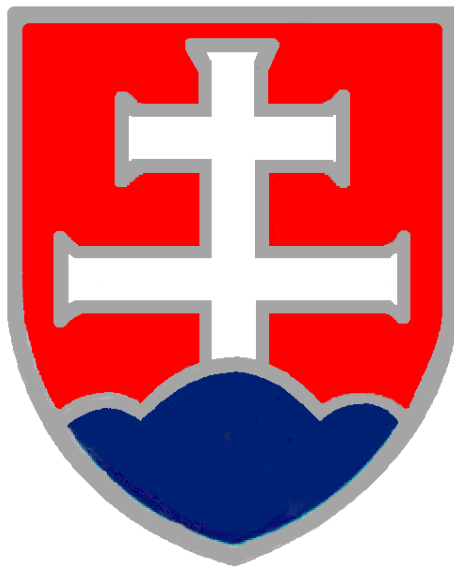


REPORT OF THE SLOVAK REPUBLIC



**COMPILED IN TERMS OF ARTICLE 14 par.1
COUNCIL DIRECTIVE 2011/70/EURATOM**

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ABBREVIATIONS

BIDSF	Bohunice International Decommissioning Support Fund
BSC	Bohunice Treatment Centre
BSVP	Storage pool for spent nuclear fuel
DS	Long-term storage
EIA	Environmental Impact Assessment
EU	European Union
FS KRAO	Final processing of KRAO
HVB	Main generating unit
INES	International Nuclear Event Scale
IRAO	Institutional Radioactive Waste
ISM	Integrated Management System
JAVYS, a. s.	Nuclear and Decommissioning Company/Jadrová a vyraďovacia spoločnosť
NPP	Nuclear Power Plant
NPP A1	NPP Bohunice A1
NPP V1	NPP V1 Jaslovské Bohunice (Units 1&2)
NPP V2	NPP V2 Jaslovské Bohunice (Units 3&4)
NPP Mochovce/EMO	NPP Mochovce
JZ	Nuclear Facility
KRAO	Liquid radioactive waste
LaP	Limits and Conditions for operation
IAEA	International Atomic Energy Agency
MoTCRD SR	Ministry of Transport, Construction and Regional Development of the Slovak Republic
MH SR	Ministry of Economy of the Slovak Republic

MPSVR SR	Ministry of Labour, Social Affairs and Family of the Slovak Republic
MSVP	Interim storage for spent fuel
MV SR	Ministry of Interior of the Slovak Republic
MZ SR	Ministry of Health of the Slovak Republic
MŽP SR	Ministry of Environment of the Slovak Republic
NIP	National Labour Inspectorate
NNF	National Nuclear fund
OIK	Citizens Information Committee
PS	Operational set
Ra	Radioactive
RAO	Radioactive Waste
RF	Russian Federation
RÚ RAO	National Radwaste Repository
SAT	Self-Assessment Tool
SE, a. s.	Slovenské elektrárne, a. s.
SE – EBO	Nuclear Power Plants Jaslovské Bohunice
SE – EMO	Nuclear Power Plants Mochovce
SE - VYZ	Decommissioning of NI and radwaste and spent fuel management, former plant of SE, a. s.
SKR	I&C System
SR	Slovak Republic
STN	Slovak Technical Standard
ŠOV	Special Water Treatment
TK	Transportation container
TK C-30	Transportation container for SNF of C-30 type

ŤK	Heavy metal
TSÚ RAW	Technology of treatment and conditioning of RAW
TV	Television
UJD SR	Úrad jadrového dozoru SR/Nuclear Regulatory Authority of the SR
ÚVZ SR	Public Health Authority of the SR
VBK	Fibre-concrete container
VJP	Spent nuclear fuel
VRAO	High-level radioactive waste
VUJE, a. s.	VUJE, a. s. Trnava – Engineering, design and research organization
WWER	Water-water power reactor
WENRA	Western European Nuclear Regulators
ZRAM	Captured radioactive materials
Z. z.	Collection of laws
ZSSR	Union of Soviet Socialist Republics

INTRODUCTION

The purpose of this Report is to fulfil the obligations of the Slovak Republic pursuant to Article 14 par. 1 of the Council Directive 2011/70/Euratom of 19 July 2011 establishing a Community framework for the responsible and safe management of spent fuel and radioactive waste. This Directive was transposed by the Act No. 143/2013 Coll., which amended the Act No. 541/2004 Coll. on the peaceful uses of nuclear energy (Atomic Act), and the Act No. 238/2006 Coll. on the National Nuclear Fund for Decommissioning of Nuclear Installations and for the Management of Spent Nuclear Fuel and Radioactive Waste (Act on Nuclear Fund).

Nuclear installations

In Slovakia there are 4 units with reactors of WWER-440 type in operation. Two at Jaslovské Bohunice site (referred to as NPP V2) and two at the Mochovce site (EMO 1 - 2). Two of WWER 440 type (NPP V1) are in the decommissioning process. Spent fuel from these units was transported to the interim spent fuel storage – ISFS.

At the Jaslovské Bohunice site there is also the NPP A1, which was a heavy water reactor cooled with carbon dioxide (HWGCR – 150 MW). NPP A1 was shut-down in 1977 after an accident (INES 4) and currently it is in the second decommissioning phase. The spent nuclear fuel was exported to the Russian Federation based on an original contract. Transports of spent fuel were completed in 1999.

Technologies for treatment of radioactive waste are at Jaslovské Bohunice and Mochovce sites. These technologies are part of the so called Bohunice Treatment Center for radwaste (BSC RAO), which is in operation since 1999. Facility for treatment of liquid radwaste (FS KRAO), is in operation since 2007 at the Mochovce site. Experimental facilities for radwaste treatment at Jaslovské Bohunice site are in decommissioning process (phase of safe enclosure).

The National Repository for low and medium radwaste (RU RAW) located at Mochovce site is in operation since 1999.

Interim spent fuel storage facility (ISFSF) is in operation at Bohunice site since 1987.

Sealed and open radioactive sources

Currently there are approx. 150 legal entities and natural persons in the Slovak Republic, which have authorization for use of sealed and open radioactive sources. These are entities operating in different sectors of the economy, in health care, schools, research, defence, etc.

For the safety of institutional radioactive waste management, including disused sealed sources, the same principles apply as for management of sources themselves:

- the exposure of staff and the public is as low as reasonably achievable,
- unauthorized handling of sources or radioactive waste is prevented.

Regulatory bodies

The basic law for peaceful use of nuclear energy is the Act No. 541/2004 Coll. (the Atomic Act). The state regulation over nuclear safety for radwaste and spent nuclear fuel management is entrusted to the Nuclear Regulatory Authority (UJD SR). UJD SR covers also the scope of a special building authority for the construction of nuclear installations under the Act No. 50/1976 Coll. on Spatial Planning and Building Code (Building Act).

The state supervision over radiation protection is provided for by the Public Health Authority (ÚVZ SR) pursuant to Act No. 355/2007 Coll. on Protection, Support and Development of Public Health.

Occupational health and safety at nuclear installations is performed by the Labour Inspectorate pursuant to Act No. 125/2006 Coll. Verifying compliance with safety requirements of classified technical equipment and technical equipment is performed by authorized legal entities in accordance with the Act No. 124/2006 Coll. on occupational health and safety.

Assessment of the impact of NI on the environment is the competence of the Ministry of Environment in compliance with the Act No. 24/2006 Coll. on Environmental Impact Assessment.

Slovakia is a contracting party to all international treaties and conventions in the field of peaceful use of nuclear energy.

By resolution No. 256/2014 the Government adopted the “Policy, Principles and Strategy for Further Development of Nuclear Safety”.

The aim of the document is to summarize and strengthen the principles to protect the public and the environment from harmful effects of ionizing radiation associated with peaceful uses of nuclear energy.

The document (based on Safety Fundamentals of the International Atomic Energy Agency No. SF-1) is intertwined with other strategic documents that exist in this field:

- Program Declaration of the Government for the period 2012 – 2016,
- Energy Security Strategy (2008),
- Strategy for the back-end of nuclear energy in SR

National policy and program

According to Act No. 238/2006 Coll. as amended by Act No. 143/2013 Coll. (National Nuclear Fund) the Board of Trustees of the National Nuclear Fund submits the draft National Policy and the National Programme for the Management of RAW and SNF to the MH SR together with the opinion of UJD SR. Subsequently the MH SR submits the draft National Policy and the draft National Program and every six years their updates to the Government for approval. The Government approved the draft National Policy and the draft National Programme by the Resolution No. 387/2015 on 8 July 2015.

The present Report is the first one being elaborated in accordance with the Council Directive 2011/70/Euratom.

ART. 4 GENERAL PRINCIPLES

1. *Member States shall establish and maintain national policies on spent fuel and radioactive waste management. Without prejudice to Article 2(3), each Member State shall have ultimate responsibility for management of the spent fuel and radioactive waste generated in it.* EN L 199/52 Official Journal of the European Union 2.8.2011
2. *Where radioactive waste or spent fuel is shipped for processing or reprocessing to a Member State or a third country, the ultimate responsibility for the safe and responsible disposal of those materials, including any waste as a by-product, shall remain with the Member State or third country from which the radioactive material was shipped.*
3. *National policies shall be based on all of the following principles:*
 - a) *the generation of radioactive waste shall be kept to the minimum which is reasonably practicable, both in terms of activity and volume, by means of appropriate design measures and of operating and decommissioning practices, including the recycling and reuse of materials;*
 - b) *the interdependencies between all steps in spent fuel and radioactive waste generation and management shall be taken into account;*
 - c) *spent fuel and radioactive waste shall be safely managed, including in the long term with passive safety features;*
 - d) *implementation of measures shall follow a graded approach;*
 - e) *the costs for the management of spent fuel and radioactive waste shall be borne by those who generated those materials;*
 - f) *an evidence-based and documented decision-making process shall be applied with regard to all stages of the management of spent fuel and radioactive waste.*
4. *Radioactive waste shall be disposed of in the Member State in which it was generated, unless at the time of shipment an agreement, taking into account the criteria established by the Commission in accordance with Article 16(2) of Directive 2006/117/Euratom, has entered into force between the Member State concerned and another Member State or a third country to use a disposal facility in one of them.*

Prior to a shipment to a third country, the exporting Member State shall inform the Commission of the content of any such agreement and take reasonable measures to be assured that:

- a) *the country of destination has concluded an agreement with the Community covering spent fuel and radioactive waste management or is a party to the Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management ('the Joint Convention');*
- b) *the country of destination has radioactive waste management and disposal programmes with objectives representing a high level of safety equivalent to those established by this Directive;*

- c) the disposal facility in the country of destination is authorised for the radioactive waste to be shipped, is operating prior to the shipment, and is managed in accordance with the requirements set down in the radioactive waste management and disposal programme of that country of destination.*

National Policy for Spent Fuel Management (SNF) and radioactive waste (RAW) management

The Board of Trustees of the National Nuclear Fund for Decommissioning of Nuclear Installations and for the Management of Spent Nuclear fuel and Radioactive Waste ("NNF") in cooperation with other stakeholders elaborates:

- a) Draft National Policy for the management of Spent Nuclear Fuel and radioactive waste (hereinafter only as the "National Policy") and
- b) Draft National Programme for the implementation of the National Policy (hereinafter only as the "National Programme").

The National Policy is based on the following principles:

- a) The Slovak Republic has the ultimate responsibility for the decommissioning of nuclear installations located in Slovakia, for the safe and responsible long-term storage and disposal of spent nuclear fuel and for the radioactive waste management, which has been produced on its territory after its takeover from the producer,
- b) The ultimate responsibility for the safe and responsible disposal of radioactive waste or of spent fuel to be transported from the Slovak Republic for conditioning or reprocessing to a Member State of the European Union or to a third country, including any waste generated as a by-product of conditioning or reprocessing, is borne by the Slovak Republic, unless the international treaty, by which the Slovak Republic is bound, stipulates otherwise,
- c) Production of radioactive waste in terms of its activity and volume, is maintained at the lowest level, which is reasonably achievable, by means of appropriate design measures and operating procedures and decommissioning practices, including recycling and reuse of materials,
- d) The interdependencies between all steps of spent nuclear fuel and radioactive waste management are taken into account,
- e) Management of spent nuclear fuel and radioactive waste shall be safe, even in the long-term, especially when applying passive safety features,
- f) Graded approach is applied in management of spent nuclear fuel and radioactive waste, taking into account in particular its activity, amount, type of nuclear installation, in which they are handled and their other hazardous properties,
- g) The costs of management of spent nuclear fuel and radioactive waste shall be borne by the person, who produced them, in case of an unknown originator, appropriate measures are taken,
- h) Documenting the decision-making process is based on evidence and results of characterization at all stages of management of spent nuclear fuel and radioactive waste.

Goals of the National Policy of SR are the following:

1. Safe and reliable decommissioning of nuclear installations
2. Waste minimization
3. Selection of a suitable fuel cycle
4. Safe storage
5. Management of radioactive waste
6. Nuclear safety
7. Application of graded approach
8. The principle of “polluter pays”
9. Objective decision-making process
10. Liability

The national policy for spent nuclear fuel and radioactive waste management, as well as the national programme for spent nuclear fuel and radioactive waste management were approved by the Government Resolution No. 387/2015 on 8 July 2015.

