency plan shall be made available to the relevant organizations.</p> <p>(4) The contingency plan shall be tested, reviewed or examined as appropriate.</p>
<p>General Requirements for Graded Approach during Transport</p>	<p>78. A licensee or consignor shall:</p> <ul style="list-style-type: none"> (1) minimize the total time during which the nuclear material remains in transport; (2) minimize the number and duration of nuclear material transfers, such as transfer from one conveyance to another, transfer to and from temporary storage while waiting for the arrival of a conveyance; (3) when the conveyance makes a planned stop, protect nuclear material in temporary storage incidental to transport in a manner consistent with the protection required for the applicable category of that nuclear material in storage at a facility; (4) if the conveyance makes an unplanned extended stop, apply the physical protection measures appropriate for that category of material in storage to the fullest extent possible; (5) avoid the use of predictable movement schedules by varying times and routes; (6) predetermine the trustworthiness of individuals involved during transport of nuclear material; (7) limit advance knowledge of transport information to the minimum number of persons necessary.
<p>Information Protection during Transport</p>	<p>79. A licensee or consignor shall:</p> <ul style="list-style-type: none"> (1) protect sensitive information relating to transport operations, including detailed information on the schedule and

	<p>route, and shall disseminate such information on need-to-know basis;</p> <p>(2) not use unnecessary markings on conveyances, and shall avoid the use of open channels for transmission of messages concerning shipments of nuclear material; and</p> <p>(3) protect such information in accordance with applicable information protection requirements when a security-related message is transmitted.</p>
Keys Control	80. A licensee or consignor shall ensure the security of keys to conveyances and security locks, commensurate with the categorization of the nuclear material transported.
Route Selection	<p>81. (1) Alternative route shall be planned in advance in addition to the primary routes, which all shall be identified in the transport security plan. The route shall where possible avoid densely populated areas and peak traffic hours.</p> <p>(2) When selecting the route, special attention shall be paid to each evident source of danger, like civil demonstrations and natural sources of dangers such as flood, woods fire and stone fall.</p> <p>(3) The availability and security related characters of the selected route shall be verified prior to the transport</p>
Transport scheduling	<p>82. The carrier shall prepare a transport schedule which includes the transport time, namely the duration spent by the vehicle on the road and the mode of transport to be determined as follows:</p> <p>(1) The number of transports and re-loading shall be minimized, and the regularity shall be avoided.</p> <p>(2) If the transport takes more than one day, then:</p> <p>(a) The transport shall be arranged without stops by more drivers to be changed, or</p> <p>(b) A guarded and monitored night-time stop meeting the security requirements shall be arranged in advance,</p> <p>(3) Any stop taking more than 24 hours shall be avoided. Arrangements should be made with security agencies or other authorized licensees along the route to ensure a secure compound is available for temporary/emergency storage.</p>
Requirements for Response Team during Transport	<p>83. (1) A licensee or consignor shall—</p> <p>(a) Accompany each shipment with enough trained and armed security guards to withstand the Design Basis Threat before and during loading and unloading operations;</p>

	<p>(b) Ensure that the guards conduct surveillance of the route for any threat indicators and initiate a necessary response; and</p> <p>(c) Ensure that continuous and effective surveillance of the packages, locked cargo hold, or compartment holding the packages are maintained by the guards at all times.</p> <p>(2) A licensee and consignor shall make arrangements for the availability of necessary response team to deal with nuclear security events in time to prevent the unauthorized removal of nuclear material.</p> <p>(3) ensure that the response teams:</p> <p>(a) are familiarized with typical transport operations and sabotage targets; and</p> <p>(b) have adequate knowledge of radiation protection to ensure that they are prepared to conduct necessary response actions.</p>
Transport Control Center	<p>84. A licensee or consignor shall:</p> <p>(1) use a transport control center for the purpose of keeping track of the current position and security status of the shipment of nuclear material, alerting response teams in case of an attack and maintaining continuous secure two-way voice communication with the shipment and the response teams;</p> <p>(2) ensure that the transport control center is protected so that its function can continue in the presence of a threat; and</p> <p>(3) ensure that the transport control center is staffed by qualified personnel whose trustworthiness has been predetermined</p>
Communication During Transport	<p>85. A licensee and consignor shall:</p> <p>(1) Maintain continuous two-way communication systems between the response teams, and the consignor and consignee, on the conveyances, transport control center, guards accompanying the shipment.</p> <p>(2) ensure that such systems are effective, diverse and secure; and</p> <p>(3) ensure that the guard or conveyance crew reports by secure two-way voice communications to the transport control center at intervals approved in the transport security plan at each overnight stopping place, hand-over areas of the shipment and upon arrival at the final destination.</p>
Provisions for Road Transport	<p>86. (1) The licensees/consignors shall maintain continuous attendance of the road conveyance during transport where possible. Where non-attendance is unavoidable, the road conveyance should be secured such that it complies with the</p>

