



Hungarian Atomic Energy Authority

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**Detailed requirement levels for the
realization of the response physical
protection function**

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FOREWORD FROM THE DIRECTOR GENERAL

The Hungarian Atomic Energy Authority (hereinafter referred to as HAEA) is a central state administration organ (a so-called government office) having nation-wide competence in the field of peaceful use of atomic energy; it operates under the direction of the Government, it has independent tasks and scope of authority. The HAEA was established in 1990 by the Government of the Republic of Hungary with Govt. decree 104/1990. (XII. 15.) Korm. on the scope of tasks and competence of the Hungarian Atomic Energy Commission and the HAEA.

The public service of the HAEA as defined in law is to perform and coordinate, independently of organizations having interest in the application of atomic energy, the regulatory tasks in relation to the peaceful and safe use of atomic energy, including the safety of nuclear facilities and materials, nuclear emergency response and nuclear security, and the corresponding public information activity, and to make proposal to develop and amend, and to offer an opinion on proposed legislations corresponding to the use of atomic energy.

The fundamental nuclear safety objective is to ensure the protection of individuals and groups of the population and of the environment against the hazards of ionising radiation. This is ensured with effective safety measures implemented and adequately maintained in the nuclear facility.

The radiation protection objective is to keep the radiation exposure of the operating personnel and the public all times below the prescribed limits and as low as reasonable achievable. This shall be ensured in the case of radiation exposures occurring during design basis accidents, and as far as reasonably possible during beyond design basis accidents and severe accidents.

The technical safety objective is to prevent or avoid the occurrence of accidents with high confidence, and the potential consequences occurring in the case of every postulated initiating event taken into account in the design of the nuclear facility shall remain within acceptable extent, and the probability of severe accidents shall be adequately low.

The HAEA determines the way how the regulations should be implemented in guidelines containing clear, unambiguous recommendations in agreement with the users of atomic energy. These guidelines are published and accessible to every members of the public. The guidelines regarding the implementation of nuclear safety, security and non-proliferation requirements for the use of atomic energy are published by the director general of the HAEA.

FOREWORD

The internationally accepted bases of physical protection are represented by the Law Order 8 of 1987 on the promulgation of the International Convention on the Physical Protection of Nuclear Materials, the Act LXII of 2008 on the promulgation of the Amendment to the Convention on Physical Protection of Nuclear Materials approved in the frame of the International Atomic Energy Agency and promulgated by Law-decree 8 of 1987 amended by a Diplomatic Conference organized by the IAEA signed on July 8, 2005, and the Act XX of 2007 on the promulgation of the International Convention for the Suppression of Acts of Nuclear Terrorism.

The realization of the stipulations undertaken by Hungary, at the highest level, is represented by the Act CXVI of 1996 (hereinafter referred to as Atomic Act), which includes the fundamental security principles and establishes the frame of the detailed physical protection regulations.

The Govt. decree 190/2011. (IX. 19.) Korm. published based on the authorization of the Act (hereinafter referred to as Government Decree) establishes the legal requirements for the physical protection of the use of atomic energy and for the connecting licensing, reporting and inspection system.

The HAEA is authorized to develop recommendations regarding the implementation of requirements established in laws, which are published in the form of guidelines and made accessible on the website of the HAEA.

For the fast and smooth conduct of licensing and inspection procedures connecting to the regulatory oversight activity, the Authority encourages the licensees to take into account the recommendations of the guidelines to the extent possible.

If methods different from those laid down in the regulatory guidelines are applied, then the Authority shall conduct an in-depth examination to determine if the applied method is correct, adequate and full scope, which may entail a longer regulatory procedure, involvement of external experts and extra costs.

The guidelines are revised regularly as specified by the HAEA or out of turn if initiated by a licensee.

The regulations listed are supplemented by the internal regulations of the licensees and other organizations contributing to the use of atomic energy (designers, manufacturers etc.), which shall be developed and maintained according to their quality management systems.

Before applying a given guideline, always make sure whether the newest, effective version is considered. The valid guidelines can be downloaded from the HAEA's website: <http://www.oah.hu>.

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1. INTRODUCTION

1.1. Scope and objective of the guideline

The guideline contains recommendations on how to meet the provisions of Government decree.

