

Document:	NSRAO2-POR-030	Procurer:  <b>REPUBLIC OF SLOVENIA</b> <b>Gregorčičeva ulica 20,</b> <b>1000 Ljubljana</b>  By authorisation of:  <b>ARAO, Ljubljana</b> <b>Celovška cesta 182, 1000 Ljubljana</b>
ARAO identification code:	02-08-011-004	
Date:	March 2019	
Revision	5	
Number of copies:		
Facility:	Vrbina, Krško LILW repository	
Contractor:	ARAO, Ljubljana	
Contractor's project manager:	mag. Sandi Viršek, univ. dipl. inž. geoteh. in rud.	
Document title:	<p><b>Draft Safety Analysis Report for the Vrbina Krško LILW Repository</b></p> <p><b>Chapter 10 Physical security</b></p>	

## DOCUMENT HISTORY

Revision:	Date of (previous) revision:	Brief description of changes from the previous version:	Notes:
1	May 2017	Amendment of the document following review	
2	January 2018	amendment of the document following review by an approved nuclear and radiation safety expert	
3	November 2018	amendment following SNSA review	
4	February 2019	amendment following SNSA review	
5	March 2019	Supplementing of application	

## TABLE OF CONTENTS

<b>10</b>	<b>PHYSICAL SECURITY OF THE REPOSITORY.....</b>	<b>5</b>
10.1	INTRODUCTION.....	5
10.1.1	<i>Purpose of physical security.....</i>	6
10.1.2	<i>Overview of legal frameworks.....</i>	7
10.1.3	<i>Requirements and criteria for physical security.....</i>	8
10.1.4	<i>Competences.....</i>	11
10.1.5	<i>Duties.....</i>	11
10.2	BASES FOR PHYSICAL SECURITY PLAN AND PROCEDURES.....	11
10.3	REPOSITORY TIME PERIODS.....	12
10.4	ORGANISATION OF WORK AT THE REPOSITORY.....	14
10.5	PHYSICAL SECURITY CONCEPT.....	15
10.6	REPOSITORY AREAS WITH RESPECT TO PHYSICAL SECURITY.....	16
	REFERENCES.....	17

## ABBREVIATIONS AND TERMS

CSRAO – Central radwaste storage

FV – Physical security

NEK – Krško nuclear power plant

osnVP – Draft Safety Analysis Report

PGD – Project for acquisition of a construction permit

SSA – Special safety analysis

SA.2 – investment scenario with cooperation of Croatia (disposal of all waste from Krško NPP and Slovenian institutional waste)

SA.3 – basic investment scenario (disposal of Slovenian part of waste from Krško NPP and Slovenian institutional waste)

TRIGA reactor – TRIGA research reactor

SNSA – Slovenian Nuclear Safety Administration

SCC – Security Control Centre

## 10 PHYSICAL SECURITY OF THE REPOSITORY

### 10.1 Introduction

The LILW repository is a nuclear facility. Therefore, physical security measures must be conducted from the start of construction of the repository until its decommissioning.

The quantities of nuclear materials disposed at the LILW repository will not exceed the quantities set out in Appendix 2 to the Rules on the physical protection of nuclear facilities, nuclear and radioactive materials, and the transport of nuclear materials, [1] therefore they are not classified into any of the categories listed in Appendix 2. Physical security measures at the LILW repository will be conducted due to the classification of the LILW repository as a nuclear facility pursuant to the ZVSIJV [2] and consequently into Category III under the FV Rules.[1]

In accordance with legislative requirements [2] and the SNSA's practical guidelines regarding the content of the Safety Analysis Report,[3] in order to obtain a risk assessment, during the phase of obtaining an environmental consent as part of the IDZ Rev. C,[4] a physical security report was drafted,[5] which is confidential owing to its containing of information on the physical security of a nuclear facility, and is marked INTERNAL pursuant to the Classified Information Act.[6] Chapter 10 of the Draft Safety Analysis Report thus provides only a summary of the FV Report [5] and contains information that is not classified. Due to the development of the project and the graduated approach to the planning of the nuclear facility, it was concluded that the FV Report will suffice for the phase of obtaining an environmental consent, while the Physical Security Plan and a separate chapter of the safety analysis report will be drafted during the next phase (obtaining construction approvals).