	<p>criteria of protection, detection and response and preferably in a well-illuminated area.</p> <p>(2) If a road movement cannot be completed without overnight or extended stops, then the nuclear material should be protected during such stops in a manner that duly protects the material against malicious acts, according to a graded approach. Security requirements for nuclear materials within a facility might be taken as a basis for defining security requirements during transit.</p> <p>(3) The transport vehicle driver shall be accompanied by one or two additional appropriately qualified and equipped personnel.</p> <p>(4) Road vehicles transporting category III quantities of radioactive material shall be equipped with automatic and real time tracking capability that is monitored remotely or other tracking arrangements approved by the Authority</p>
Provisions for Rail Transport	87. If a rail movement cannot be completed without overnight or extended stops, then the nuclear material shall be protected during such stops in a manner that duly protects the material against malicious acts, according to a graded approach. (Security requirements for nuclear materials within a facility might be taken as a basis for defining security requirements during transit).
Provisions for Air Transport	88. For air transport, shipment shall be carried out in accordance with the applicable security provisions (Schedules 17 and 18 of the Convention on International Civil Aviation and the ICAO Technical Instructions for the Safe Transport of Dangerous Goods by Air).
Provisions for Maritime Transport	89. For maritime transport, shipment shall be carried out in accordance with the applicable security provisions of the International Ship and Port Facility Security Code and of the International Maritime Dangerous Goods Code [21].
PART VIII: PROTECTION OF NUCLEAR MATERIAL DURING TRANSPORT	
Prudent Management Practices for the Protection of Nuclear Material below Category III.	<p>90. The operator, consignor and/or carrier is responsible for:</p> <p>(1) Ensuring all employees who are involved with the transport hold verifiable documentation, including;</p> <p style="padding-left: 40px;">(a) including a manifest (packaging list) with a schedule and an inventory of the packages,</p>

	<p>(b) licenses, certificates and operating documents where applicable; and</p> <p>(c) Any necessary work permits.</p> <p>(2) Maintaining records associated with the custody and movement of the material such as tracking packages by count and unique tamper seal numbers.</p> <p>(3) Providing crewmembers with photographic identification cards and developing procedures to positively verify and document identification of individuals from other organizations.</p> <p>(4) Establishing the reliability of employees who are involved in the transport.</p> <p>(5) Employing key control practices for both the vehicle locks and the cargo compartment locks.</p> <p>(6) Restricting access to only those persons that have a need to access the material;</p> <p>(7) Securing and storing the package while in transport, such as in a locked conveyance or storage area;</p> <p>(8) Utilizing carriers with package tracking systems such as bar code system to monitor the status of the shipment, as appropriate;</p> <p>(9) Not using public transport for the transport of nuclear material or radioactive material;</p> <p>(10) Not leaving packages or conveyances unattended for any longer that absolute necessary.</p> <p>(11) The driver must keep the vehicle and the cargo area locked at all times to prevent unlawful removal.</p> <p>(12) Use a closed vehicle for the conveyance of the material or an open vehicle with a closed cargo area.</p> <p>(13) Providing drivers of road conveyances with effective communication capability.</p>
<p>Arrangements Prior To Transport of Category III Nuclear Material</p>	<p>91. In addition to the general requirements and the prudent management practices provided in Regulation 90, the following requirements apply to Category III nuclear material.</p> <p>A licensees or consignor shall ensure that —</p> <p>(1) the carrier gives the receiver of the nuclear material advance notification of the planned shipment;</p> <p>(2) an advance notification under this regulation shall specify the mode of transport, estimated time of arrival of the shipment and the point of hand-over where this is to be done before the ultimate destination;</p>