This guideline provides detailed guidance and practical examples to meet the requirements for the response function the physical protection system, and thus supports the compliance with the legal criteria.

1.2. Corresponding laws and regulations

The legal background of the nuclear safety requirements is established in the Atomic Act and the Government decree.

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2. TERMINOLOGY

This guideline used the following terminology in addition to the terms determined in Section 2 of the Atomic Act and Section 2 of the Government decree.

Intrusion detection system:

Such electronic system, which can automatically sense the existence of any intruder in rooms or areas under surveillance, as well as the intrusion or its attempt, it can receive manual signalling, and display such signals.

Access point:

Where the access is controlled; the equipment controlling the access can be rotating door, turnstile, barrier, etc.

Access control system:

The system supervises the access to a location; it can be operated automatically or under supervision.

Biometric identifier:

An instrument that identifies a person based on his/her individual biological characteristics (fingerprint, hand geometry, iris, face, etc).

Authority:

The HAEA and the Hungarian Police Headquarters.

Minimum (intrusion) detection system:

The surface protection covers doors and windows below 3 meters, area protection is trap-like, object and person protection do not exist.

Partial (intrusion) detection system:

The surface protection is overall (detection system supervises all the doors, windows, portals, as well as those walls, ceilings and floors that are not in compliance with the requirements of the overall mechanical physical protection; it provides alarm if intrusion is attempted), the area protection is trap-like (the detection system supervises the access routes to threatened objects and important areas), and the alarm goes off locally (alarming the immediate vicinity).

Overall (intrusion) detection system:

As a part of surface protection the detection system supervises all the doors, windows, portals, as well as those walls, ceilings and floors that are not in compliance with the requirements of the overall mechanical physical

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protection; it provides alarm if intrusion is attempted. As a part of area protection the detection system supervises the internal area, provides alarm if any unauthorized human action has been done, as well as supervises the access routes at least in a trap-like manner. As a part of object protection the detection system supervises every threatened object. As a part of person protection the detection system provides the opportunity for every potentially threatened person to indicate any attack; in addition to local alarming, the detection system (in addition to local alarm) directly notifies the security personnel.

3. RECOMMENDATIONS OF THE GUIDELINE

3.1. General considerations

The response, as a function of the physical protection system, primarily includes actions of the response forces as they prepare themselves after the receipt of an alarm, arrive to the scene, deny and then eliminate the adversaries in order to prevent the successful completion of the adversary action and to mitigate its potential consequences. The response function includes the activities of the guards and armed security guards, which provide the denial and arrestment of the adversaries in order to prevent their access to the source, as well as to prevent the authorized removal of the source or the sabotage thereto.

Section 12 of the Government decree regulates that

“(2) During response the denial and neutralization of the adversary of unauthorized removal or sabotage shall be carried out in cooperation with the following organizations as specified in Annex 2 and 3:

- a) local guards,*
- b) armed security guards,*
- c) police and*
- d) on-call security service.*

(3) The following shall be ensured during the carrying out of the response function:

- a) short time required to interact,*
- b) required number of response forces to carry out the response, and*
- c) capabilities required for the response forces to respond.”*

Section 21 of the regulates that the reaction capability of the response forces should be maintained and periodically tested by the obligant, as follows:

“(2) The obligant shall hold annual physical protection exercise to demonstrate the adequacy of operability of the physical protection functions and capabilities of response forces.”

The response activity starts after detection and assessment of the alarm; therefore it is essential that the obligant should have a proper contingency plan within the physical protection plan and should ensure the availability of the response forces needed for the implementation of the plan.

Section 32 (9) of the Govt. decree provides the possibility, based on local specifics, of licensed deviations from the requirements listed in Annex 2 of

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the Govt. decree; however only in such cases if the obligant can demonstrate that the realization of the deviation from the prescriptive requirements does not compromise the fulfilment of the general physical protection requirements described in Sections 6-30 of the Govt. decree. Recommendations on the construction and operation of the physical protection system are contained in the guidelines provided by the HAEA. The guidelines are published on the website of the HAEA (www.oah.hu). If the obligant submits the application for license according to (1) a) through c) of Section 32, and if the obligant performs the physical protection activities according to the guidelines, the Authority shall consider the chosen method to be suitable for verifying the fulfilment of the requirements of the physical protection system. When the methods and procedures used are other than those described in the guidelines, the Authority shall assess the completeness, appropriateness and correctness thereof.