The physical security report was drafted as an integral part of the IDZ. The solutions deriving from the findings in the report will be shown in the plan of technical security systems and in the construction plan. The solutions will be supported with plan and layout schematics. The specific connections and solutions are given only in the case that they are unavoidably required in order to estimate costs. On the basis of the FV Report,[5] an application was submitted to the Police in August 2015 to obtain a Risk Assessment,[7] which was received from the Police on 14 October 2015 and then reissued for 2017 on 18 March 2017. As part of the PGD, a plan of technical security systems will be drawn up, which will take the current risk assessment into account.

The physical security design includes all of the repository facilities during all of the repository time periods.

The content of the report will roughly follow the content prescribed for physical security programmes under Article 15 of the Rules on the conditions for workers who carry out physical protection of nuclear materials, nuclear facilities or radiation facilities and on the conditions for workers who have access to nuclear materials as well as on other conditions with respect to physical protection, Rules on the physical protection of nuclear facilities, nuclear and radioactive materials, and the transport of nuclear materials (Official Gazette of the RS 17/13).[1]

The physical security design is based primarily on the ZVISJV [2] and related regulations, and on LILW storage technology. The design is also compliant with the requirements set out in the Private Security Act.[8]

The default activities to be conducted at the repository are those set out in scenario SA.3 from the feasibility study,[9] which includes the following assumptions:

- LILW generated in Slovenia will be disposed of at the LILW repository; pre-disposal conditioning will be carried out at Krško NPP; accordingly, the scope of the investment at the repository site will be reduced (with respect to the IDP),
- half of the waste from Krško NPP and all Slovenian institutional waste will be disposed of at the repository site,
- the repository's disposal capacities have been adjusted to the newly defined data on LILW quantities that will have to be disposed of; in the determination of the quantity of waste, it was assumed that Krško NPP will operate until 2043 (extended operating life),
- the assumed repository operation solution involves the suspension of operations after the stored waste has been deposited and the repository being restarted during the Krško NPP decommissioning phase.

There will be no differences with regard to physical security if scenario SA.2 from the feasibility study is realised. Physical security will be provided on the same bases as those given below.

#### **10.1.1 PURPOSE OF PHYSICAL SECURITY**

Physical security at the Vrbina Krško LILW repository will be provided in order to prevent criminal offences that could constitute a threat to nuclear safety or enable the circulation of nuclear weapons or the unlawful use of nuclear materials, therefore the operator of the nuclear facility must provide physical security for the facility (Article 118 ZVISJV).[2]

Physical security at the repository in the sense of the security of the nuclear facility will be carried out in order to:

- prevent unauthorised access to facilities, devices or radioactive materials,
- prevent unauthorised persons from managing the facilities and radioactive materials,
- prevent intentional damage to the facilities and the devices and installations installed therein, and to prevent radioactive discharges,
- prevent the appropriation of radioactive materials,
- prevent the appropriation of documents,
- prevent the possibility of threats to or attacks on repository staff,
- initiate measures in the event of an attempt at or the execution of one of the abovementioned actions,
- initiate measures in the event of an accident in the controlled radiation area at the repository,
- initiate measures in the event of crisis, state of emergency or war.

### 10.1.2 OVERVIEW OF LEGAL FRAMEWORKS

The following regulations were primarily taken into account when developing the physical security solution:

- Ionising Radiation Protection and Nuclear Safety Act (ZVISJV), Official Gazette of the RS 67/02, 110/02, 24/03, 46/04, 70/08, 60/11, 74/15; Articles 118, 119 and 120, [2]
- Rules on the physical protection of nuclear facilities, nuclear and radioactive materials, and the transport of nuclear materials (FV Rules), Official Gazette of the RS 17/13 [1] and
- General risk assessment, summarising the Resolution on the national security strategy of the Republic of Slovenia (ReSNV-1), Official Gazette of the RS 27/10, point 4. Sources of threats to the national security of the Republic of Slovenia. [10]

The development of the solution also included the requirements of the:

- Private Security Act (ZZasV-1), Official Gazette of the RS 17/11 [8] and
- Rules on the implementation of the Private Security Act, Official Gazette of the RS 100/11. [11]

The requirements set out in the aforementioned regulations, as well as other implementing regulations based on the ZZasV-1, will be taken into account in the development of the physical security programme and plan (pursuant to the ZVISJV) and the development of the security plan and other safety-related documents (pursuant to the ZZasV-1).