	<p>(3) an advance notification under this regulation is supplied at least 3 days to enable the receiver to make adequate physical protection arrangements: and</p> <p>(4) prior agreements among consignor, receiver and carrier specify the time, place and procedures for transferring physical protection responsibilities.</p>
Trustworthiness of personnel engaged in transport of Category III Nuclear Material	<p>92.(1) The operator, consignor and/or carrier shall determine the trustworthiness of all their personnel who are engaged in the transport of nuclear material for the purpose of granting authorized access to sensitive information, or to unescorted access to nuclear material, shall be vetted by the designated agencies.</p> <p>(2) The trustworthiness determination shall be based on background checks and used to verify the character and reputation of the individual. The stringency of this determination shall be commensurate with the responsibilities of the individual</p>
Information security during Transport of Category III Nuclear Material	<p>93. (1) The operator, consignor and/or carrier shall limit access to sensitive information relevant to transport security to those people who need that information in order to perform their jobs.</p> <p>(2) The operator, consignor and/or carrier shall take measures, according to a graded approach, to ensure the security of electronic systems, particularly computer systems</p>
Written Instructions for Category III Nuclear Material during Transport	<p>94. (1) The operator, consignor and/or carrier shall provide crew members, as appropriate, with written procedures on security measures required by the Authority.</p> <p>(2) These procedures should include information addressing how to respond to a security incident during transport, especially details of emergency contacts.</p>
Control for Category III Nuclear Material during Transport	<p>95. The operator, consignor and/or carrier shall establish procedures to ensure the security of keys to conveyances and security locks, commensurate with the category of the nuclear material being transported.</p>
Locks and Seals for Category III Nuclear Material	<p>96. The licensee and consignor shall ensure that:</p> <p>(1) packages containing nuclear material are carried in closed, locked conveyances. compartments or freight containers;</p> <p>(2) packages weighing more than 2000 kg that are locked or sealed may be transported in open vehicles if tied down or attached to the vehicle or freight container; and</p> <p>(3) locks and seals are applied to conveyances, compartments or freight containers.</p>

<p>Communications for Category III Nuclear Material during Transport</p>	<p>97. A licensee and consignor shall ensure that there is a communication system in place in the conveyance to communicate with the guards, response forces and the consignee.</p>
<p>Checks upon receipt for Category III Nuclear Material during Transport</p>	<p>98. A licensee or receiver shall:</p> <ol style="list-style-type: none"> (1) check the integrity of the packages and locks and seals to verify that the security of the consignment has not been compromised and accepts the shipment and shall notify the Consignor immediately upon arrival; or (2) notify the consignor of non-arrival within 2 hours after the estimated time of arrival at the destination.
<p>Guards and response Teams for Category III Nuclear Material during Transport</p>	<p>99. A licensee shall:</p> <ol style="list-style-type: none"> (1) make arrangements for the provision of sufficient guards and response teams to deal with nuclear security events; and (2) ensure that the physical protection measures include communication system in place within the conveyance capable of communicating with appropriate response teams.
<p>Requirements for Category II Nuclear Materials during Transport</p>	<p>100. In addition to the requirements established in the general requirements, prudent management practices and basic security level, the following requirements apply to Category II nuclear material, a licensee or consignor shall:</p> <ol style="list-style-type: none"> (1) ensure that the carrier gives the receiver of the nuclear material advance notification of the planned shipment; (2) ensure that an advance notification specify the mode of transport. estimated time of arrival of the shipment and point of hand-over where the hand-over is to be done before the ultimate destination; (3) supply an advance notification of the planned shipment to the receiver at least 3 days prior to shipment to enable the receiver to make adequate physical protection arrangements; (4) ensure that prior agreements among consignor, receiver. and carrier specify the time, place and procedures for transferring physical protection responsibilities; (5) prior to the commencement of each shipment. ensure that the receiver has confirmed that it will accept delivery and hand-over, as applicable at the planned time and location