The Board of Trustees of NNF draws up together with relevant stakeholders a report on the implementation of the National Programme once a year for the previous year and submits it for approval to the MH SR together with UJD SR’s opinion.

ART. 5 NATIONAL FRAMEWORK

1. *Member States shall establish and maintain a national legislative, regulatory and organisational framework ('national framework') for spent fuel and radioactive waste management that allocates responsibility and provides for coordination between relevant competent bodies. The national framework shall provide for all of the following:*
 - a) *a national programme for the implementation of spent fuel and radioactive waste management policy;*
 - b) *national arrangements for the safety of spent fuel and radioactive waste management. The determination of how those arrangements are to be adopted and through which instrument they are to be applied rests within the competence of the Member States;*
 - c) *a system of licensing of spent fuel and radioactive waste management activities, facilities or both, including the prohibition of spent fuel or radioactive waste management activities, of the operation of a spent fuel or radioactive waste management facility without a licence or both and, if appropriate, prescribing conditions for further management of the activity, facility or both;*
 - d) *a system of appropriate control, a management system, regulatory inspections, documentation and reporting obligations for radioactive waste and spent fuel management activities, facilities or both, including appropriate measures for the post-closure periods of disposal facilities;*
 - e) *enforcement actions, including the suspension of activities and the modification, expiration or revocation of a licence together with requirements, if appropriate, for alternative solutions that lead to improved safety;*
 - f) *the allocation of responsibility to the bodies involved in the different steps of spent fuel and radioactive waste management; in particular, the national framework shall give primary responsibility for the spent fuel and radioactive waste to their generators or, under specific circumstances, to a licence holder to whom this responsibility has been entrusted by competent bodies;*
 - g) *national requirements for public information and participation;*
 - h) *the financing scheme(s) for spent fuel and radioactive waste management in accordance with Article 9.*
2. *Member States shall ensure that the national framework is improved where appropriate, taking into account operating experience, insights gained from the decision-making process referred to in Article 4(3)(f), and the development of relevant technology and research.*

Legislative and Regulatory Framework

Act No. 541/2004 Coll. (Atomic Act) and the subsequent decrees define the basic rules, including a licensing system for the management of SNF and RAW, and ban of such management without the appropriate authorization. The said legal regulations also define the system of regulatory activities and control of management of this waste.

Legislation

Introduction

The legal system of Slovakia is categorized as follows:

1. The supreme fundamental law of the state is the Constitution approved by the National Council of SR by qualified majority – having generally binding nature.
2. The acts stipulate the fundamental rights and obligations specifying the principles in various areas and are approved by the Parliament – having generally binding nature.
3. Government ordinances are subordinated to laws and are approved by the Government – having generally binding nature.
4. Decrees, edicts regulations are rules issued by the central bodies of state administration (such as the ministries), to stipulate the details for implementing laws and government ordinances - having generally binding nature.
5. Slovak technical standards (STN), the European technical standards (STN EN) and international technical standards (STN ISO/IEC) – having nature of recommendations.
6. Guidelines (manuals) contain the detailed requirements and recommended steps to ensure fulfilment of requirements. These are issued by the regulatory authorities – having nature of recommendations.
7. Decision can be characterized as an act of law enforcement. This means that it is application of rights and obligations set in the generally binding legal regulation for a concrete case and a concrete entity. Decisions issued by administrative authorities are also called individual administrative acts and are binding solely internally for the regulator.

Acts in the field of State Regulation

Act No. 575/2001 Coll. on Organization of Governmental Activities and of Central State Administration as amended (so called Competence Act) defines the framework of tasks and responsibilities of central state administration authorities. The provision on UJD SR is in section 29 of the valid Competence Act.

Act No. 251/2012 Coll. on the energy sector, repealed the original Act No. 656/2004 Coll. on the energy sector as amended. The Energy Act, as one of the basic laws, governs the terms and condition for doing business in the nuclear energy sector as well as the rights and obligations of legal entities doing business in this field and state supervision and control over doing business in the energy sector.

Act No. 250/2012 Coll. on regulation in network industries governs conditions and the method of regulation in network industries. Network industry means also the power generation sector. Activities performed in the network industries are considered as regulated activities, which require permit from the Regulatory Office for Network Industries.

Act No. 24/2006 Coll. on environmental impact assessment with the aim to strengthen and ensure high environmental protection, the Act establishes a procedure for expert and public environmental impact assessment:

1. Strategic documents prior to their approval (*for example, concept* for radioactive waste and spent nuclear fuel management, the national program of radioactive waste and spent nuclear fuel management); and
2. Proposed activities prior to the decision on their siting or prior to their approval according to special regulations (construction of nuclear installations and relating activities).

The Act defines activities that are obligatory subject to international assessment from the aspect of their environmental impact:

- Nuclear power plants and other facilities with nuclear reactors (except research installations for the production and conversion of fissile and enriched materials, where the maximal thermal output does not exceed 1 kW of continuous thermal output) including their decommissioning and disposal. Nuclear power plants and nuclear reactors cease to be such facilities when the nuclear fuel and other radioactively contaminated elements are permanently removed from their territory.
- Installations for reprocessing of spent nuclear fuel;
- Facilities for the production or enrichment of nuclear fuel and research facilities for the production and conversion of nuclear fuel and nuclear fuel raw materials;
- Installations for the treatment of spent nuclear fuel and high activity radioactive waste
- Deep geological repositories of spent nuclear fuel and high level waste;
- Installations for storage (planned for more than 10 years) of spent nuclear fuel or radioactive waste in a different site than the production site;
- Installations for the treatment, conditioning and disposal of intermediate and low level waste from operation and decommissioning of nuclear power plants and the use of radionuclides;
- Other facilities for management of radioactive waste including their storage, if they are not listed above.

The Ministry of Environment is the competent authority to assess transboundary environmental impacts.

Act No. 238/2006 Coll. on National Nuclear Fund for Decommissioning of Nuclear Installation and for Management of Spent Nuclear Fuel and Radioactive Waste (Act on Nuclear Fund). The Nuclear Fund is an independent legal entity, which is managed by the Ministry of Economy. The Fund has its own bodies (Council of Administrators, Supervisors Board, Director, managers of sub-accounts, auditor). The sources of the Nuclear Fund are various – contributions paid by the licensees for operation of nuclear facilities, charges collected by the operators of the transmission and the distribution systems in the prices of supplied electricity directly from end customers (serving for compensation of the so called “historical debt”), fines imposed by UJD SR, interests earned on deposits, subsidies and contributions from the EU, from the state budget, and other. The details on the

method of collection and payment of mandatory contributions, including its calculation is specified by the Government Regulation No. 312/2007 Coll.

The Board of Trustees of the NNF for Decommissioning of Nuclear Installations and for Management of Spent Nuclear Fuel and Radioactive Waste in cooperation with other stakeholders elaborates:

- a) Draft National Policy for Management of Spent Nuclear Fuel and with Radioactive Waste (hereinafter only as the “National Policy”) and
- b) Draft National Programme for the implementation of the National Policy (hereinafter only as the “National Programme”).

Act No. 355/2007 Coll. on the protection, promotion and development of public health establishes requirements for the protection of public health, defining health authorities, their competence, the basic conditions for the implementation of activities leading to radiation exposure, and activities relevant for radiation protection and the release of radioactive substances and radioactive contaminated materials from administrative control, defines the requirements for professional competence, tests of professional competence and issuing certificates of professional competence of persons in the field of radiation protection, determines the activities leading to exposure, which need to be authorized and activities that are subject to reporting, state health supervision and penalties for violation of obligations in the field of radiation protection. Implementing regulations are listed in Annex V.

Act No. 125/2006 Coll. on labour inspection and Act No. 82/2005 Coll. on undeclared work and on illegal employment governs the labour inspection, through which it promotes protection of employees at work and execution of state administration in labour inspection, defines the competencies of bodies of state administration in labour inspection and their competence in executing oversight according to special regulation (Act No. 264/1999 Coll. on technical requirements for products and on conformity assessment amended by Act No. 133/2013 Coll.), establishes rights and obligations of labour inspector and duties of natural and legal entities. Related generally binding legal regulations are listed in Annex V.

Act No. 124/2006 Coll. on occupational health and safety lays down the general principles for prevention and the basic conditions for ensuring occupational health and safety, to exclude risks and factors underlying the emergence of industrial accidents, occupational diseases and other damage to health from work. An integral part of occupational health and safety is the safety of technical equipment. The follow up generally binding legal regulations are listed in Annex V.

Amending the **Act No. 50/1976 Coll. on land use and the building code** (the Building Code) with effect from 01. 12. 2004 UJD SR became a special building authority for constructions of nuclear installations and construction related to nuclear installation located within the premises of a nuclear installation.

Note: Prior to issuing decision on siting of a structure relating to a structure, part of which is a nuclear installation, the building authority is obliged to request a binding opinion from UJD SR, which may condition its consent by fulfilment of conditions.

Civil liability for nuclear damage and the requirements for its financial coverage are governed by a special Act No. 54/2015 Coll. on civil liability for nuclear damage, which will take effect from 1 January 2016.

Use of nuclear energy is governed by **Act No. 541/2004 Coll.** on peaceful use of nuclear energy (the Atomic Act). It came into effect on 1 December 2004 and has been amended thirteen times.

The Atomic Act lays down conditions for safe use of nuclear energy exclusively for peaceful purposes in accordance with international treaties concluded by the Slovak Republic.

(1) This Act governs inter alia:

- a) The peaceful uses of nuclear energy,
- b) The state administration, state regulation and the responsibilities of UJD SR,
- c) Categorization of nuclear materials, conditions for the management of nuclear materials,
- d) The safe and responsible management of radioactive waste and spent nuclear fuel, so as to avoid imposing undue burdens on future generations and ensuring the protection of workers and the public,
- e) The continuous improvement of nuclear safety,
- f) Verification of special professional competence of staff of license holders,
- g) Emergency preparedness.

(2) Cross-border shipments of radioactive waste and spent nuclear fuel including spent nuclear fuel exported for reprocessing, etc.

Identification of the bodies responsible for the preparation and issuance of national regulations to meet the requirements for nuclear safety

UJD SR has prepared for example the following bills:

The amendment to the Atomic Act No. 350/2011 Coll. transposing Council Directive 2009/71/Euratom of 25 June 2009 establishing the Community framework for nuclear safety of nuclear installations (it implemented also WENRA reference levels).

Act No. 143/2013 Coll. amended the Atomic Act No. 541/2004 Coll. and Act No. 238/2006 Coll. on the National Nuclear Fund due to a consistent transposition of the Council Directive of 19 July 2011, establishing the Community framework for the responsible and safe management of spent fuel and radioactive waste (Directive 2011/70/Euratom). The amendment with an effect from 1 January 2014 introduced increased limits of liability of operators for nuclear damage and increased contributions paid for state regulation by the licensees.

Generally binding legal regulations implementing the Atomic Act and issued by UJD SR in a form of decrees are listed in Annex V.

UJD SR also issues safety guides to explain and specify in more details the legal requirements (Annex VI.).

An overview of the process of development and revision of national requirements for nuclear safety, including the involvement of stakeholders

Legislative rules of the Government approved by the Government Resolution No. 680/2012 specify the rules in a mandatory manner for the development of generally binding legal regulations and govern the procedure of ministries and other public authorities. In May 2015 a bill was submitted for inter-ministerial commenting procedure on the development of normative legislation, which transforms these rules into law with the institutionalization of public participation also in the development of legislation. It is expected that this bill will enter into force by the end of 2015.

The mover of the bill (in case of the Atomic Act it is UJD SR) discusses with the competent authorities and institutions in the consultation exercise, which is public and is accessible via a web portal of laws, where even the public may send comments. The bill is then submitted by the mover for discussion to the Legislative Council of the Government.

After approval by the Legislative Council the bill is subjected to the intra-Community commenting procedure within the EU pursuant to Art. 30 – 33 of the Euratom Treaty, and as a technical regulation in a partially not harmonized area also according to the European Parliament and the Council Directive 98/34/EC. After completing this process the bill is submitted for discussion to the Government.

The bill, which was approved by the Government, is submitted to the National Council.

After adoption of the Bill by the National Council of SR and after it is signed by the President, the Act is promulgated in the Collection of Laws of SR.

International Treaties and Conventions

The Slovak Republic is a party to all relevant international treaties and conventions in the field of peaceful use of nuclear energy, for example:

- a) The Treaty on the Non-Proliferation of Nuclear Weapons
- b) Convention on Nuclear Safety
- c) Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radwaste Management
- d) Vienna Convention on Civil Liability for Nuclear Damage.

The Slovak Republic has concluded also bilateral intergovernmental agreements on peaceful uses of nuclear energy and information exchange with all neighbouring countries, as well as with other countries. These intergovernmental treaties also include cooperation or exchange of information in the field of spent nuclear fuel and radioactive waste management.