In addition to the aforementioned regulations, the following regulations and their implementing acts were taken into account in the development of the comprehensive security plan:

- Fire Safety Act, Official Gazette of the RS 71/93, 87/01, 105/06, 83/12, [12]
- Firearms Act, Official Gazette of the RS 85/09, [13]
- Criminal Procedure Act, 47/13 and 87/14, [14]
- Health and Safety at Work Act, Official Gazette of the RS 56/99, 64/01, 43/11, 32/12, [15]
- Act Ratifying the Amendment to the Convention on the Physical Protection of Nuclear Material (MSKVVJM, Official Gazette of the RS, 62/2009), [16]
- Convention on the Physical Protection of Nuclear Material (Official Gazette of the SFRJ [MP], 9/85), [17]
- Personal Data Protection Act (Official Gazette of the RS, 94/07 [official consolidated version]), [18]
- Classified Information Act (Official Gazette of the RS, 50/06 [official consolidated version], 9/10 and 60/11), [6]
- Decree on the safeguarding of nuclear materials (Official Gazette of the RS, 34/2008), [19]
- Decree on the mandatory organisation of security (Official Gazette of the RS, 80/12), [20]
- Decree on the protection of classified information in communication and information systems (Official Gazette of the RS, 48/2007), [21]

- Order determining a basic training programme and periodic advanced professional training for security personnel involved in the physical protection of nuclear facilities and nuclear or radioactive materials, and the transport of nuclear materials (Official Gazette of the RS, 12/2013), [22] and
- Protection Against Natural and Other Disasters Act (Official Gazette of the RS, 51/2006). [23]

### 10.1.3 REQUIREMENTS AND CRITERIA FOR PHYSICAL SECURITY

The planned LILW repository will meet the following physical security requirements and criteria.

Article 118(2) of the ZVISJV [2] stipulates that nuclear facilities must be physically secure from the start of construction to the decommissioning of the facility. Since the ZVISJV does not specifically define the start of construction and decommissioning in the case of a repository, the following assumptions are made for purposes of physical security planning:

1. Physical security is begun to be implemented:
  - a. upon the physical securing of the construction site from the commencement of works pursuant to the project for acquisition of a construction permit (PGD).
2. With respect to nuclear facilities, physical security ceases to be implemented:
  - a. for disposal facilities: after the end of active long-term monitoring
  - b. for conditioning and technological facilities: upon transfer of the facilities into unrestricted use
  - c. for documentation: when physical security ceases to be provided for facilities

Article 120 of the ZVISJV stipulates that only persons that meet the general conditions determined by the law and the general acts of the employer and for whom there are no security impediments may work in a controlled facility or area or in a physically controlled facility or area, or in a vital facility or area of a nuclear facility. Security impediments shall be established by means of security screening.

The ZVISJV stipulates that an investor in a nuclear or radiation facility must enclose to the Safety Analysis Report a security plan as referred to in Article 119 of that act as a separate and confidential document in accordance with the regulations governing data confidentiality. It is logical that all of the design documentation containing details on physical and technical security be treated as confidential documents.

Pursuant to the Classified Information Act, all persons who could access documents classified as INTERNAL during any phase of a project must be qualified (basic training in safeguarding of confidential information). In the event that the classification is increased to CONFIDENTIAL, persons must have an authorisation for access to classified information that includes a security check in addition to basic training. It is currently planned that classified information will be classified as INTERNAL and will be stored pursuant to the Classified Information Act.