	<p>(6) submit a transport security plan to the Authority for approval at least 7 days prior to shipment;</p> <p>(7) ensure that a transport security plan include the route, with alternative wining if necessary, stopping places, destination hand-over arrangements, identification of persons authorized to take delivery, accident procedures, and reporting procedures of both routine and emergency nature;</p> <p>(8) ensure that the capabilities of the response team, are taken into account when choosing the route;</p> <p>(9) ensure that the carrier has put into place all measures necessary to implement the approved transport security plan prior to cot transport; and</p> <p>(10) make provision for sufficient access delay or compensating measures to counter any threat while nuclear material is on board a conveyance before departure.</p> <p>(11) Immediately before dispatch and after any intermodal transfer, checks to shipment. are made of each nuclear material consignment to verify that the integrity of the conveyance, the package, and the locks and seals have not been compromised; and</p> <p>(12) immediately following completion of the search, the conveyance is placed in a secure area or kept under guard surveillance pending its loading and shipment. A licensee or consignor shall ensure that physical protection measures Surveillance, include surveillance of the cargo, load compartment or conveyance, is provided;</p> <p>(13) ensure physical protection measures provide sufficient delay in the conveyance, freight container and package, so that guards and response forces have time to intervene to prevent removal of the material;</p> <p>(14) ensure locks and seals are applied to conveyances containers, compartments or freight seals;</p> <p>(15) ensure that packages containing nuclear material are carried in closed, locked conveyances, compartments or freight containers; and</p> <p>(16) packages weighing more than 2000kg that are locked or sealed and are transported in open vehicles, tied down or attached to the vehicle or freight container.</p>
<p>Communications for Category II Nuclear Material</p>	<p>101. A licensee and consignor shall ensure that physical protection measure-include a two-way voice communication system between the conveyance, any guards accompanying the shipment, and the response teams, where necessary.</p>

Procedures for Category II Nuclear Material	102. A licensee and consignor shall require personnel with physical protection responsibilities for a particular shipment to follow procedures detailing their responsibilities during the transport in accordance with the transport security plan.
Information protection for Category II Nuclear Material	103. A licensee and consignor shall protect sensitive information relating to transport operations, including dissemination of information only to persons who need to have the information for the performance of their duties.
Checks upon receipt for Category II Nuclear Material	104. A licensee and consignor shall — (1) ensure that the receiver checks the integrity of the packages, locks and seals to verify that the security of the consignment has not been compromised; (2) confirm from the receiver the arrival of shipment within one hour after the estimated time of arrival at the destination; and (3) notify the consignor of the non-arrival of the shipment within one hour after the estimated time of arrival at the destination.
Mode of transport for Category II Nuclear Material	105. A licensee or consignor shall ensure that— (1) for shipment by road, the consignment is shipped in a conveyance under exclusive use; (2) for shipment by rail, the consignment is shipped in a freight train in a conveyance under exclusive use and unless operationally impracticable, the consignment is shipped in a fully enclosed and locked conveyance and if not shipped in a fully enclosed and locked conveyance, the Authority shall give further approval for such conveyance; (3) for shipment by water, the consignment is shipped on a vessel in a secure compartment or container which is locked and sealed; and (4) for shipment by air, the consignment is shipped in an aircraft designated for cargo only and in a secure compartment or container which is locked and sealed.
	PART X: ADDITIONAL MEASURES FOR PROTECTION AGAINST SABOTAGE
Additional Measures for Protection Against Sabotage during transport.	106. (1) A licensee and consignor shall take into account the safety features of the design for the transport package, container and conveyance when implementing required physical protection measures to protect against sabotage (2) A licensee and consignor shall identify and implement additional physical protection measures to prevent sabotage of nuclear material during transport based on design basis threat

and potential radiological consequences which measures shall include:

- (a) postponing the shipment;
- (b) rerouting the shipment to avoid high-threat areas;
- (c) enhancing the robustness of the package or the conveyance;
- (d) detailed route surveillance to observe the current environment; and
- (e) provision for additional guards.