ART. 6 STRUCTURE OF GOVERNMENT / REGULATORY BODIES

1. *Each Member State shall establish and maintain a competent regulatory authority in the field of safety of spent fuel and radioactive waste management.*
2. *Member States shall ensure that the competent regulatory authority is functionally separate from any other body or organisation concerned with the promotion or utilisation of nuclear energy or radioactive material, including electricity production and radioisotope applications, or with the management of spent fuel and radioactive waste, in order to ensure effective independence from undue influence on its regulatory function.*
3. *Member States shall ensure that the competent regulatory authority is given the legal powers and human and financial resources necessary to fulfil its obligations in connection with the national framework as described in Article 5(1)(b), (c), (d) and (e).*

Regulation of the peaceful use of nuclear energy is performed by the governmental bodies and organizations within the framework of their competence defined by the respective acts according to the structure described in figure.

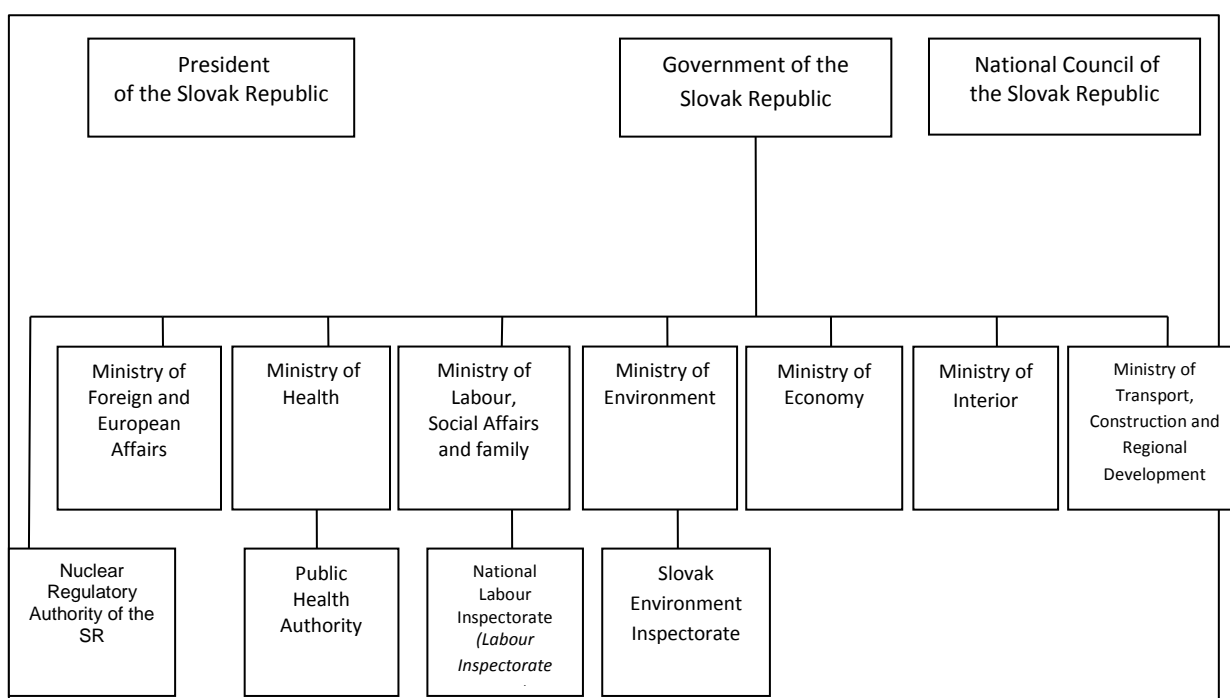


Fig. Structure of government / regulatory bodies

Ministry of Health of the Slovak Republic (Public Health Authority of SR)

Ministry of Health is a central body of state administration for health care, health protection and other activities in the health service. State administration in the field of health protection is executed by the Ministry of Health and the Public Health Authority. The scope of the Ministry includes establishing radiation limits and conditions for radioactive waste management in terms of their potential impact on

health. Public Health Authority prepares proposals on principal directions and priorities of the National Health Policy for the protection of health, assesses impacts of harmful factors on health of the population at the national level, manages, controls and coordinates the state administration in health protection against ionizing radiation.

Ministry of Environment of the Slovak Republic (MŽP SR)

MŽP SR is a central body of state administration of the Slovak Republic (inter alia) for the creation and protection of the environment. The following bodies report to the Ministry of Environment:

- The Slovak Environmental Inspectorate, through which MŽP SR fulfils the role of the main state regulator in environmental matters.
- The Slovak Hydro-meteorological Institute and others.

MŽP SR provides, inter alia, the assessment process of strategic documents carried out also under the Protocol on Strategic Environmental Assessment, in conformity with the Convention on the Assessment of Environmental Impacts in a Transboundary Context (Espoo Convention). MŽP SR under the Act governs also the procedure on assessment of anticipated impacts on the environment of proposed activities before deciding about their siting or prior to their authorization pursuant to special regulations in accordance with the Directive 2011/92/EU on the Assessment of the Effects of Certain Public and Private Projects on the Environment and under the Espoo Convention.

Ministry of Interior of the Slovak Republic (MV SR)

The Ministry of Interior is a central state administration authority for, amongst others, the conceptual management and control of fire prevention, the preparation of an integrated rescue system including civil protection of the population and property, public order and personal security. In case of accidents at a nuclear installation it is involved in management and carrying out rescue works, organizes and provides for the operation of the notification and warning centre of the Slovak Republic, etc. It provides for a 24 hours permanent service, which fulfils the role of the national point of contact of the Slovak Republic vis-à-vis the International Atomic Energy Agency in Vienna and a competent body of the European Commission (ECURIE) in Luxembourg.

Ministry of Economy of the Slovak Republic (MH SR)

The Ministry of Economy of the Slovak Republic is a central state administration authority for, amongst others, nuclear energy industry, including the management of nuclear fuel, storage of radioactive waste, prospecting and exploration of radioactive raw materials and their extraction.

Ministry of Labour, Social Affairs and Family of the Slovak Republic (MPSVR SR)

The Ministry of Labour, Social Affairs and Family is a central state administration authority for, among others, safety and health protection at work and labour inspection. State administration on labour inspection is executed by state administration bodies MPSVR SR, the National Labour Inspectorate and labour inspectorates.

The Ministry of Labour, Social Affairs and Family of SR oversees and controls the National Labour Inspectorate (NLI) and is responsible for the execution of labour inspection. The National Labour Inspectorate is a governing body for labour inspectorates, which performs supervision of compliance with laws and other regulations to ensure safety and protection of health at work at the workplaces (including nuclear installations).

Ministry of Transport, Construction and Regional Development of the Slovak Republic (MDVRR SR) and Department of Health Officer (ÚVHR)

MDVRR SR is a central administration body for railway, road, water and air transport, electronic communications, postal services, tourism and construction. In terms of transports of fresh and spent nuclear fuel, MDVRR SR is one of the authorities participating in the permitting process. According to Section 28 par. 13 sub-par. c) of the Atomic Act, MDVRR SR approves the emergency transport schedule containing measures during an incident or accident during transport of radioactive materials.

Within its competence ÚVHR MDVRR SR in the field of use of nuclear energy issues permits for transport of fresh and spent nuclear fuel and defines conditions for performance of these activities, it performs state health supervision over radiation protection during transport according to the Act No. 355/2007 Coll.

Nuclear Safety Regulation - UJD SR

In accordance with the Act No. 575/2001 Coll. UJD SR is a central state administration authority. It executes state regulatory activities in the field of nuclear safety of nuclear installations, including management of radioactive waste, spent fuel and other parts of the fuel cycle, as well as transport and management of nuclear materials including their control and record keeping system. It is responsible for the assessment of goals of nuclear energy program and of quality of the classified equipment, as well as for commitments of the Slovak Republic under international agreements and treaties in the said field.

UJD SR issues various types of decisions: on approval, on license, on authorization, on sanction or measure imposition, on determination of a new licensee, on verification of professional competency, on documentation review and other.

Competence of the UJD SR is established by Section 4 of the Atomic Act, which is very extensive ([http://www.ujd.gov.sk/ujd/WebStore.nsf/viewKey/AZ/\\$FILE/541_2004%20ZAROVNANY%20povodny 2004_12.1.2015.pdf](http://www.ujd.gov.sk/ujd/WebStore.nsf/viewKey/AZ/$FILE/541_2004%20ZAROVNANY%20povodny%202004_12.1.2015.pdf)).

UJD SR issues annual reports on the status of nuclear safety of nuclear installations and on its activities in the previous year. It presents the report once a year, always by 30 April, to the Government and subsequently to the National Council. The annual reports can be found at <http://www.ujd.gov.sk>.

Nuclear Installation Authorization Procedure

The authorization procedure for nuclear installation consists of 5 major stages: siting, construction, commissioning, operation and decommissioning. Before granting an authorization for operation, the regulatory authority carries out inspection under the approved schedule of particular stages of nuclear installation commissioning (testing, fuel loading, physical start up, energetic start up, trial operation). The main regulatory authorities and the authorization procedure for construction operation decommissioning are shown in picture.

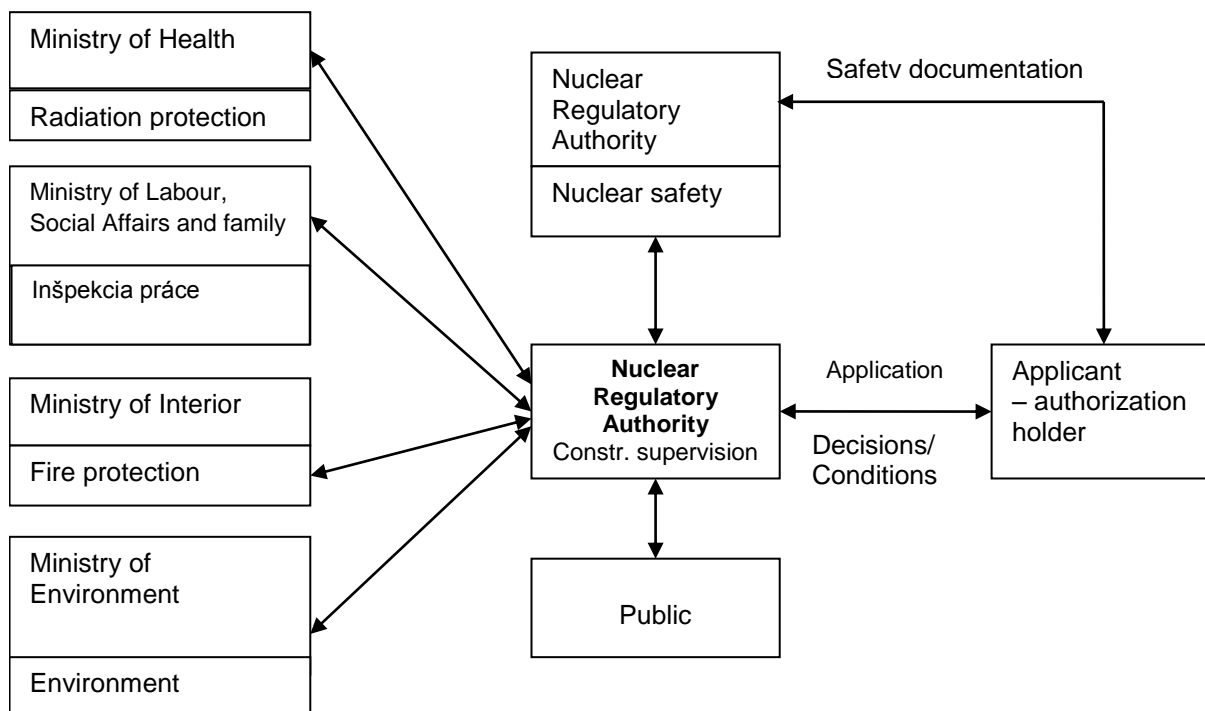


Fig. Authorization procedure

The basic conditions for authorization is the elaboration and submission of safety documentation listed in the annexes of the Atomic Act, necessary for issuance of particular types of decisions and for meeting the legislative requirements for nuclear safety. An essential criteria is also the fulfilment of conditions of preceding approval procedures and decisions of regulatory authority.

Decision about siting of nuclear installation is issued by the affected Municipal Office depending on the site of planned construction of NI, which decides based on the approval issued by UJD SR, ÚVZ SR and positions of other regulatory authorities (Labour Inspection authorities, etc.) Authorization to construct a nuclear installation, permit for early use of a building (part of it is also authorization for commissioning of a nuclear installation), approval for temporary use of the construction (part of it is authorization for trial operation) and the decision on final approval of the building (including license for operation of a nuclear installation) issued by UJD SR as a building authority. UJD SR exercises its competence as an building authority and state administration authority for nuclear safety at the same time in one and the same proceedings, in which its decisions are based on its own partial decision

(partial approval of the safety documentation), as well as based on opinions from the relevant regulatory bodies – the Public Health Authority of SR (radiation protection), the National Labour Inspectorate (labour inspection and occupational health and safety) and other bodies and organizations of state administration (fire protection, civil protection). When issuing authorizations and licenses by the Nuclear Regulatory Authority of SR, the obligations of UJD SR and of other affected bodies are defined by the Act No. 50/1976 Coll. (the Building Act) as amended, Act No. 541/2004 (the Atomic Act), the decree of UJD SR No. 430/2011 Coll., setting the details of requirements for nuclear safety of nuclear installations during their siting, design, construction, commissioning, operation, decommissioning and closure of repository, as well as criteria for classification of selected equipment into safety classes, decrees of the Ministry of Environment of SR No. 453/2000 Coll. and No. 55/2001 Coll. and the *Decree of MPSVR SR No. 508/2009 Coll.* The licensee is liable for nuclear safety.