In accordance with Article 3 of the Rules on physical protection of nuclear materials, nuclear facilities and radiation facilities and transport of nuclear materials, [1] and Appendix 1, the LILW repository is classified as a Category III nuclear facility as regards physical security. It is subject to the following requirements:



1. the operator shall provide physical security in a controlled area for Category III nuclear materials and equipment, and devices in nuclear safety related Category III facilities,<sup>1</sup>
2. physical security in a controlled area shall be provided for the facilities referred to in the previous point,
3. documentation important to the physical security of Category I, II and III nuclear facilities and radioactive materials shall be maintained in accordance with the act governing classified information,
4. the following physical security measures shall be carried out in controlled areas:
  - a. periodic control of the movement of persons,
  - b. periodic physical control of the area,
  - c. periodic visual surveillance of the area.
5. the following technical security measures shall be carried out in controlled areas:<sup>2</sup>
  - a. control of the movement of persons,
  - b. continuous video surveillance.

The controlled area of a Category III nuclear facility shall be equipped with a single fence and marked with warning signs from the operator bearing the words "KONTROLIRANO OBMOČJE", "GIBANJE OMEJENO" (CONTROLLED AREA, MOVEMENT RESTRICTED).

In accordance with Article 6 of the Rules on physical protection of nuclear materials, nuclear facilities and radiation facilities and transport of nuclear materials, the following measures shall be carried out in controlled facilities or in controlled areas within facilities:

The following physical security measures shall be carried out in controlled facilities or in controlled areas within facilities:

- a. periodic physical controls at the facility or area within the facility,
- b. periodic visual surveillance of the facility or area,
- c. periodic control of the operator's employees,
- d. the movement of visitors in controlled facilities or controlled areas within facilities shall be conducted in the presence of the operator's authorised personnel pursuant to the operator's internal rules and procedures, and the measures set out in the physical security plan.

The following technical security measures shall be carried out in controlled facilities or in controlled areas within facilities:

- a. a device for detection of unauthorised entry into the facility of area shall be installed,
- b. alarm signal transmission systems shall be manufactured in such a way that they detect unauthorised intrusions into the system, and shall have their own power source,
- c. technically secured security doors with dummy handles on the outside and automatic locking devices shall be installed,
- d. security windows shall be installed,

---

<sup>1</sup> Rules on the physical protection of nuclear facilities, nuclear and radioactive materials, and the transport of nuclear materials, Official Gazette of the RS 17/13, Article 4.

<sup>2</sup> Rules on the physical protection of nuclear facilities, nuclear and radioactive materials, and the transport of nuclear materials, Official Gazette of the RS 17/13, Article 5.

- e. a device for monitoring entries and exits shall be installed in the facility or area.

Irrespective of the previous provision, technical and physical security measures shall be conducted in the facilities referred to in the third indent of the first paragraph of Article 3 of these rules so that the undisturbed performance of radiation practices is ensured upon the implementation of a graduated approach.

In accordance with Article 14 of the physical security rules, continuous information security against potential cyber attacks and interruptions shall be provided through the use of appropriate information technology in all physical security information systems.

The computer security programme is compliant with the JV5 rules, Appendix 8, and is described in the Physical Security Report.

The physical security of the repository shall be conducted in accordance with the physical security plan for the facility, which shall be provided by the facility operator. It shall be drafted in accordance with Article 25 of the FV Rules. [1] The risk assessment shall be drafted and updated by the Police and sent to the ARAO. The risk assessment shall be updated annually.

The repository operator (ARAO) is obliged to provide a security service pursuant to the Article 69(1)(1) of the ZZasV-1. [8] Security shall not be provided only for the nuclear facility, but also the general safety of persons and property (private security) in connection with facilities whose security is not provided by the state (ZZasV-1, Article 1).

Parties obliged to provide security shall establish their own security service pursuant to the provisions of the ZZasV-1 regulating the conditions for obtaining licences for conducting private security practices set out in Article 19 of the act, or conclude a security agreement with an entity referred to in Article 11 of the act. The scope of the party's security practices shall be set out in a security plan developed by a firm or sole trader holding the appropriate licence.

ARAO is one of the explicitly stated parties (ZZasV-1, Article 69) that are obliged to provide a security service. ARAO shall establish a security service and draft physical security plans in accordance with the ZVISJV. [2]

On the basis of Article 3 of the Decree on obligatory setting-up of security service and the Private Security Act, [20] the government shall by decree define the repository operator as a party obliged to provide security. The proposal for definition as an obligated party shall be drafted for the government by the ministry responsible for the specific area, after prior coordination with the ministry responsible for internal affairs. After the drafting of the proposal, the ministry responsible for the specific area shall consult with the obligated party.