SCHEDULE I- CATEGORIZATION OF NUCLEAR MATERIAL

Table 1: Categorization of Nuclear Materials

Material	Form	Category I	Category II	Category III^c
1. Plutonium ^a	Unirradiated ^b	2 kg or more	Less than 2 kg but more than 500 g	500 g or less but more than 15 g
2. Uranium-235 (²³⁵ U)	Unirradiated ^b - Uranium enriched to 20% ²³⁵ U or more - Uranium enriched to 10% ²³⁵ U but less than 20% ²³⁵ U - Uranium	5 kg or more	Less than 5 kg but more than 1 kg 10 kg or more	1 kg or less but more than 15 g Less than 10kg but more than 1 kg 10 kg or more
3. Uranium-233 (²³³ U)	Unirradiated	2 kg or more	Less than 2 kg but more than 500 g	500 g or less but more than 15 g
4. Irradiated fuel (The categorization of irradiated fuel in the table is based on international transport considerations. The State may assign a different category for domestic use, storage and transport taking all relevant factors into account.)			Depleted or natural uranium, thorium or low enriched fuel (less than 10% fissile content) ^{d, e}	

Note: This table is not to be used or interpreted independently of the text of the entire publication.

1. ^aAll plutonium except that with isotopic concentration exceeding 80% in plutonium-238.
2. ^bMaterial not irradiated in a reactor or material irradiated in a reactor but with a radiation level equal to or less than 1 Gy/h. (100 rad/h) at 1 m unshielded.

3. ^cQuantities not falling in Category III and natural uranium, depleted uranium and thorium should be protected at least in accordance with prudent management practice.
4. ^dAlthough this level of protection is recommended, it would be open to States, upon evaluation of the specific circumstances, to assign a different category of physical protection.
5. ^eOther fuel which by virtue of its original fissile material content is classified as Category I or II before irradiation may be reduced one category level while the radiation level from the fuel exceeds 1 Gy/h (100 rad/h) at one meter unshielded.

SCHEDULE II– UNACCEPTABLE AND HIGH RADIOLOGICAL CONSEQUENCES

TABLE 2: Unacceptable and High Radiological Consequences

Consequence Level A High Radiological Consequences	Consequence Level B Unacceptable Radiological Consequences	Consequence Level C* Unacceptable Radiological Consequences
<p>Sabotage could give rise to severe deterministic health effects off-site, such as:</p> <ul style="list-style-type: none"> • Facilities with inventories of dispersible radioactive material sufficient to result in severe deterministic effects off-site. • Reactors with power levels exceeding 100 MW(th) (e.g. a nuclear power plant, a nuclear powered ship, a research facility) • Spent fuel pools that may contain some recently discharged fuel and a total of more than about 0.1 EBq of Cs-137 (equivalent to the inventory in a 3000 MW (th) reactor core) 	<p>Sabotage could result in doses to persons off-site that warrant urgent protective actions off-site, such as:</p> <ul style="list-style-type: none"> • Facilities with inventories of radioactive material sufficient to result in doses warranting urgent protective action off-site. • Reactors with power levels of 100 MW(th) or less, but more than 2 MW(th) • Spent fuel pools requiring active cooling • Facilities with potential for uncontrolled criticality within 0.5 km of the site boundary 	<p>Sabotage could result in doses or contamination that warrants urgent protective action on-site, such as:</p> <ul style="list-style-type: none"> • Facilities with inventories of radioactive material sufficient to result in doses warranting urgent protective action on-site. • Facilities with potential, if shielding lost, of direct external (shine) dose rates of more than 100 mGy/h at 1 m • Facilities with potential for uncontrolled criticality more than 0.5 km from the off-site boundary • Reactors with power levels of less than or equal to 2 MW{th}

SCHEDULE III- TRANSPORT SECURITY PLAN FOR NUCLEAR MATERIAL

1. A transport security plan (TSP) shall include all information necessary to describe the security approach and system being used for protection of the nuclear material during transport, the level of details and depth of content shall be commensurate with the category of the nuclear material covered by the plan.