Documentation, attached to the application for issuance of certain decisions of UJD SR and essential for submission, is listed in the Annexes No. 1 and 2 to the Atomic Act. Details concerning the scope, content and the method of preparation of documentation are defined in the UJD SR Decree No. 58/2006 Coll. as amended by the UJD SR Decree No. 31/2012 Coll.

In 2011 by amending the Act No. 541/2004 Coll. (Atomic Act) the license for operation of all nuclear installations is valid for unlimited period of time (before it was limited to 10 years).

Regulatory Methods to Verify Operator's Compliance with Authorization Conditions

Inspections

The tasks in the field of state regulation are fulfilled by UJD's nuclear safety inspectors. The nuclear safety inspectors during fulfilment of their tasks follow UJD's internal directive "Inspection Activity of UJD SR". The Directive sets an uniform procedure for inspections, for processing and assessment of annual inspection plans, for management of UJD's inspection program, for processing of documentation of inspection activities, and for analysis of UJD's inspection activities.

Inspection plan is a tool for continuous and systematic evaluation of inspection activities at nuclear installations and during transports and controls of nuclear materials. As a rule, such plans are developed for the period of one year and it covers in a complex way all areas of regulation of nuclear safety.

Inspections follow inspection procedures that are part of the UJD's Inspection Manual. For inspection activities with no developed inspection procedures, individual inspection procedures are conducted.

Types of Inspections

In general, inspections are planned and unplanned – as the first level of division. In the second level the planned and unplanned inspections are divided to routine, special and team inspections.

Planned Inspections:

By routine inspections, the nuclear safety inspector verifies the assurance of compliance with requirements and conditions of nuclear safety, conditions of the installation, compliance with approved limits and conditions and with selected operational provisions. Routine inspections are performed mainly by site inspectors at the corresponding installation. In case of inspection, focus of which exceeds the professional competencies of the site inspector, inspection is performed by nuclear safety inspectors from the Department of Safety Evaluation and Inspection Activities and Department of Regulatory Activities and International Relations of UJD SR. Routine inspections follow the procedures contained in the Inspection Manual.

Special inspections are performed by nuclear safety inspector in accordance with the basic inspection plan. Special inspections focus on specific areas, in particular on the verification of compliance with the requirements and conditions of regulation pursuant to section 31 of the Atomic Act.

Special inspections normally follow procedures contained in the Inspection Manual.

Team inspections focus on the verification of compliance with requirements and conditions of regulation pursuant to section 31 of the Atomic Act, normally within several areas in parallel. Team inspections are planned for areas selected on the base of long-term assessment of operator's results emerging from the analyses of inspection activities. Team inspection is an inspection, in which several departments participate.

Unplanned Inspections:

Unplanned inspections are performed by nuclear safety inspectors as routine, special or team inspections. These inspections respond to the conditions at the NI (for example, commissioning phases) or events at NI. UJD SR thus responds to the situation at NI.

Rules valid for all types of inspections:

- inspections are announced in advance. However, they can be also unannounced, if their focus and nature requires to do so,
- the corresponding site inspector is notified in advance of the inspection. Generally, the site inspector participates in the inspection,
- any inspection performed by more than a single inspector has a head of inspection team appointed.

Inspection Protocol

Every performed inspection must be documented in a form of a protocol or a record. Binding measures to repair the detected findings are included in the protocol. They must be formulated clearly so as to impose the responsibility to eliminate detected deficiencies, and must be comprehensible with unambiguously set deadlines for their fulfilment.

Analysis of Inspection Activity

Analysis of inspection activity comprises statistical evaluation of the findings. The objective of the statistical evaluation is to determine the distribution and the frequency of inspection findings. Based on the evaluation of the trends of the inspection findings, it is possible to modify the inspection plan for the upcoming period, particularly in those areas where the most deficiencies have been identified.

Sanction

Pursuant to authorization for operation and RAW management, the requirements and conditions of nuclear safety approved and introduced by the regulatory authority are monitored. The regulatory body may impose fines to the operator, as well as to his employees, when nuclear safety is violated. In case of non-observance of requirements and violation of legal provisions, regulatory body is entitled to impose sanctions including financial fine to the authorization holder.

Financial and human resources of the regulatory body - UJD SR

The budget Chapter of UJD SR is linked to the state budget with its revenues and expenditures. In this connection it is necessary to state that from 1 January 2008 annual contributions have been introduced into the legal order of SR for execution of state regulation in nuclear safety. The Act No.94/2007 Coll. amending the Atomic Act, imposes an obligation to the licensees to pay annual contributions for execution of state regulation in nuclear safety. The basic principle of the adopted law is securing sufficient funding for regulatory activities relating to nuclear safety, for maintaining the expertise of its staff and for their stabilization, for safety research and it aims at reducing demand on the state budget by raising other external sources. The Act stipulates rules for determining the amount of annual contribution and the method of calculating the contribution. The amount of annual contribution depends on the type of nuclear installation and the type of issued license.

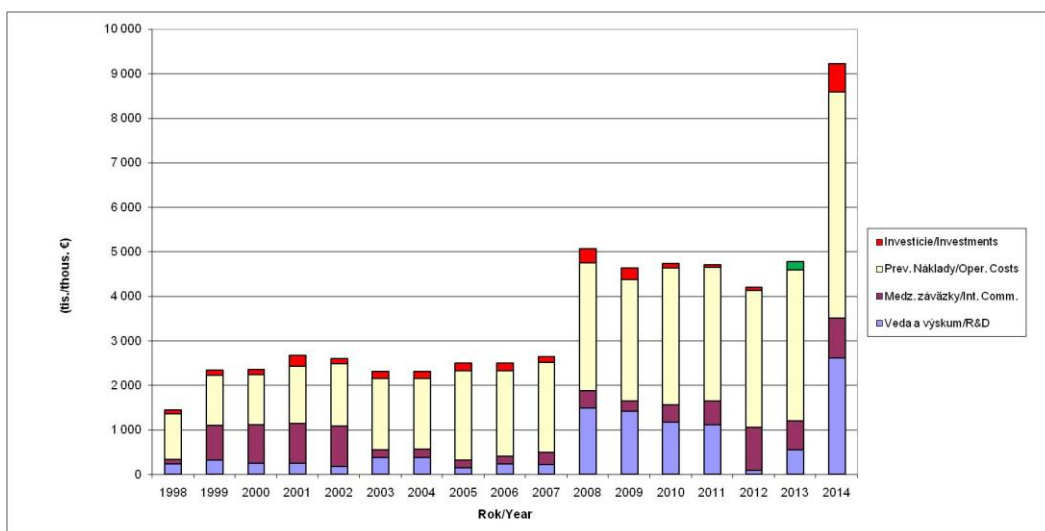


Fig. Structure of the budget chapter

For year 2014 the budget breakdown UJD SR contained a determined total number of employees of 108, of which 91 are civil servants and 17 employees working in public interest.

UJD SR approves and *evaluates* the annual training program for its employees. In addition, UJD SR has a training software at its disposal, LMS i-Tutor, which includes a training and testing *module according to the demands and requirements for training*. The system is on the office server and each employee has its own access code. Employees can thus deepen their knowledge of general overview (legislation, international relations, etc.) as well as their own specialization (*operation, decommissioning, radioactive waste management, emergency planning, etc.*). This is a form of e-learning (*Computer Based Training*) for employees as self-study.

Quality Management

The Authority has been continuously improving its management system. In 2002 a process oriented internal quality management system was introduced with the aim to achieve more effective and more efficient fulfilment of its tasks. In the following period this management system was extended to all activities of the Authority. As the basis for quality assurance in the activities of the Authority the following standards were adopted: STN EN ISO 9001:2008 standard and the IAEA GS-R-3 documents. Partially the requirements from STN EN ISO 9004:2001 standard and other standards of STN EN ISO line are being applied. The basic document of this system is the Quality Manual formulating the Quality Policy, setting the quality objectives, which the Authority intends to achieve in relation to the population of the SR, as well as to the international community. The set quality objectives, as well as functioning of the whole system, are subject of internal audits, as well as regular annual assessments. For all processes the Authority has relevant guidelines developed, as well as system of other governing acts, management, support, inspection procedures, and other. The CAF system (Common Assessment Framework) is also used to assess and improve the activities of the Authority. Activities relating to the management system are managed by the Board for the management system headed by the chairperson of the Authority. The Board develops concept for further development of the management system. In doing this it takes into account experiences from implementing management systems in the state administration and international recommendations in the field of management of regulatory bodies for nuclear safety.

Regulation in the Field of Health Protection Against Radiation ÚVZ SR

State regulation in the field of health protection against radiation

The Ministry of Health of SR (MZ SR) is the central body of state administration for health care, health protection and other activities in the field of health services. The state administration in health protection is executed by the MZ SR and by the Public Health Authority (ÚVZ SR), possibly by special authorities exercising the competence in the relevant sector (transport, defence, internal affairs). Competencies of the ministry include, besides other, setting the exposure limits and conditions for disposal and storage of radioactive waste from the view of their potential impact on health.

Regulation of health protection against radiation is provided by the Public Health Authority according to the provisions of Act No. 355/2007 Coll. on protection, support and development of the public health. The body of public health supervision at the nuclear installations is ÚVZ SR.

The Public Health Authority of SR provides in the field of radiation protection, inter alia:

- Conditions for the implementation of activities leading to exposure, and the release of radioactive substances and radioactive contaminated objects and materials under administrative control;
- Determines the dose limits to optimize radiation protection for individual activities leading to exposure and individual sources of ionizing radiation;
- Issues permits for activities leading to exposure a permits for release of radioactive substances and radioactively contaminated objects under administrative control;
- Exercises state health supervision in nuclear installations;
- Orders measures to prevent occurrence of diseases and other health disorders due to exposure by ionizing radiation;
- Performs monitoring of radiation situation and data collection on the territory of the Slovak Republic for the purposes assessment of exposure and assessing the impact of radiation on the public health and manages the activity of the radiation monitoring network;
- Issues directives and guides for ensuring radiation protection in implementing activities leading to exposure when releasing radioactive substances and radioactively contaminated materials from administrative control;
- Maintains central register of sources of ionizing radiation and a central register of doses, and issues personal radiation passes to external staff, provides information to the public on radiation situation, extraordinary events and on potential exposure, on the risks caused by exposure and on measures and interventions to reduce the irradiation during radiation accidents;
- Searches workplaces and facilities, where abandoned radioactive sources may occur;
- Cooperates with the European Commission and the relevant bodies and institutions of the Member States and represents the Slovak Republic in international organizations in matters of radiation protection.

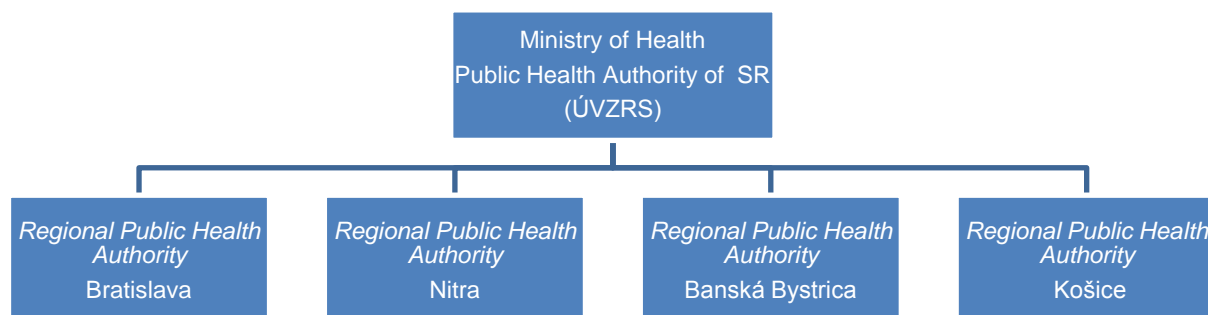


Fig. Structure of state regulation in the field of health protection against radiation

Authorization by ÚVZ SR for activities leading to exposure in relation to nuclear installations is not a final granting of a licence, however it is a condition for issuing the licence (e. g. for operation).

Authorization Procedure

When permitting activity leading to exposure the procedure of Act No. 71/1967 Coll. on administrative proceedings as amended, is followed. The Act No. 355/2007 Coll. on protection, support and development of public health sets the conditions for issuing authorization in more details.