ARAO shall provide suitable premises for the operation of the security service, and the prescribed equipment and material and technical resources required for the obligated party's operational security, or shall provide suitable premises for the operation of a contracted security service.

#### 10.1.4 COMPETENCES

1. Supervision of the physical security of the nuclear facility shall be conducted by the Ministry of the Interior (MNZ).
2. The MNZ shall also approve the physical security plan.
3. Administrative duties in the area of private security shall be conducted by the ministry responsible for internal affairs.
4. The SNSA shall approve the physical security plan.

#### 10.1.5 DUTIES

The Police shall draw up a risk assessment for the repository.

The repository operator (ARAO) shall:

- a. decide on the level of confidentiality of documents relating to the security of the repository,
- b. publish an internal rulebook on classified information and determine the administrative area by decree,
- c. train its staff in management of classified information,
- d. develop a physical security plan,
- e. establish a security service at the repository,
- f. conduct background checks of its employees.

The operator of a facility at which nuclear or radioactive materials are present and the transporter or organiser of the transport of nuclear materials shall amend and update the physical security plan with respect to changes in the risk assessment or the secure area that directly affect the physical security of the facility. All amendments and updates to the physical security plan shall be submitted for approval and confirmation in accordance with the first and second paragraphs of this Article. [24]

### 10.2 Bases for physical security plan and procedures

In accordance with the development of the project and the optimisation of the project as a whole, a suitably qualified external security service is planned to be engaged to provide security at the repository.

The site at which the Vrbina Krško LILW repository will be built is described in detail in Chapter 4 of this Draft Safety Analysis Report, and the repository facilities in chapters 2 and 6.

LILW from Krško NPP, the CSRAO, LILW from decommissioning of the CSRAO and the TRIGA reactor, and LILW generated through the operation and closure of the repository will be disposed of in the repository.

All LILW will be transported to the repository in N2b disposal containers, which shall be prepared at Krško NPP, external dimensions 1.95 x 1.95 x 3.3 m. The max. weight of a full container will be 40 t. The LILW requiring disposal will be placed in 990 disposal containers (design quantity of containers as adapted from the SAC&WAC Inventory Report). One disposal silo will have to be built for disposal of the design quantities.

Access to the repository complex leads from Vrbina road, which will be reconstructed appropriately. Vehicle and personnel access to the enclosed area is provided via an entry

control point located in the administrative and service building. The vehicle entrance to the repository is mechanically (physically) secured using a sliding gate that follows the fence line. The vehicle gate will normally be closed. All deliveries of LILW and other LILW materials must be announced in advance. Formalities relating to vehicle and personnel entry shall be arranged at the reception desk in the administrative and service building. A review and inspection of vehicles entering the area of the repository will be conducted inside the outer perimeter fence, in an area which is confined by the outer sliding doors on one side and an additional set of sliding doors on the other. After the vehicle review and inspection, the second sliding doors will open and the vehicle can proceed into the fenced (controlled) area of the repository. The sliding doors open using a system whereby only one set of sliding doors at the entry point can be open at one time. The personnel access doors (in the outer perimeter fence) will be closed but unlocked at times when a security officer is present, i.e. during the repository's operating hours, but will be locked outside of operating hours. The level of access for personnel and vehicles shall also be defined within the framework of the entry formalities.

All personnel will in principle enter the controlled radiation area at the repository via a control point situated in the technological facility. The same applies to exiting. Vehicle operators are an exception to this principle. They will enter the controlled area via a vehicle control point (access/deliveries) situated to the south of the technological facility. Access via this control point is secured using sliding security doors and devices for monitoring entries. The architectural design, control point in the technological facility and devices for monitoring entries will allow for the management of multiple variants for access to the technological facility and to the disposal units. The control regimes for the different variants shall be defined in accordance with the requirements for radiological monitoring and from the perspective of the physical security requirements.