In accordance with the legislation, the response function can be performed by either internal or external response forces.

3.2. Internal response forces

3.2.1. Requirements

Chapter IV of Annex 2 of the Government decree requires that

On physical protection level A: the response shall be performed by internal response forces having at least the same number of persons as the number of independent adversary pathways, and by external response forces arriving within 5 minutes, and the internal response forces shall perform patrolling on the site and provide 24 hours guard service.

On physical protection level B: the response shall be performed by internal response forces having the same number of persons as the number of independent adversary pathways, and by external response forces arriving within 10 minutes, and the internal response forces shall perform patrolling on the site and provide 24 hours guard service.

On physical protection level C the response shall be performed by local guards or external response forces arriving within 15 minutes.

On physical protection level D the response shall be performed by internal or external response forces.

3.2.2. Structure and tasks of internal response forces

The internal response forces basically consist of local guards and armed security guards. Internal response forces having sufficient response

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capabilities shall be established according to the requirements of the Government decree. The size of the internal response forces and the equipment required for the response activity should be determined based on the categorization of the materials to be protected and the required level of physical protection.

The local guard force needed for the adequate performance of the response physical protection function can be a part of the organization of the obligant; however external civilian security services can also be used. The local guard force of the internal response force can be operated by an organization other than the obligant based on sufficient contractual guarantees; nevertheless the obligant has the prime responsibility for the performance of the response function in compliance with the requirements of the Govt. decree.

In the case of Level A and B physical protection, in line with the requirements defined in Annex 2 of the Government decree, the internal response forces shall ensure 24 h guard service on the site of the facility as well as sufficient patrolling shall be provided to perform the response physical protection function.

In the case of Level C physical protection, the operation of a 24 h guard service and patrolling are not required.

In the case of Level D physical protection, the response function should be basically performed by external response forces.

The size of the internal response forces to be established depends on the size of the site, the location of the guards and the distance from the material to be protected. In the case of Level A physical protection, the Government decree requires as a minimum requirement that the number of the staff of internal response forces shall be at least equal to the potential intrusion pathways. In order to specify this number those potential pathways should be assessed, through which the material to be protected can be accessed. In the case of Level B physical protection the number of the staff of the internal response forces shall be proportionate with the number of potential adversary pathways.

3.3. External response forces

3.3.1. Requirements

Chapter IV of Annex 2 of the Govt. decree requires that

On physical protection level A: the response shall be performed by internal response forces having at least the same number of persons as the number of

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*independent adversary pathways, and **by external response forces arriving within 5 minutes**, and the internal response forces shall perform patrolling on the site and provide 24 hours guard service.*

***On physical protection level B:** the response shall be performed by internal response forces having the same number of persons as the number of independent adversary pathways, and **by external response forces arriving within 10 minutes**, and the internal response forces shall perform patrolling on the site and provide 24 hours guard service.*

***On physical protection level C** the response shall be performed by local guards or **external response forces arriving within 15 minutes**.*

***On physical protection level D** the response shall be performed by internal or **external response forces**.*

3.3.2. Contribution of the external response forces

The external response forces consist of the police and the on-call security services. The basic duty of the external response forces is that they should reach the site as soon as possible after the receipt of an alarm from the local guards or detection system, in order to support the internal response forces in the performance of the response function. The availability of the external response forces having sufficient capabilities should be ensured in line with the requirements of the Government decree as discussed in Section 3.2.1 of this Guideline.

In the case of Level C and D physical protection, the function of the on-call security service should be provided by the establishment of a duty and alert system within its own organization of the obligant.

The alarming of the police as an external response force is justified, if the attack against the material to be protected has such a nature that unambiguously indicates the illegal manner of the act, and if the action exceeds the scope of events that can be managed by the internal forces. The reliable and effective involvement of the police as an external response force can be facilitated in the frame of an agreement.