Regulatory Methods to Verify Compliance with License Requirements by the Operator

The control system of compliance with the obligations and requirements for radiation protection assurance laid down in the legal acts and the meeting of conditions and obligations laid down in the authorization for the activity leading to exposure is especially provided by a system of targeted in situ inspections, but a very effective tool and information source is also a complex system of reports, information and announcements on nuclear installation situation, employees exposure, on extraordinary events and on radioactive waste management, which the operator shall provide continuously in writing or in electronic format to the regulatory authority within the set dates.

During in situ inspection, the following items are inspected in particular:

- Equipment state,
- Regime observance,
- Monitoring system state, monitoring plan observance and results recordkeeping,
- Documentation on operation,
- Documentation on radiation protection assurance,
- Operational procedures,
- Records of discrepancies, results of event investigations.

In situ inspections are often connected with inspection measurements of radiation situation and sampling by the regulatory employees.

Inspections are mainly focused on special area important from the viewpoint of radiation protection.

Regulation in the Field of Occupational Health and Safety – NIP SR

Role of the Regulatory Authority

State administration in the field of labour inspection is executed by:

- a) Ministry of Labour, Social Affairs and Family of the Slovak Republic;
- b) National Labour Inspectorate;
- c) Regional Labour Inspectorate Nitra oversees compliance with the legal regulations and other regulations to ensure occupational health and safety at the workplaces of a nuclear installation on the whole territory of the Slovak Republic.

Labour inspection means:

- a) Supervision of compliance (among others) with:
 - 1. employment regulations governing labour relations;
 - 2. legal regulations and other regulations to ensure occupational health and safety, including regulations governing factors of working environment;
 - 3. obligations arising from collective agreements and other;
- b) Drawing liability for breaches of regulations contained under letter a);
- c) Providing free advice to employers, natural persons as entrepreneurs, but not employers, and to employees within the scope of basic expert information and advice on ways how to effectively comply with the regulations contained under a).

Obligations of the operator of nuclear installations, legal entities and natural persons vis-à-vis bodies of labour inspection arise from the Act No. 124/2006 Coll., Act No. 125/2006 Coll. and the implementing regulations to the given acts (listed in Annex V.).

Activity of the Labour Inspectorate Nitra

Ensures labour inspection to the extent as provided by the Act No. 125/2006 Coll. and oversees in particular whether the following conform to the requirements of labour protection:

- Selection, location, arrangement, use, maintenance and control of the workplace, working environment, work equipment;
- Workflows, working time, organization of labour protection and system of its management;
- Investigates causes of an accident at work, which caused death or serious harm, imminent threat of major industrial accident, major industrial accident, safety, technical and organizational causes of occupational diseases and the threat of occupational disease, keeps their records and where appropriate investigates the causes of other work accidents;
- By means of binding opinion imposes requirements for ensuring safety and protection of health at work;
- Withdraws authorization, certificates and licenses issued to a natural person or a legal entity for performing activity according to special regulations;
- Discusses offences, takes decisions on imposing fines for offences and on ban of activity according to special regulations.

The Labour Inspectorate is independent in performing labour inspection and executes labour inspection through labour inspectors.

Besides the classic work of labour inspection the Labour Inspectorate Nitra also performs labour inspection relating to the condition of occupational health and safety, including the safety condition of the technical equipment - pressure, lifting, electrical and gas, in accordance with the decree of the

Ministry of Labour, Social Affairs and Family of the Slovak Republic No. 508/2009 Coll., providing for the technical equipment that is considered as classified technical equipment. It also performs labour inspection on technical equipments that are intended products after they are marketed or after they are put into operation.

According to the degree of threat the types of technical equipments are divided into group A, group B or group C. "Group A" contains technical equipments with high degree of threat, "Group B" are technical equipments with higher degree of threat and "Group C" are technical equipments with lower degree of threat. Technical equipments of Group A and technical equipments of Group B are considered as classified technical equipments.

Methods of supervision by the labour inspection body

During inspection the labour inspector is authorized to:

- Enter freely and at any time the premises and the workplaces that are subject to labour inspection under the terms of the relevant regulations concerning workplaces of nuclear installations;
- Perform control, test, investigation and other acts aimed at establishing whether the regulations to ensure occupational health and safety are complied with;
- Request documents, information and explanations relating to application of regulations to ensure occupational health and safety;
- Request submission of documentation, records or other documents necessary for labour inspection purposes and to request copies thereof;
- Take the necessary samples of materials or substances that are used or which are being handled, for the purposes of analysis;
- Require proof of identity from an individual being at the workplace of an employer and to ask for explanation for the presence.

The Labour Inspectorate Nitra is authorized to perform labour inspection at nuclear installations focusing on control of the status of occupational health and safety, the status of safety of technical equipment, the relevant documentation, accompanying technical documentation, periodical tests of classified technical equipments and other.

Based on the results of inspection the labour inspector proposes measures, imposes measures and obligations to adopt measures for removal of breaches of regulations found and their causes and an obligation to submit to the Labour Inspectorate Nitra information on fulfilment of measures to remove the breaches of regulations found and their causes.

International Cooperation

Cooperation with the International Atomic Energy Agency (IAEA)

Cooperation between the SR and the IAEA in the field of technical projects has been extraordinarily successful. Part of this cooperation is that expert missions are taking place focusing on nuclear safety review, in the health service, on evaluation of material degradation of primary circuit components, etc.

Significant part of regional projects related to issues of nuclear safety. Internships of foreign experts, seminars, workshops and trainings with broad international participation are being organized under regional projects in the SR.

The self-assessment of UJD SR following the methodology of the Integrated Regulatory Review Service (UN/IAEA) was carried out in 2011 and reviewed by the IRRS mission in 2012 and subsequently by the follow-up mission in February 2015.

The mission reviewed the following 11 areas:

- Government responsibilities and functions,
- Global nuclear safety regime,
- Responsibilities and functions of UJD SR,
- Management system,
- Issuing authorizations/licenses,
- Safety review and assessment,
- Conducting inspections,
- Law enforcement,
- Development of laws, decrees and guides,
- Emergency preparedness and response,
- Consequences of the accident at the nuclear power plant at Fukushima.

The IRRS mission confirmed a high level of regulation. It highlighted the work that has been done so far at UJD SR and ÚVZ SR, and the enthusiasm of their employees. Conclusions from the mission were categorized as proposals for improvements and recommendations, which UJD SR transposed into an Action Plan to address the measures resulting from the IRRS mission.

The Action Plan for strengthening the regulatory framework was approved by the Government in November 2012.

Cooperation with the Organization for Economic Cooperation and Development/ the Nuclear Energy Agency (OECD/NEA)

Representatives of SR attended the government experts meeting on third party nuclear liability, the meetings of government experts in the Committee for Safety of Nuclear Installations (CSNI) and the committee for nuclear regulatory activities, the committee on radioactive waste, as well as other committees and working groups.

Cooperation with the European Commission and the countries of the European Union

Representatives of UJD SR are attending on a regular basis meetings of expert groups of the EU Council and the European Commission with the aim to exchange knowledge on reviews of the level of nuclear safety of nuclear installations in Europe and they participate in developing the EU legislation in selected areas.

Bilateral Cooperation

Formal (on the basis of international treaties) and informal cooperation exists with all neighbouring countries (Czech Republic, Poland, Ukraine, Hungary and Austria), as well as with other countries (such as: Armenia, Bulgaria, Germany, France, Finland, Slovenia, the US). The cooperation focuses on exchange of experience in the field of peaceful use of nuclear energy, developing the system of emergency preparedness, accident analyses, etc.

Forum of state nuclear safety authorities of countries operating NPPs of WWER type

Forum of state nuclear safety authorities of countries operating NPPs with WWER type was established with the aim of mutual exchange of experiences in construction and operation of nuclear power plants of WWER type. These activities are also supported by the IAEA and other developed countries having a nuclear program. Ad hoc working groups have been set up dealing with the current issues of nuclear safety and state regulation.

Network of Nuclear Regulatory Bodies of countries with small nuclear program

Network of Regulators of Countries with Small Nuclear Program (NERS) was established in 1998 from the initiative of the Swiss Regulator (HSK) with the aim to enhance cooperation and exchange of experiences among countries with similar nuclear program. UJD SR has been taking an active part in the activities of NERS on a regular basis.

ART. 7 LICENCE HOLDERS

1. *Member States shall ensure that the prime responsibility for the safety of spent fuel and radioactive waste management facilities and/or activities rest with the licence holder. That responsibility can not be delegated.*
2. *Member States shall ensure that the national framework in place require licence holders, under the regulatory control of the competent regulatory authority, to regularly assess, verify and continuously improve, as far as is reasonably achievable, the safety of the radioactive waste and spent fuel management facility or activity in a systematic and verifiable manner. This shall be achieved through an appropriate safety assessment, other arguments and evidence.*
3. *As part of the licensing of a facility or activity the safety demonstration shall cover the development and operation of an activity and the development, operation and decommissioning of a facility or closure of a disposal facility as well as the post- closure phase of a disposal facility. The extent of the safety demonstration shall be commensurate with the complexity of the operation and the magnitude of the hazards associated with the radioactive waste and spent fuel, and the facility or activity. The licensing process shall contribute to safety in the facility or activity during normal operating conditions, anticipated operational occurrences and design basis accidents. It shall provide the required assurance of safety in the facility or activity. Measures shall be in place to prevent accidents and mitigate the consequences of accidents, including verification of physical barriers and the licence holder's administrative protection procedures that would have to fail before workers and the general public would be significantly affected by ionising radiation. That approach shall identify and reduce uncertainties.*
4. *Member States shall ensure that the national framework require licence holders to establish and implement integrated management systems, including quality assurance, which give due priority for overall management of spent fuel and radioactive waste to safety and are regularly verified by the competent regulatory authority.*
5. *Member States shall ensure that the national framework require licence holders to provide for and maintain adequate financial and human resources to fulfil their obligations with respect to the safety of spent fuel and radioactive waste management as laid down in paragraphs 1 to 4.*

Responsibility of the Licensee

The authorization holder according to Atomic Act is obliged to establish the necessary organizational structure, to define the responsibilities, professional competencies, procedures and resources to ensure quality of nuclear installations and general safety provisions. In compliance with Act 541/2004 Coll. the authorization holder is obliged to ensure nuclear safety, physical protection, emergency preparedness, including their verification, to comply with the documentation reviewed or approved by the Nuclear Regulatory Authority of SR, to adhere to the limits and conditions of safe operation or limits and conditions of safe decommissioning. Further he is obliged to comply with the technical and organizational requirements provided by the generally binding legal regulations.

The authorization holder may authorize performance of work activities only to persons meeting the conditions set in Section 24 of the Atomic Act and in compliance with the Decree No. 52/2006 Coll. of the Nuclear Regulatory Authority of SR on professional competence, shall identify all job positions, where working activities are being performed that have impact on nuclear safety, and other job positions with direct impact on nuclear safety together with a description of work activities in the documentation of the quality system.

Principles and Definition of Nuclear Safety and Radiation Protection

In sense of Act No. 541/2004 Coll. (Atomic Act) nuclear safety shall mean the technical status and ability of a nuclear installation or transport equipment and the status and ability of its staff to prevent the uncontrolled development of a fission chain reaction or the unsanctioned release of radioactive substances or ionising radiation into the workplace environment or the natural environment and the ability to limit the consequences of incidents and accidents at nuclear installations or consequences of nuclear events during shipment of radioactive materials.

The authorization holder shall be liable for nuclear safety.

A level of nuclear safety, reliability and health protection at work and safety of technological facilities, protection of health from ionizing radiation, psychical protection, emergency preparedness and fire protection must be achieved upon using nuclear energy so as to keep the life, health, working or environment-related hazards as low as reasonably achievable according to the available state-of-the-art knowledge; at the same time, exposure limits shall not be exceeded. Upon new significant information being obtained about the risk and consequences of the use of nuclear energy, the above-mentioned level must be reassessed and necessary measures shall be taken to meet the conditions pursuant to the Atomic Act.

In Slovakia it is possible to dispose only radioactive waste that is produced on its territory.

According to the Atomic Act and Council Directive 2011/70/Euratom of 19 July 2011 establishing a Community framework for the responsible and safe management of spent fuel and radioactive waste:

In case of shipments of radioactive waste and spent nuclear fuel produced on the territory of Slovakia, for treatment or reprocessing in a Member State or a third country, the ultimate responsibility for safe disposal of these materials, including waste, which is generated as a by-product, is the Slovak Republic.

Radioactive waste produced in the Slovak Republic can be disposed in another Member State or a third country only on the basis of an international treaty concluded between SR and that other state or a third country, which will enter into force no later than at the time of shipment of radioactive waste and which takes into account the recommendations of the European Community for Atomic Energy, under the conditions contained in the Atomic Act Section 21 par. 13.

Policy of Nuclear Safety and Radiation Protection

The purpose of the safety policy of nuclear installations for operators is to set safety goals, requirements, fundamentals, principles, responsibility, measures and methods of their performance for all areas of safety, such as nuclear safety and radiation protection, environmental safety, operational safety, technical safety, construction and physical safety, occupational health and safety and fire protection, safety of integrated system and telecommunication network, classified information protection, emergency planning and civil protection, personal safety, administration safety, financial safety, protection of company' reputation and planning of activity continuity.