### **10.3 Repository time periods**

The repository's time periods are as follows:

#### Selection of repository site

The site selection procedure for the repository was carried out in accordance with the Programme for the preparation of the national site development plan for an LILW repository, Official Gazette of the RS 128/04, and taking into account government resolutions, legal requirements and the provisions of the programme, as well as requirements arising from local partnerships. The Decree on the detailed plan of national importance for the low- and intermediate-level radioactive waste repository at Vrbina in the Municipality of Krško (Official Gazette of the RS 114/2009; Decree on the DPN) was adopted at the end of 2009.

#### Construction

Construction of the repository (construction phase 1 – up to the start of operations) is expected to take 3 years. A single disposal silo, all technological facility and other facilities and associated infrastructure will be built.

### Trial operation

A two-year trial operation period will start at the end of construction. The first part of the trial operation period will specifically include cold commissioning. This will be followed by the acquisition of a licence for trial operation, which is a pre-condition for the acceptance of radioactive waste. At the end of the trial operation period, a use permit will be obtained; this permit is the basis for the issuing of the operating permit.

### Regular operation

When the repository begins regular operations, it will operate at full capacity. A total of 461 containers will be deposited during the trial and regular operation phases. The disposal silo will be filled to 47-percent capacity. All "Slovenian" operational waste from the storage facility at Krško NPP will be disposed at the storage facility, so the repository will be emptied in this respect.

### Period of (temporary) suspension of operations

Activities for preparation of the repository for the phase of (temporary) suspension of operations are planned for 2025.

### Second period of regular operation

Activities for the restart of the repository will be carried out in 2049 during the phase of the decommissioning of Krško NPP. The repository will restart operations in 2050, when the storage capacities at Krško NPP are to a great extent filled with operational and decommissioning waste, which will begin to accumulate after the start of decommissioning in 2043, and when the continued filling of the storage facility is no longer reasonable due to the rapid accumulation of bulky waste. 30 containers will be disposed of in 2050, and 62 containers per year will be deposited in the following years until the completion of the decommissioning of Krško NPP (2051-2060). 47 containers will be deposited in 2061, including waste generated during the decommissioning of the repository. The work capacities that will participate in the decommissioning of Krško NPP will be included in the preparations for disposal and the operation of the repository.

### Closure of the repository

The decommissioning of the technical facilities will be carried out in 2061, and the disposal silo will be sealed in 2062. Decommissioning will be carried out only for the technological facilities. Due to decommissioning the technological facilities (which does not necessarily involve their dismantling, as it involves an administrative change – the facility will cease to be a nuclear facility), these facilities will be able to be transferred into unrestricted use.

### Period of preparing the repository for long-term post-closure monitoring

After the closure of the repository, it will enter the period of post-closure monitoring and maintenance. During this period, the operator identifies and monitors the effectiveness of the performed activities for closure and carries out the necessary maintenance and corrective measures that bring the repository to a state appropriate for the repository to be transitioned to post-closure monitoring and maintenance.

### Long-term active monitoring

After the period of transition to post-closure monitoring and maintenance, the repository is planned to enter the period of active long-term monitoring. The period of active long-term monitoring begins when all preparatory activities are performed for the transition to monitoring and when the competent authority or the monitoring provider takes over the repository for long-term monitoring.

Active long-term monitoring will last from several decades to a maximum of 300 years after closure. The length of the active long-term monitoring period will be determined on the basis of a safety analysis. For the purpose of the drafting of the SSA, [25] it was assumed that the active long-term monitoring period would last for 100 years after the closure of the repository.

### Passive long-term monitoring

After the end of active long-term monitoring, the repository will pass into the phase of passive long-term monitoring. The above-ground facilities of the repository will be removed or assigned to unlimited use. Passive long-term monitoring will last a maximum of 500 years after closure. The length of the active long-term monitoring period will be determined on the basis of a safety analysis. For the purpose of the drafting of the SSA it was assumed that the passive long-term monitoring period would last for 300 years after closure or 200 years after the end of the active long-term monitoring period.

### Period of unrestricted use of repository site

At the end of the passive monitoring period, the repository site will transition into unrestricted use.

## **10.4 Organisation of work at the repository**

The repository will operate in one eight-hour shift, five days a week, throughout the year (250 business days). 12 people will be employed at the repository. The repository is therefore designed as a continuously operating independent facility.