2. The following shall be included in the plan referred to in this schedule [administrative requirements or information provided us follows]

(a) Allocation of responsibilities shall cover:

- (i) list of all personnel that will be involved in the shipment and their responsibilities.
- (ii) information about the consignor, carrier or receiver, and
- (iii) when shipment is to be changed from one party to another. the transfer of responsibilities shall be stipulated;

(b) policies and operational procedures shall cover:

- (i) vulnerability assessment,
- (ii) testing and evaluation of the TSP.
- (iii) review and update of the TSP,
- (iv) response to higher threat conditions, and
- (v) reporting of threats or incidents;

(c) training requirements shall:

- (i) provide detailed training program and exercises on physical protection that will be conducted, and
- (ii) document the results of all trainings. exercises and lessons learnt

(d) the following information shall be retained and updated as appropriate;

- (i) information on the nuclear material and nuclear material packages and their design.
- (ii) information on the personnel involved in the shipment.
- (iii) records of all nuclear material that has been transported.
- (iv) records associated with the preparation and actual undertaking of a, shipment. And
- (v) records of personnel training and notification;

- (e) confidentiality and protection of information shall be as follows:
 - (i) develop program for information security and this shall include protecting detailed information on the category and quantity of the nuclear material,
 - (ii) transportation schedule, route and timings.
 - (iii) physical protection arrangements and the names, number and qualifications of personnel involved in the shipment. and
 - (iv) define the precautionary measures put in place to prevent unauthorized access to any sensitive information contained in the TSP and;
 - (v) Report of the conduct of personnel trustworthiness verification

3. Shipment Security shall provide the following information:

(a) Information on the nuclear material to be transported and this shall include-

- (i) name of the nuclear material.
- (ii) quantity of the nuclear material,
- (iii) form of the material,
- (iv) chemical and physical characteristics of the material,
- (v) isotopic composition of the material,
- (vi) enrichment values, and
- (vii) radiation levels, and any other applicable data

(b) Description of the transport physical protection system such as;

- (i) packages and conveyances,
- (ii) description of the packages to be used, their designs pertinent to security,
- (iii) description of physical protective measures,
- (iv) description of the conveyance's protective capabilities if any,
- (v) planned and alternate routes and modes of transport, and
- (vi) detailed description of the planned modes of transport and the planned primary routes to be followed and all available information on these routes; the Information shall include description of current applicable road, rail, inland waterway, port facility. transfer and stopover facility, border crossing and airport conditions that affect the transport, and
- (vii) information on:

- (A) the permissible speeds.
- (B) areas where repair or construction work is being, or is expected to be, performed,
- (C) potential impacts of weather conditions,
- (D) planned transfer point and stopover facility capabilities.
- (E) refueling sites, safe havens and subsistence locations.
- (F) alternate routes that could be used in case of emergency.
- (G) description of the structure of the primary and redundant alternate communications systems for the proposed transport operation,
- (H) description of any system proposed to be used for tracking the conveyances,
- (I) description of the command-and-control procedures and establishment of persons of authority for each phase of the transport operation.
- (J) Description of the command and co-ordination procedures between the response force and the guards. and between the primary response force and any secondary response forces that may be planned for deployment.
- (K) description of the roles and responsibilities of the transport commander. the response force commander. and the transport control center. And
- (L) elaboration on how and when handoff of command and control would be made from the transport commander to the response force commander.

4. Maintenance and testing of systems and equipment shall provide the following:

- (a) program for the maintenance and testing of systems and equipment:
- (b) program for testing all mission-related equipment (such as all transport conveyances, communications equipment and tracking systems. any delay systems built into the transport packages or conveyances; and individual guards and response force weapons and tactical equipment. protective gear and communication devices) prior to the beginning of the transport operations.