The policy of safety is pursued by internal acts as well as by inspection of their observance across all levels of company management.

Compliance with and fulfilment of the safety policy content by all employees is one of the main priorities and objectives; Safety is an integral part of all activities.

The following main requirements, fundamentals and principles of nuclear safety and radiation protection are set to achieve the safety goals:

- Nuclear safety and radiation protection is overriding and superior over any other interests of the company.
- Every employee is liable for nuclear safety and radiation protection in the scope of his competencies, responsibilities and duties.
- The principles of safety culture apply in all activities relating to nuclear installations.
- Principles of defense in-depth strategy: multi-level, mutually overlapping measures, focused mainly at prevention, but also at accident mitigation, are applied in nuclear installation designs and activities related to the operation of nuclear installations.
- Systems and components of relevance to safety are periodically tested with the aim to verify their functionality and serviceability.
- Safety audits of the respective safety systems are conducted on a periodical basis.
- *Integrated management system* is developed in line with the requirements of the Slovak legal order, of regulatory authorities, of IAEA recommendations and of the requirements of STN EN ISO 9001:2015, STN EN ISO 14001:2005, STN OHSAS 18001:2007 a STN ISO/IEC 20000-1:2008 standards.
- The latest knowledge and experience from operation of nuclear installations in the country and abroad are permanently utilized.
- International assessments and reviews are regularly used for independent assessment of nuclear safety and radiation protection level.
- An open dialogue with the public, local and regional state administration and self-governing authorities is applied.
- Currently occurring safety risks concerning nuclear safety and radiation protection are identified, analyzed, classified, and managed across all management levels. More serious hazards are

submitted to the Nuclear Safety Committee, an advisory body of the top management of the operator.

- Operators invest adequate material and financial means to deliver the safety goals and meet the safety requirements, fundamentals and principles of nuclear safety and radiation protection, and to improve education and qualification of employees.

The primary responsibility for nuclear safety and radiation protection is with the specific persons listed as statutory body of the licensees (Boards of Directors in case of joint stock companies), who determine and pursue the application of the main goals, requirements, fundamentals and principles of nuclear safety and radiation protection in all activities related to the nuclear installations, from their siting, design, construction, commissioning, operation until decommissioning, including management of spent nuclear fuel and radioactive waste. The obligations following the primary responsibility are delegated to the executive management through authorization of persons and the description of the organizational rules of the company.

Obligations of the Authorization Holders (Licensee) towards Regulator

The operator is obliged to provide for sufficient financial and human resources to ensure nuclear safety, including the necessary engineering and technical support in all areas related to nuclear safety. The authorization holder (licensee) shall give priority to safety aspects over all other aspects of the authorized activity.

The obligations of the operator are provided primarily by the provisions of laws listed under Art. 5.

Any modifications to nuclear installation affecting nuclear safety during construction, commissioning, operation, decommissioning, closure of repository or after closure of repository may be implemented only after a preceding approval or permission of relevant regulatory authorities has been obtained and in special cases after having obtained the statement (opinion) of the European Commission. Other modifications must be notified by the operator, or submitted for review.

The authorization holder shall issue operating procedures for the performance of activities at a nuclear installation, in particular service, maintenance, control and testing of classified equipment. These procedures shall be in accordance with the conditions of the authorization. The authorization holder shall update and complete these procedures according to the current state of the nuclear installation.

The operator has the obligation to report to the regulatory authorities events at nuclear installations and in case of incidents and accidents also to other organizations and to the public, to take action to prevent recurrence.

The holder of authorization has the obligation to provide information to the public on nuclear safety. This obligation does not change the responsibility of UJD SR to provide the public with its own independent assessment.

In practice, the operator of a nuclear installation uses other essential specialized organizations, in the field of maintenance, operation or research. These specialized organizations have the function of so-called technical support organizations and are involved through their activities in supporting reliable

and safe operation of nuclear installations, since the works, which they carry out, cannot be provided for by the operator with his own human resources nor in organizational, technical and knowledge terms.

The licensee is given the obligation to identify for all radioactive waste a suitable system for their treatment in at least two alternatives justifying the choice of one of them.

The licensee is required, during operation, to hand over radioactive waste within one year of their production and spent nuclear fuel immediately after fulfilling the requirements for its safe transport and storage, to the legal entity – JAVYS, a. s. – authorized by the Ministry of Economy of the Slovak Republic and by UJD SR.

The producer of radioactive waste is responsible for safe management of radioactive waste up to their disposal, and the licensee operating the facilities for the management of radioactive waste and spent fuel is responsible for safety of these facilities.

The licensee's responsibility is to check and verify before closing the repository its readiness and also the readiness of the staff and the compliance of the documentation with its current status.

Periodic safety review

Measures to improve safety, including measures after the accident at the Fukushima Dai-Ichi Nuclear Power Plant

Nuclear installations for management of spent nuclear fuel (SNF) and radioactive waste (RAW) are operated by Slovenské elektrárne, a. s. and JAVYS, a. s.

List and Description of Spent Fuel Management Facilities

Interim spent fuel storage of JAVYS, a. s. (ISFS)

BASIC TECHNICAL DATA FOR ISFS - JAVYS, A. S.	
Maximal storage capacity	14 112 fuel assemblies
Storage capacity as at 31 December 2014	11 285 fuel assemblies
Number of pools	3 operational + 1 backup
Ground-plan of the building	45m x 70m
Total built up area	95 000 m ³
Possibility of extending it	2 - 3 pools
Method of storage	KZ 48 baskets, T-13
Maximal temperature of pool water	50 °C
Capacity of purification system of pool water	25 m ³ /h
Method of transportation of spent fuel	Rail wagons, TK C-30 containers
Pool size, length x width x depth	23,4 x 8,4 x 7,2 m
Number of baskets per pool	98 of KZ-48 type

ISFS is a nuclear installation intended for temporary and safe storage of spent nuclear fuel from WWER-440 reactors prior to its further processing in the reprocessing plant or final disposal. It is designed as a wet storage and was put into operation in 1986. Active operation began in 1987.

The ISFS is a standalone building without any construction link to the buildings within the premises of other nuclear installations at Jaslovské Bohunice. The building is divided to container section and storage section. The storage section consists of 4 storage pools. The storage pools are interconnected with a transport channel. Each pool can be separated from the transport channel with hydro locks. The spent fuel is stored inside baskets located in the pools under water, which at the same time is also a shielding and removes the residual heat from the spent fuel assemblies.

In the pool section of the ISFS there are 4 **storage pools**, while one of the pools is a back up. The bottom of the pool is on the level of $\pm 0,00$ m, the pool cover is on the level of +7,20 m. The level of the cooling water is permanently maintained at a level of +6,30 m.

The pools are equipped with double lining (carbon steel and stainless steel) with an inter-space, from which leaks are draught into the system of leaks. The pools are covered with over-cover, the clapper segments of which clearly define the route of transport of the basket and precise placing of the basket to a predetermined place in the storage pool. The pool cover can be sealed individually or by sections. Each storage pool can take 98 compact KZ-48 baskets (in 14 rows by 7 baskets), while each basket can take 48 assemblies. Transport of baskets is done at a maximal elevation of 600 mm above the bottom of the transport pool and storage pools.

The ISFS has its own **cooling and purification station**. With regard to increased requirements for removing residual heat from the spent fuel (increased burnout, more spent fuel) the original system of cooling pool water was replaced with a new system. The new system consists of two panel coolers (one as a 100 % back up) and 4 pumps (one for each pool, while the pump of the backup pool is a back up for the rest of the pumps). Removal of heat from the cooling water can be secured also through a separate autonomous cooling system for the cooling water consisting of 3 cooling micro-towers and 2 circulation pumps (one as a 100 % back up). Operation of the cooling station is continuous and maintains the temperature of the pool water within the required values. The treatment station is designed to maintain the necessary quality of pool water within the required parameters, which is secured by mechanical filtration and ion exchange. Operation is periodical.

The original design of WWER-440 units presumed that after three years in the storage pond next to the reactor the spent fuel will be transported to the former ZSSR. Later on the Soviet side started to request storage of spent fuel at the NPP sites for a period of minimum 10 years. Therefore an Interim spent fuel storage was built at Jaslovské Bohunice for the needs of NPP Bohunice Units.

Since 1989 the ISFS has been used to store also spent fuel from NPP Dukovany, the Czech Republic. After development of a storage facility in the Czech Republic in the period 1995 to 1997 this fuel was gradually transported back to NPP Dukovany.

The interim spent fuel storage was reconstructed in the period 1997 – 1999 for the purpose of increasing its storage capacity, life extension and enhancing the seismic resistance of the structure.

The overall storage capacity of ISFS after reconstruction and seismic enhancement is nearly three times higher compared to the designed capacity (increase from the original 5 040 to the current 14 112 fuel assemblies – 1 694 t $\dot{T}K$). The capacity has gradually been increased by replacing the original T-12 baskets with the KZ-48 baskets (completed in 2007).

The goal of the seismic enhancement project on ISFS was to enhance resistance of the building and technology to the level required by international guidelines and requirements and that is in compliance with the geological and seismological surveys carried out. On the basis of “Requirements” methodology the classification of buildings, technological equipment and electric equipment and I&C - category 1 (1a, 1b, 1c) was carried out on the level of RLE (Review Level Earthquake). Evaluation of calculations performed resulted in the necessary modifications on the buildings and technology, which were subsequently implemented as part of “Seismic enhancement and increase of the storage capacity of ISFS Bohunice” Project. By implementing this project the achieved status is that even after a seismic event all safety functions of ISFS will be secured up to the level set for the Jaslovské Bohunice site (8o MSK 64) and its life was extended by minimum 50 years.

Besides changes and modifications on the original construction design and technological equipment of ISFS, which resulted from the requirements for seismic enhancement and increase of the storage capacity and were the main aim of the reconstruction, there were further changes and modifications made, which increase the technical and safety level of ISFS:

- Installation of a manipulator MAPP 400 for transferring spent fuel;
- Reinforcement of the air conditioning systems of control rooms, ventilation of entry to ISFS, modifications of air-conditioning due to layout changes in the hygienic loops, ventilation for escape routes (staircase) on the basis of requirements of fire protection;
- Enhancing filtration of pool water with a filtration unit to capture micro-organisms in the pool water, including disposal of filter cartridges;
- Modification of the decontamination system;
- Installation of detection system for fuel assemblies tightness (Sipping in Pool) and monitoring of corrosion on the pools lining;
- Modernization of the system and instrumentation for radiation control of ISFS;
- Layout modifications of the hygienic loop on the $\pm 0,00$ m floor and on +3,60 m floor;
- Modifications at the entrance area for the staff when entering ISFS;
- Construction work resulting from the requirements of the new technology;
- Monitoring the life of building structures and of technological systems including monitoring of the status of spent fuel.

To ensure supplies of important operating media originating from NPP V1 – which is under decommissioning - (common technology) the following changes were implemented at ISFS:

- Modification of the heating system and steam distribution,
- Building a nitrogen pressure regulation station,
- Building a compressor station.

Currently the ISFS serves as a storage of spent nuclear fuel originating from NPP V1, NPP V2 and NPP Mochovce.

Periodic Safety Review of ISFS (ISFS PSR)

Periodic safety review of the ISFS was carried out in 2008. Emphasis of the assessment was on meeting the requirements of UJD SR Decree No. 50/2006 Coll. and UJD SR safety guide BNS I.7.4/2006 on Periodic safety assessment.

Siting, design and construction were not assessed, but only assessment of design for the operation of ISFS. PSR was made after the implementation of seismic reinforcement and expanding the storage capacity, which was implemented during the period 1997 to 1999.

The PSR took into account:

- Compliance of ISFS project with legislative requirements for nuclear safety;
- Assessment of the current status of ISFS equipment having impact on nuclear safety;
- ISFS safety analysis;
- Safety of operation of ISFS for the assessed period;
- Professional competence of personnel, safety culture and quality of operating procedures.

The assessment demonstrated that the ISFS complies with the current safety requirements for normal operation and emergency conditions anticipated by the design basis.

As a result of the analyses a set of corrective measures divided into groups according their priorities is listed in chapter 5 of document "Integrated plan of realization of corrective measures". From 32 corrective measures 21 have been evaluated as measures having high priority (implementation by the end of 2010), 7 having medium priority (implementation by the end of 2012) and 4 low priority (implementation by the end of 2014).

Examples of high priority measures:

1. Ensure completion of project documentations of that the requirements described in Regulation 53/2006 Coll. Section 16 Paragraph 2 Letter g (conditions for the carriage of heavy loads over the spent fuel storage facilities) are fulfilled.
2. Add relevant chapters to the ISFSF Safety report reasoning limits and conditions.
3. Include to the program of environmental monitoring measurement of alpha activity of radionuclides collected on aerosol filters from ISFSF air-condition quarterly (or biannually).