A different work method can be implemented particularly in the event of the combining of the technological and in particular the employment capacities of ARAO and Krško NPP, pursuant to a prior agreement between the two operators. In the event of non-continuous operation, the repository would be in the phase of (temporary) suspension of disposal during the period between the two operating periods.

The weekly capacity of conditioning devices at the repository allow for the conditioning of 4-5 containers or LILW. The annual conditioning capacity is at least 200 containers.

## 10.5 Physical security concept

### Background checks

Background checks on persons that work or will work at the nuclear facility are conducted in accordance with Article 120 of the ZVISJV. [2]

### Security service

The security service is an independent organisational unit at the repository that reports directly to the director of the repository. The duties of the security service include primarily:

- drafting and implementation of security plans, carrying out emergency measures and implementation of written procedures for all critical security activities,
- organisation, training and monitoring of the operations of security service employees,
- planning of security systems,
- monitoring of security systems.

Physical security activities shall be carried out by security service staff – security officers. Security officers shall undergo security screening, must be mentally and physically capable of carrying out their duties, and must be qualified to carry out general physical security and fire safety tasks as well as radiological practices in controlled radiation areas or with radiation emitters. The activities of security officers shall include above all:

- conducting security patrols and observation,
- keeping records of entries of people, material and vehicles and carrying out appropriate security controls,
- conducting security i.e. the security monitoring of individual targets in accordance with the physical security plan,
- carrying out duties within the scope of the SCC,
- testing and verifying technical security devices,
- measures in case of the detection of inappropriate status/activity.

### Security measures

The purpose of the security measures is the identification of inappropriate statuses and activities (detection), responding to those activities and restricting the progress and spread of such activities (delay) and the restriction and elimination of the consequences of such activities (response). The security measures are planned in such a way that they are not counter to the requirements regarding radiation protection.

## 10.6 Repository areas with respect to physical security

The entire repository site will be secured during both construction and operation. During operation, the repository shall be divided into several areas for the purposes of security:

1. the controlled area (under the FV Rules; the entire area of the repository, which is at the same time the controlled area), in which the following are located:
  - a. the controlled radiation area, which is secured by means of an additional fence,
  - b. the potential administrative area inside the administrative and service building,
2. the unenclosed area with car park.

The level of access for employees, external contractors and visitors will be defined in detail in the security plan. During this phase we can give a framework definition of the subsequent bases with respect to access:

- all access to the enclosed/controlled area of the repository will be recorded and managed,
- access to the controlled area (CRA) will be recorded and managed by individual area and premises,
- employees will have guaranteed access to their workplaces,
- access for external contractors will be determined in accordance with their activities at the repository,
- visitor access to the controlled radiation area will be permissible only upon prior announcement, and visitors must be accompanied by employees or external contractors with the appropriate authorisations.