5. Response planning shall:

- (a) provide information on emergency arrangements such as:

(i) planned actions and procedures to be taken in the event of an emergency situation such as a road closure, Vehicle breakdown, accident, or driver illness that may occur during the shipment

(ii) backup vehicle and driver, heavy towing and lifting capability. safe havens, and alternative routes: and

(iii) procedure to immediately in thrill any transport control center or alternative central point of communication that is used.

of an emergency situation and for that control center or central point to be able to instigate the planned actions or procedures in response.

(b) contingency plans include the following:

(i) identify personnel who have the responsibility and authority to execute the contingency plans in case of any nuclear security event.

(ii) provide assurance that any transport control center or alternative central point of-communication would be notified immediately of a nuclear security event.

(iii) specify how the consignor or carrier will maintain and have readily available, accurate information on the availability and capability of potential local response teams close to the route chosen.

(iv) develop response teams exercise program and conduct the emergency exercises and training and document lessons learnt. and

(v) identify;

(A)any designated guards that are to accompany the shipment.

(B)all designated response three units/organizations that are assigned responsibilities for the shipment.

(C) any other national assets that are projected to be available to support the movement or assist in response to an incident or emergency,

(D) all other support personnel, including lire, rescue and other asset units along the route. as applicable and the communications system required for appropriate information transfer. And

(E) incident communications, command and control and give description of the;

(i) structure of the entire primary and alternate communications system for the proposed transport operation, and

(ii) installed tracking system for the conveyances which shall be located at and operated by a transport control center or an alternative central point of communication.

SCHEDULE IV- PROTECTION OF SENSITIVE INFORMATION

1, The types of information and documents that shall be protected as safeguarded information include non-public security-related requirements as specified in this schedule.

2. Physical protection Information not classified as restricted data or national security information related to physical protection. including the following shall be protected;

(a) the composite physical security plan for the facility or site;

(b) site-specific drawings, diagrams, sketches, or maps that substantially represent the final design features of the physical security system not easily discernible by members of the public;

(c) alarm system layouts showing the location of intrusion detection devices, alarm assessment equipment, alarm system wiring, emergency power sources for security equipment, and duress alarms not easily discernible by members of the public;

(d) physical security orders and procedures issued by the licensee for members of the security organization detailing duress codes, patrol routes and schedules, or responses to security contingency events;

(e) site-specific design features of plant security communications systems;

(f) lock combinations, mechanical key design, or passwords integral to the physical security system;

(g) documents and other matters that contain lists or locations of certain safety-related equipment explicitly identified in the documents or other matters as vital for purposes of physical protection, as contained in security plans and contingency measures;

(h) the composite facility guard qualification and training plan or measures disclosing features of the physical security system or response procedures;

(i) information relating to on-site or off-site response forces, including size, armament of response forces, and arrival times of such forces committed to respond to security contingency events;

(j) the adversary characteristics document and related information, including implementing guidance associated with the Design Basis Threat and;

(k) engineering and safety analyses. security-related procedures or scenarios, and other information revealing site-specific details of the facility or materials if the unauthorized disclosure of such analyses. procedures. scenarios, or other information could reasonably be expected to have a significant adverse effect on the health and safety of the public or the common defence and security by significantly

increasing the likelihood of theft, diversion, or sabotage of source, by-product, or special nuclear material.

3. Physical protection in transit

Information not classified as restricted data or national security information related to the transportation of, or delivery to a carrier for transportation of a formula quantity of strategic special nuclear material or more than 100 grams of irradiated reactor fuel, include;

- (a) the composite transport security plan;
- (b) schedules and itineraries for specific shipments of source material, by-product material, high-level nuclear waste, or irradiated reactor fuel;
- (c) vehicle immobilization features, intrusion alarm devices, and communications systems;
- (d) arrangements with and capabilities of response forces, and locations of safe havens identified along the transportation route;
- (e) limitations of communications during transport;
- (f) procedures for response to security contingency events;
- (g) information concerning the tactics and capabilities required to defend against attempted sabotage, or theft and diversion of formula quantities of nuclear material, irradiated reactor fuel, spent fuel or related information; and
- (h) engineering or safety analyses, security-related procedures or scenarios and other information related to the protection of the transported material if the unauthorized disclosure of such analyses, procedures, scenarios, or other information could reasonably be expected to have a significant adverse effect on the health and safety of the public or the common defense and security by significantly increasing the likelihood of theft, diversion, or sabotage of source, by-product, or nuclear material.