Examples of medium priority measures:

1. Ensure completion of project documentation for spent fuel disposal concept after the end of the storage.
2. Process as a controlled document list of devices that are subject to the requirements of legislation to monitor their service life.

Examples of low priority measures:

1. Establish a system of periodic review of the implementation of the limits and conditions
2. Develop a methodology according to SAT WENRA, Issue Q.4.2 and determine expert guarantee its correct application.

All measures were completed at the time of preparation of this Report.

After the PSR, ÚJD SR by its Decision No. 444/2010 on 9 December 2010 approved the operation for another 10 years. (Note: In 2011 the amendment to the Atomic Act No. 541/2004 Coll. changed the license for operation of all nuclear installations to an unlimited period of time before it was limited to 10 years).

Stress Tests for the ISFS

In July 2011 UJD SR requested JAVYS to prepare similar analysis as for the NPPs also for the ISFS. Following events have been considered:

1. earthquake stronger than envisaged in the project,
2. extreme floods beyond what was envisaged in the design,
3. other external environmental conditions that could be the Bohunice site for induced loss of safety functions,
4. extended time of complete loss of own electrical power consumption,
5. extended period of incapacity of residual heat removal,
6. degradation in terms of cooling the spent fuel storage pools.

In 2012 JAVYS realized "Program evaluation – review ISFS response to the Fukushima event type". After evaluation of analyses results in this program UJD SR confirmed, that all goals were met. Chapter "Seismic event" has been added to an operating document "Addressing failure conditions in ISFS". The evaluation points of this program have shown that:

1. The implementation of safety functions is ensured at NI ISFS for spent fuel storage initiating events referred above,
2. ISFS after realization of seismic upgrading and expansion of spent fuel storage capacity has increased its nuclear safety and reliably meet all safety requirements in accordance with current legislation and using knowledge and measures to analysis the impact of events on the ISFS project referred above.
3. ISFSF is operated by qualified personnel and the level of safety culture meets the desired requirements for nuclear safety.

Transport container C-30 TK is designed for on-site transportation from Units NPP V2 to ISFS JAVYS, a. s. at the Jaslovské Bohunice site or off-site transport of SNF from the units of NPP EMO. TK is transported on a special railway wagon.

Fuel stored in the basket is transported in a container in a water environment with a nitrogen cushion (wet transport), or with cooling gas - nitrogen (dry transport). The transport packaging set C-30 is moved by using 130 t crane into the receiving shaft by a special transport suspension from the

transportation rail corridor. After performing the necessary handling in the receiving shaft, container de-sealing and lid removal, the basket with the spent fuel is moved to the respective position in the storage pool by a trap and 16 t crane.



Fig. Transport containers TK C-30



Fig. Transport of TK C-30 by special transport hitch

List and Description of Facilities for Radioactive Waste (RAW) Management

Facilities for Radioactive Waste (RAW) Management within NPP (operator SE, a. s.)

NPPs with WWER-440 are equipped with the following facilities for treatment and storage of RAW:

Facilities for treatment of solid RAW are represented by collecting equipment, sorting equipment, washers, dryers, low pressure compactor and fragmentation equipment. These are used for fragmentation of large size metal SRAW.

Facilities for treatment of liquid RAW are represented by purification (filtration) stations with ion exchange resins (ŠOV 1, 4, 5 – single block; ŠOV 2, 3, 6 - common), evaporating distillation equipment, treatment plant of contaminated oil, connecting assembly of concentrate homogenization and pumping stations.

Facilities for gaseous RAW management are represented by ventilation systems are provided with filters to capture aerosols and iodine. During 2003 - 2004 replacement of original iodine filters of Soviet provenience with iodine filtration stations took place. As part of completion of the fragmenting workplace a new exhaustion system was installed for the workplace. *On the basis of decision of ÚVZ SR the operator of NPP V1 from 2012 is not obliged to monitor discharges of noble gases and iodine-131 (NPP V1 is under decommissioning).*

Facility for storage of solid RAW

The method of storing solid RAW depends on the type of RAW and from its packaging:

- *Solid RAW for incineration and high pressure compacting is stored in 200 litres MEVA drums in storage shafts;*
- *Metal solid RAW is stored in box pallets (only at NPP V2 3&4 and NPP Mochovce);*
- *For example, medium and high level solid RAW from the reactor is stored in special packaging, in stainless steel cylindrical containers at a special storage facility, which is accessible directly from the reactor hall and is formed as a set of vertical metal cylindrical shafts embedded in mass concrete to shield radiation;*
- *Other solid RAW with higher activity in shielded drums and with these in shielded boxes;*
- *Air-conditioning filters in metal packages placed in storage shafts;*
- *Oversized solid RAW is freely stored in designated storage shafts.*

Facilities for storage of liquid RAW are tanks for storage of untreated liquid RAW and concentrates. Contaminated oils are stored in jerry cans put into MEVA drums, resp. directly in MEVA drums, to which they are pumped from the tanks.

The concentrate is stored in stainless steel tanks with a capacity from 415 up to 550 m³.

Exhausted ion exchange resins are stored in stainless steel tanks with a capacity from 150 up to 450 m³, which are located in leak proof concrete shafts capable of capturing the entire volume of the tank in the event of failure.

Technology for Treatment and Conditioning of Radioactive Waste (TSÚ RAW) (operator JAVYS, a. s.)

Technology for treatment and conditioning of RAW includes the following technology:

- Bohunice Treatment Centre - BSC RAW, containing new technology:
 - Incineration plant (burning of combustible liquid RAW and solid RAW);
 - High pressure compacting facility (compacting of solid RAW, in particular metal waste);
 - Concentration facility (Final evaporation of concentrates on the evaporator);
 - Facility for RAW conditioning by cementation to fibre-concrete containers;
 - Sorting facility for solid RAW;
 - Storage and transportation facility;
- Bituminization lines PS 44 and PS 100 for treatment of concentrates and sorbents, and active water purification station PS 100;
- *Discontinuous bituminization line PS44/2 designated for treatment of saturated sorbents,*
- Wastewater treatment plant *for treatment of liquid RAW from NPP A1;*
- Fragmenting line and high capacity decontamination line for metal RAW for treatment of metal RAW;
- Workplace for processing air filters,
- *Workplace for crushing used power cables.*

The license to operate TSÚ RAW was renewed in compliance with the requirements of the Act No. 541/2004 Coll. after a periodic nuclear safety assessment, for the following 10 years of operation, on 30 December 2010.

Note: In 2011 the amendment to the Atomic Act No. 541/2004 Coll. changed the license for operation of all nuclear installations to and unlimited period of time before it was limited to 10 years.



Fig. Bohunice Conditioning Centre (BSC)

Facility for Final Treatment and Conditioning of Liquid Radioactive Waste - FS KRAO (operator JAVYS, a. s.)

FS KRAO is designed for treatment and conditioning of liquid RAW (radioactive concentrates, saturated sorbents and sludge) and certain types of solid radwaste from the operation of EMO Units and for conditioning of processed solid radwaste from other NIs. The resulting product is VBK complying with the L&C for storage, transportation and disposal at RÚ RAW, where liquid RAW is solidified by bituminization in 200 l drums, or solid radwaste put into VBK directly or in drums, or as compacts filled with active cement mixture.

FS KRAO is located within the EMO premises in the immediate vicinity of NPP EMO1,2. It consists of the following technology for treatment and conditioning of RAW:

- Bituminization liquid RAW ;
- Thickening concentration evaporator;
- Cementation RAW.

Facility for institutional radioactive waste (IRAW) management and captured radioactive materials (ZRAM)

The original centralized system for collection of IRAW in the SR was disrupted due to the separation of the Czecho-Slovak Republic. Establishment of a new national system was imposed by government resolution No. 610/2009, which has designated responsibility for storing the captured contaminated radioactive materials within SR to SE - VYZ, while from 1 April 2006 the commitments were transferred to Nuclear and Decommissioning Company (JAVYS, a. s.).

The Government of the Slovak Republic by its Resolution No. 610 from 2 September 2009 approved the concept for institutional radioactive waste management and for captured radioactive materials and charged JAVYS, a. s., with constructing a facility for accepting, sorting and long-term safe storage of such materials. This facility will be constructed in the vicinity of the National Radwaste Repository Mochovce. Until this facility is available short term storage facilities were created at the Jaslovské Bohunice site for IRAW and ZRAM.

Disposable IRAW and ZRAM will be after treatment disposed at the existing repository at the Mochovce site. Non-disposable IRAW/ZRAM will be stored at the new storage facility at Mochovce site until suitable disposal facility will be available (e. g. geological disposal facility).

Facility for Radioactive Waste (RAW) Shipment

In order to ensure the concept of RAW and IRAW/ZRAM management, a transport system was established providing for shipments of:

- Solid and liquid RAW within Jaslovské Bohunice premises;
- Solid RAW between Jaslovské Bohunice – Mochovce sites,
- Institutional RAW and ZRAM from the whole territory of SR to Jaslovské Bohunice.

The shipment of RAW is performed in certified transportation equipment on means of transport meeting the conditions of the European Agreement on international carriage of dangerous goods (ADR), or the Regulation concerning international carriage of dangerous goods (RID), Act No. 541/2004 Coll. and the Decree of UJD SR No. 57/2006 Coll.

The shipment of RAW is arranged fully by JAVYS, a. s.

National Repository for Radwaste - RÚ RAW (operator JAVYS, a. s.)

The National Repository for Radioactive Waste is a near-surface type, designed for disposal of solid and solidified low activity RAW from operation and from decommissioning of nuclear installations.

The Repository site is located about 2 km northwest from NPP Mochovce site.

The basic safety requirement for a repository is that during its operation, period of institutional control and after its completion no leakage of radionuclides to the environment shall occur that would cause radiation exposure exceeding the values set by valid legal regulations.

The repository is built in a geological formation with low permeability and high sorption capacity. Artificial layer of compacted clay represents an additional barrier against radioactivity leakage. A drainage system mouthed into monitoring shafts, which enables to control eventual water leakages from each disposal box, is built between it and the disposal boxes. Other basic engineering barriers against leakage of radionuclides to the environment include concrete structure of the repository, fibre-concrete container and solidified form of radioactive waste.

The Repository is currently formed by a system of disposal boxes arranged into two double-rows, 40 boxes each. The capacity of one box is 90 fibre-concrete containers (VBK). The total capacity of

the Repository is 7 200 containers with a total volume of 22 320 m³. The inside volume of VBK is 3,1 m³. Compacted and bituminized wastes are fixed with active or non-active cement mixture.

License for operation of RU RAW was renewed by UJD SR Decision No. 490/2011 dated 26 August 2011 for another 10 years of operation under the following conditions (Note: In 2011 the amendment to the Atomic Act No. 541/2004 Coll. changed the license for operation of all nuclear installations to an unlimited period of time [before it was limited to 10 years]):

- Implementation of corrective actions identified during PSR,
- RAW to be disposed only in the first double row; disposing in the second double row to be started only after receiving favourable opinion of UJD SR,
- After reaching the expected load status in the first double row to submit a report to UJD SR comparing estimated values of settling subsoil with the measured results.

In 2014 a second double-row of disposal boxes was completed and put into operation, in order to smoothly continue disposing VBK with RAW. The third double row of disposal boxes is planned to be built in 2018.

The repository site allows for expansion up to 10 disposal double rows, i. e. for disposal of approx. 36 thousand VBK containing RAW, however, based on the latest data and the requirements for disposal of all low activity RAW from operation and from decommissioning present NPPs will be sufficient.

The first double-row is protected against meteorological influence by a hall, which ensures that the disposal area is covered during the whole process of disposal until the time when it is replaced with a final over-cover.

List and Description of Facilities in Decommissioning and Facilities for Radwaste (RAW) Management from Decommissioning, which are part thereof

NPP V1 Bohunice – In Decommissioning

Nuclear power plant V1 (NPP V1) is located in Jaslovské Bohunice site.

NPP V1 has 2 pressurized water reactors of WWER-440/230 type. NPP V1, Unit 1 was commissioned in December 1978 and Unit 2 in March 1980.

In accordance with the Government Resolution No. 809/1998 operation of Unit 1 was terminated by as at 31 December 2006 and the operation of Unit 2 by 31 December 2008.

After removal of the spent nuclear fuel from NPP V1 into the interim spent fuel storage (ISFS) and based on a positive opinion of the European Commission in accordance with Article 37 of the Euratom Treaty, license for the first phase of decommissioning of this power plant was issued.

UJD SR conditioned the license with conditions in the field of radioactive waste treatment, modifications in the operating regulations, etc.

The scope and timing of decommissioning is monitored and updated on a regular basis. In the I. phase the activities focusing on dismantling of components and removal of structures of the secondary circuit, i. e. outside the controlled zone of the nuclear power plant, which are not needed and are not suitable for any other purpose. At the same time preparatory works are being implemented for phase two for the period 2015 – 2025. The II. phase will include dismantling of components and structures of primary circuit of NPP located in the controlled zone, that means decommissioning of the nuclear island.