3.4. Cooperation between response forces

The obligant, through the conclusion of agreements/contracts, is obliged to ensure and demonstrate that the external response forces supporting the performance of the local guards will arrive to the site within the period defined in the Government decree. Appropriate communication lines and

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notification procedures should be established between the internal and external response forces.

The external response forces should be alerted either directly or indirectly. The indirect alerting should be realized with the establishment of communication channels, or agreements with organizations performing the external monitoring of the detection and alarming systems. The direct alerting should be performed by panic alarm (i.e. pushing a panic button).

Procedures should be elaborated in advance to manage any potential threats and actions with regard to the materials and equipment to be protected; such response plan should be prepared, which identifies the scope of potential events including those inducing the inadequate operation of the physical protection system, as well as the procedures of the implementation of the necessary measures and interventions. An important part of the response plan is the elaboration of the notification and communication rules, the identification of concrete persons participating in response and listing of their contact details. Care should be taken that each person participating in the performance of the response function should be aware of his/her tasks to be performed during an emergency event that are necessary for the successful fulfilment of the response physical protection function.

3.5. Evaluation of the effectiveness of the response forces

The obligant should maintain and regularly test the effectiveness of the response function. The effectiveness of the response capabilities of the response forces should be tested and demonstrated during exercises to be organized at least once a year. Such an exercise can be either announced in advance or unannounced.

An exercise should be evaluated as successful, if the adversary is denied by the response forces before he/she is able to remove the material to be protected against theft or access the equipment to be protected against sabotage.

The exercises conducted and their evaluations should be documented including the positive and negative experiences gained during the exercises.

3.6. Response during transport

3.6.1. Requirements

Chapter IV of Annex 3 of the Government decree regulates that

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“70. On physical protection level A the primary and alternative routes as well as the stops during the transport shall be planned that the response shall be effectuated by the escort personnel and the additional on-call external response forces within 5 minutes.

71. On physical protection level B the primary and alternative routes as well as the stops during the transport shall be planned that the response shall be effectuated by the escort personnel and the additional on-call external response forces within 10 minutes.

72. On physical protection level C the primary and alternative routes as well as the stops during the transport shall be planned that the response shall be effectuated by the escort personnel and the additional on-call external response forces within 15 minutes.

73. On physical protection level D the primary and alternative routes as well as the stops during the transport shall be planned that the response shall be effectuated by the escort personnel and the additional on-call external response forces.”

3.6.2. Realization of the response function during transport

The law prescribes explicit requirements for the realization of the response function during transport on public areas. These requirements are dependent on the category of the nuclear material, radiative material or radiative waste to be transported through public area. The response actions to be performed on different physical protection levels are in harmony with the graded approach.

The movement of the nuclear and other radioactive material during transport is not the only difficulty for the performance of the physical protection functions, but the specifics of the transport modes (via public road, railway, inland or international water and by air) require special arrangements (e.g. ensuring alternate transport route in the case of a transport requiring Level B physical protection).

The legal requirements shall be met by the planning and realization of the response during transport. The following recommendation should be taken into account:

The response should be performed primarily by those participating in the transport, it should not be considered as an official task of the police. Nevertheless, the police or other law enforcement organization might be involved.

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Depending on the material to be transported, the shipment should be escorted (leading vehicle/escort vehicle/armed escort); in such a case, a copy of the valid agreement with the organization providing the escort should be attached to the submitted physical protection plan.

If escort is applied during the transport, then the convoy should keep an order, the escort should maintain continuous visual surveillance over the shipment.

If the shipment does not require direct escort, then a contract with a security company should be the solution, which as an external response force can facilitate the performance of the response function if needed. The time limit defined for response should be complied with.

During the planning of the transport route the shipper or carrier should take into account that the transport should be made only on such route and in such period, when the response function can be properly performed.

A recommended solution is that if more than one person travels in the transport vehicle, then one member of the personnel should always stay in the vehicle, thus the surveillance of the shipment is continuous and the response activity, if needed, can be started without delay.

The person responsible for physical protection should periodically verify whether the persons involved in the shipment are aware of their obligations and capable to perform the response actions.

The effective response to extraordinary events occurring during a transport requires continuous and protected communication between the cooperating response forces in order to ensure information exchange and harmonization of the necessary actions. The absence of communication may be a signal indicating a contingency situation.