## REFERENCES

- [1] Rules on the physical protection of nuclear facilities, nuclear and radioactive materials, and the transport of nuclear materials (*Pravilnik o fizičnem varovanju jedrskih objektov, jedrskih in radioaktivnih snovi ter prevozov jedrskih snovi*). (Official Gazette of the RS, No. 17/13 and 76/17 – ZVISJV-1).
- [2] Ionising Radiation Protection and Nuclear Safety Act (*Zakon o varstvu pred ionizirajočimi sevanji in jedrski varnosti*) (ZVISJV-D). (Official Gazette of the RS, 102/04 [official consolidated version], 70/08 [ZVO-1B], 60/11, 74/15).
- [3] Practical Guidelines – Content of the safety analysis report for radiation and nuclear facilities (*Praktične smernice - Vsebina varnostnega poročila sevalnih ali jedrskih objektov*). PG 1.04, Version 2, SNSA, 2016.
- [4] Vrblina Krško LILW repository, Conceptual Design (*Odlagališče NSRAO Vrblina, Krško, Idejna zasnova*), Rev. C. 2016.
- [5] Physical Security Report (*Elaborat fizičnega varovanja*), NRVB 1P1050C, January 2016 – INTERNAL DOCUMENT. IBE d.d.
- [6] Classified Information Act (*Zakon o tajnih podatkih – ZTP*). (Official Gazette of the RS 50/06 [OCV 2], 9/10, 60/11).
- [7] Risk assessment for the planned Vrblina LILW repository (*Ocena ogroženosti načrtovanega odlagališča NSRAO Vrblina*), no. 843-62/2016/14-2112-06) - 18.3.2017 - INTERNAL document.
- [8] Private Security Act (*Zakon o zasebnem varovanju*) (ZZasV-1). (Official Gazette of the RS, 17/11).
- [9] Vrblina Krško LILW repository, Feasibility Study (*Odlagališče NSRAO Vrblina, Krško, Investicijski program*), Rev. C, IBE, d.d., 2013.
- [10] Resolution on Nuclear and Radiation Safety in the Republic of Slovenia 2013–2023 (*Resolucija o jedrski in sevalni varnosti v republiki Sloveniji za obdobje 2013–2023*). (Official Gazette of the RS, 56/2013).
- [11] Rules on the implementation of the Private Security Act (*Pravilnika o izvajanju Zakona o zasebnem varovanju*). (Official Gazette of the RS, 100/11).
- [12] Fire Safety Act (*Zakon o varstvu pred požarom*) (ZVPoz). (Official Gazette of the RS, 3/07 [official consolidated version], 9/11, 83/12).
- [13] Firearms Act (*Zakon o orožju*). (Official Gazette of the RS, 85/09).
- [14] Criminal Procedure Act (*Zakon o kazenskem postopku*). (Official Gazette of the RS, 87/14).
- [15] Health and Safety at Work Act (*Zakon o varnosti in zdravju pri delu*). (Official Gazette of the RS, 56/99, 64/01, 43/11 [ZVZD-1]).
- [16] Act Ratifying the Amendment to the Convention on the Physical Protection of Nuclear Material (*Zakon o ratifikaciji Spremembe Konvencije o fizičnem varovanju jedrskega materiala*) (MSKFVJM). (Official Gazette of the RS, 62/09).
- [17] Convention on the Physical Protection of Nuclear Material (*Konvencija o fizičnem varovanju jedrskega materiala*). (Official Gazette of the SFRJ [MP], 9/85).
- [18] Personal Data Protection Act (*Zakon o varstvu osebnih podatkov*). Official Gazette of the RS, 74/2007.
- [19] Decree on the safeguarding of nuclear materials (*Uredba o varovanju jedrskih snovi*) (UV6). (Official Gazette of the RS, 34/08 and 76/17 – ZVISJV-1).
- [20] Decree on the mandatory organisation of security (*Uredba o obveznem organiziranju varovanja*). (Official Gazette of the RS, 80/12).
- [21] Decree on the protection of classified information in communication and information systems (*Uredba o varovanju tajnih podatkov v komunikacijsko informacijskih sistemih*). (Official Gazette of the RS, 48/07 and 86/11).
- [22] Order determining a basic training programme and periodic advanced professional training for security personnel involved in the physical protection of nuclear facilities and

nuclear or radioactive materials, and the transport of nuclear materials (*Odredba o določitvi programa osnovnega strokovnega usposabljanja in programa obdobjnega strokovnega izpopolnjevanja varnostnega osebja, ki izvaja fizično varovanje jedrskih objektov, jedrskih ali radioaktivnih snovi ter prevozov jedrskih snovi*). (Official Gazette of the RS, 12/13).

- [23] Act on protection against natural and other disasters (*Zakon o varstvu pred naravnimi in drugimi nesrečami*) (ZVZDN). (Official Gazette of the RS 51/06 [official consolidated version] and 97/10).
- [24] Ionising Radiation Protection and Nuclear Safety Act (*Zakon o varstvu pred ionizirajočimi sevanji in jedrski varnosti*) (ZVISJV-1) (Official Gazette of the RS, 76/17).
- [25] Special safety analysis for the siting of the LILW repository, Vrbina site in the Municipality of Krško (*Posebna varnostna analiza za umestitev odlagališča NSRAO, Lokacija Vrbina v občini Krško*), December 2006. ARAO, DDC, ZVD, ZAG and Imos Geateh.