4. Inspections, audits and evaluations

Information not classified as national security information or restricted data pertaining to safeguards and security inspections and reports. Including;

- (a) portions of inspection reports, evaluations, audits, or investigations that contain details of a licensee's or applicant's physical security system or that disclose uncorrected defects, weaknesses, or vulnerabilities in the system;
- (b) disclosure of corrected defects, weaknesses, or vulnerabilities which are subject to an assessment taking into account such factors as trending analyses and the impacts of disclosure on licensees having similar physical security systems; and

(c) reports of investigations containing general information may be released after corrective actions have been completed, unless withheld pursuant to other authorities.

5. Portions of correspondence insofar as they contain safeguarded information as provided in this schedule.

SCHEDULE V- SAFEGUARD OF SENSITIVE INFORMATION

Processing of Safeguarded Information

- (1) Safeguarded Information may be stored, processed and produced on a stand-alone computer or computer system.
- (2) Each computer not located within an approved and lockable security storage container that is used to process safe guarded Information shall have a removable storage medium with a bootable operating system and the bootable operating system shall he used to load and initialize the computer.
- (3) The removable storage medium shall also contain the software application programs.
- (4) Data may be saved on either the removable storage medium that is used to boot the operating system or on a different removable storage medium: the removable storage medium shall he secured in a locked security storage container when not in use.
- (5) A mobile device may also be used for the processing of safeguarded information provided the device is secured in a locked security storage container when not in use and other systems may be used if approved for security by the Authority.
- (6) Any electronic system that has been used for storage processing or production of safe guarded information shall be free of recoverable safeguarded information prior to being returned to non-exclusive use.
- (7) Safeguarded information designated for modified handling shall be stored. processed or produced on a computer or computer system is assigned to the licensee's or contractor's facility.
- (8) Safeguarded information-modified I kindling files shall be protected either by a password or encryption to prevent unauthorized individual, from gaining access. word processors such type writers are not subject to these requirements as long as they do not transmit information offsite, where safeguarded information modified handling is produced on a type writer, the

ribbon shall be properly marked, removed and stored in the same manner as other safeguarded-information modified handling.

- (9) Safeguarded Information-modified handling files may be transmitted over a network provided the file is encrypted. In such cases the licensee shall select an encryption that is certified. Safeguarded information modified handling files may be properly labeled to indicate the presence of Safeguarded information with modified handling requirements and saved to removable matter and stored in a locked drawer or cabinet.
- (10) A mobile device may also be used for the processing of safeguarded information-modified handling provided the device is secured in an appropriate locked storage container when not in use. Other systems may be used where approved for security by the Authority.
- (11) Any electronic system that has been used for storage, processing or production of safeguarded information shall be free of recoverable safeguarded information designated as safeguarded information-modified handling prior to being returned to nonexclusive use.

Removable from safeguards information handling category

Documents or other matter originally containing safeguarded information-modified handling shall be removed from the safeguarded information category at such time as the information no longer meets the criteria contained in this Schedule care shall be exercised to ensure that any document or other matter decontrolled shall not disclose safeguarded information in some other form or be combined with other unprotected information to disclose safeguarded information. The authority to determine that a document or other matter may be decontrolled will only be exercised by the Authority.

Destruction of matter containing Safeguarded Information designated as safeguarded Information modified handling.

Documents or other matter containing safeguarded information shall be destroyed when no longer needed. The information can be destroyed by burning, shredding, or any other method that precludes reconstruction by means available to the public at large; piece sizes no wider than 6.35mm composed of several pages or documents and thoroughly mixed are considered completely destroyed.