Currently there are 26 BIDSF projects completed and the implementation of another 16 projects is under way. There are 21 projects in a preparatory phase and another 12 projects are planned. JAVYS, a. s., after getting the decommissioning license, performs activities that represent irreversible modifications on the technology of the power plant, for example, modified systems of essential service water, dismantled diesel-generators, block and stub transformers, 220 kV switchyard, equipment in the machinery room of TG and the electrical buildings 110 kV switchyard modification, modification of systems of power supply for own consumption and relocation of systems for the needs of other NI crossing the premises of NPP V1.

NPP A1 Bohunice – In Decommissioning

Nuclear Power Plant A1 with heterogeneous reactor KS-150, was designed for electric output of 143 MW. Natural metal uranium was used as fuel, heavy water (D_2O) as moderator and carbon dioxide (CO_2) as coolant.

The A1 NPP was connected to the power distribution network in December 1972. After an operational accident in January 1976 the operation was restored, after another operational accident in February 1977 technical, economical and safety analyses were conducted and on the basis of their results, in 1979 the government decided by its Resolution No. 135/79 that the operation of NPP A1 would not be restored.

- Activities aimed at decommissioning of NPP A1 have commenced. Due to the absence of legal regulations for decommissioning of nuclear power plants at that time any partial issues were solved on a case-by-case basis and the individual activities were approved as modifications having impact on nuclear safety. The works concentrated on:
 - Removal of consequences of the operational event,
 - Preparation of fuel export to ZSSR/RF,
 - Development and subsequent implementation of RAW management technologies.

The first integrated documentation for decommissioning of NPP A1 was developed in 1992. The currently valid concept and the time schedule for decommissioning of NPP A1 was passed by the Government Resolution No. 227/92. Government Resolutions Nos. 266/93, 524/93, 877/94 and 649/95 approved this time schedule, including a comprehensive procedure. **Updated documentation for the initial stage of decommissioning** was elaborated during 1994 - 1996. Based on the Atomic Act No. 130/1998 Coll. after the assessment of the safety report elaborated in 1996 and after

completion of fuel preparation for export to the RF in 1999 UJD SR issued an authorization for the **first stage of decommissioning** (until 2007), i. e. to achieve the state declared in this documentation from the current base line:

- All spent fuel is removed from the long-term storage and media representing the highest potential risk are solidified or re-stored into new tanks,
- Majority of liquid operational RAW is conditioned in a form enabling safe disposal,
- Other RAW is treated into a form enabling safe disposal or their storage,
- Essential decontamination is performed aimed at further reduction of potential sources of RA material leakage.

Since in particular the implementation works showed significant time delays, either due to deficient inputs regarding estimates of RAW amounts and capacities of technologies for RAW management during its planning, due to failed solutions or due to putting the works aside on positions with lower priority, the scope of works of the first stage, on the basis of request from SE – VYZ, was revised by the Decision of UJD SR No. 144/2003, which indicated that not even in the prolonged deadline until the end of 2008 the basic activities focusing on safety improvement and reducing the risk level would not be completed and will have to be preferentially performed at the beginning of the next stage of decommissioning focusing on disassembly of external objects. In order to continue in the activities to improve safety and reduce the risks UJD SR Decision No. 337/2008 was issued, allowing continuation in the decommissioning activities until the time when the authorization for commencing the second stage is obtained.

On 18 June 2009 an authorization was issued by means of UJD SR Decision No. 178/2009 for the second stage of decommissioning of NPP A1 in accordance with the Plan for the Second Stage of Decommissioning of NPP A1, which enabled to continue with a continual alternative in the process of decommissioning of NPP A1. The following period was focused in particular on decommissioning of external objects of the nuclear installation of NPP A1, on the issue of handling contaminated soil and RAW management produced by the main generating Unit of NPP A1.

The current status of NPP A1 can be characterized as follows::

- Export of spent fuel to the Russian Federation was completed in 1999 (based on an inter-governmental treaty from 1956);
- Media for after-cooling of spent fuel were partially treated, and partially re-stored: chrompik (water solution of chromate and potassium bi-chromate) was vitrified or re-stored into new tanks, the sludge in enclosures (originally designed for after cooling of fuel cells) and on the bottom of the DS pool is solidified into geo-polymers, dowtherm (organic liquid mixture of biphenyl and biphenyl-oxide – originally the coolant for fuel cells) is gradually re-purified and incinerated. More than 99 % of water activity of the long-term storage pool was captured on special sorbents. Liquids from the long-term storage pool were processed by concentration on the evaporator. Bottom sediments are re-stored into a new re-storage tank of the reactor hall of NPP A1.

- Liquid operational waste (concentrates) were bituminized, liquid waste from decommissioning of NPP A1 and together with other waste from Jaslovské Bohunice site are gradually conditioned and disposed at the repository;
- Storage of solid RAW, object 44/20, was reconstructed, waste removed, sorted and stored in a controlled manner. Part of this waste was conditioned and disposed.
- The original, currently not operated storage tanks, object 41, represent the highest potential risk for the environment. Waste from this object located outside of reactor building was re-stored into tanks of object 44/10. Liquid RAW is gradually conditioned by concentration and cementation for the purpose of further conditioning and disposal.

Technological facilities with induced activity or with higher level contamination will be dismantled only in the following decommissioning stages.

Integrated Radwaste Storage Facility (Bohunice site)

The reason for constructing an Integrated Radwaste Storage Facility is to ensure storage of solid waste from decommissioning of nuclear installations (NPP A1 and NPP V1) conditioned with various technologies until they can be released into the environment, or transferred for permanent disposal at the National Radwaste Repository in Mochovce or stored for a longer period (70 years) until suitable disposal facility will be available (waste which for various reasons can't be disposed at the National Repository Mochovce) centralised. Collection of these wastes will allow for reliable protection of the environment, keeping their central register and exercising control. The Integrated Storage Facility is planned as detached building with a system of single-storey nave halls.

Integrated Quality Management System - IMS

IMS is implemented in accordance with the applicable national legislation, the IAEA documents No. GS-R-3 and IAEA No. GS-G-3.1, ISO 9001; ISO 14001, OHSAS 18001 and ISO/IEC20000-1 standards. Integrated management system of the operator is process oriented.

The effectiveness of the Integrated Management System is verified by:

- internal audits conducted within IMS for the fields of safety, quality, environmental protection, in a form of autonomous or combined internal audits,
- supervisory audits of external certificate companies, which have certified integrated management system and
- inspections conducted by the UJD SR.

Any findings identified during the audits, inspections and reviews are subject to analysis at the corresponding level of the top management. Based on analyses, remedial and preventive measures are taken; their implementation is controlled.

Funding of safe operation

One of the principles of nuclear and radiation safety of operators is the commitment to have necessary financial means to meet nuclear and radiation safety and to provide for continuous training and

improvement of qualification of the staff. In order to fulfil this commitment, financial strategies of companies were developed that would enable, among the tasks mentioned, also fulfilment of the program for technological development.

Financial strategy of the operators is defined as providing for funding operation and investment needs of the company by optimal utilization of own and external resources (see also Art. 9).

ART. 8 EXPERTISE AND SKILLS

Member States shall ensure that the national framework require all parties to make arrangements for education and training for their staff, as well as research and development activities to cover the needs of the national programme for spent fuel and radioactive waste management in order to obtain, maintain and to further develop necessary expertise and skills.

Expertise and skills

Quality of human resources represent the principal precondition for a safe, reliable, economical and environmentally friendly operation of nuclear installations. The term “quality of human resources” is understood as a set of professional, health-related and mental capacities of the staff to perform activities at nuclear installations. From the aspect of impacts of working activities on nuclear safety, the staff of the authorization holder is classified into two basic groups:

- Employees having direct impact on nuclear safety – licensed employees, whose special competence is verified by an exam (written exam, oral exam and verification of competences on a representative full-scale simulator) and a practical test for licensed employees before an examination commission established by UJD SR, which issues License of special competence (*currently this category is no longer in JAVYS, a. s.*);
- Employees with impact on nuclear safety – professionally competent employees, whose Professional competence was verified by a panel established by the operator of specialized facility in a form of written and oral exam and to whom Certificate of Professional competence has been issued.

Special competence of employees according to the Act No. 541/2004 Coll. on peaceful use of nuclear energy means a set of expertise, practical experience, principal attitudes and knowledge of generally binding legal regulations and operating procedures issued by the authorization holder to ensure nuclear safety that is necessary for performing work activities having direct impact on nuclear safety.

Professional competence means a complex of professional knowledge, practical experience, knowledge of generally binding legal regulations and operating procedures issued by the authorization holder, necessary to perform work activities by the employee of an authorization holder. Professional competence is acquired by successful completion of Professional training at a specialized facility.

The overall working (professional, health and mental) competency of staff to carry out working activities at nuclear installations is the responsibility of the authorization holder. The authorization holder authorizes his personnel to perform working activities. An “Authorization to Perform Working Activities” as part of the Integrated Management System (IMS) for quality assurance of a nuclear installation – an authorization holder. The Authorization to Perform Working Activities is issued for a given position and concrete nuclear installation only for those selected and professionally competent employees of the authorization holder, who have valid Licenses of Special Professional Competency

or Certificates of Professional Competency. The authorization is an evidence of working competency of an employee in relation to the regulatory authorities.

Each position within the system of professional training has defined requirements for education, experience, professional training, health or mental capabilities. The direct supervisor of the employee is responsible for meeting these requirements.

The professional training system of the authorization holder staff is updated on the base of operational experience, performed organizational changes, technical solutions (modernization) on installation, requirements of regulatory authorities, audits, reviews and recommendations of IAEA. It is provided for by necessary human, financial and material resources.

The professional training of the authorization holder staff and third parties (third parties represent contractors) is being conducted in accordance with documents of quality assurance management program, which is set up and maintained in accordance with:

- Generally binding legal regulations of the Slovak Republic;
- the IAEA standards, recommendations and guides;
- STN EN ISO 9001:2015, STN EN ISO 14001:2005 *and STN/ISO/IEC20000-1 series standards*;
- Management documentation in the Quality System.

Diagram of the system of staff training:



Fig. Chart of Professional training system for employees

With respect to impacts on nuclear safety, employees are allocated to the relevant type and phase of professional training and divided according to the performed working activities into six categories that are further subdivided into occupational groups and subgroups, following occupational orientation:

Category 1 - the selected personnel are the employees with university education who perform working activities with direct impact on nuclear safety (permanent crew of control room, shift supervisor, supervisory physicist, shift start-up engineer and senior start-up supervisor).

Category 2 - technical and administrative professionally competent employees of operation, maintenance and technical support departments with university education or secondary education

Category 3 - operating shift and operating professionally competent staff, including employees involved in maintenance activities at technological facility with impact on nuclear safety.

Category 4 - professionally competent maintenance employees (except for engineers) – employees involved in maintenance activities at technological facility with impact on nuclear safety.

Category 5 - professionally competent employees in charge of NI decommissioning and handling RAW and spent nuclear fuel with impact on nuclear safety.

Category 6 - other employees assigned to professional training on NI.

JAVYS, a. s. only has categories 5 and 6.

Operator of specialized facility

Professional education and training of employees of authorization holder, as well as of employees of contractors, is carried out at the operator of a specialized facility, who is a holder of authorization for professional training issued by UJD SR upon written application after reviewing the technical equipment used during the training and professional competency of applicant's employees. *The practical exercise (internship and on-the-job training) is carried out within the premises of the operator on the basis of licence from UJD SR for professional staff training.* Professional training is carried out in compliance with the UJD SR decree No. 52/2006 Coll. on professional competence and with the approved system of professional training according to the training programs.

Regulatory Body

UJD SR approves and *evaluates* the annual training program for its employees. In addition, UJD SR has a training software at its disposal, LMS i-Tutor, which includes a training and testing *module according to the demands and requirements for training*. The system is on the office server and each employee has its own access code. Employees can thus deepen their knowledge of general overview (legislation, international relations, etc.) as well as their own specialization (*operation, decommissioning, radioactive waste management, emergency planning, etc.*). This is a form of e-learning (*Computer Based Training*) for employees as self-study.

ART. 9 FINANCIAL RESOURCES

Member States shall ensure that the national framework require that adequate financial resources be available when needed for the implementation of national programmes referred to in Article 11, especially for the management of spent fuel and radioactive waste, taking due account of the responsibility of spent fuel and radioactive waste generators.

Financing RAW, SNF Management and Decommissioning of Nuclear Installations

The Act No. 238/2006 Coll. on National Nuclear Fund for Decommissioning of Nuclear Installation and for Management of Spent Nuclear Fuel and Radioactive Waste (Act on Nuclear Fund) sets rules for management, contributions and the scope of activity of the Fund for Decommissioning of Nuclear Facilities.

The purpose of establishment and activity of the National Nuclear Fund is to collect and administer financial resources (resources of the Fund) determined for the back-end of nuclear energy and grant these resources in sufficient amount in a transparent and non-discriminatory manner to the applicants for covering of lawful expenses incurred in connection with activities related to the back-end of nuclear energy under conditions mentioned in the Act and in compliance with Slovakia's commitments resulting from the Joint Convention.

The Fund resources are funds paid as:

- a) obligatory contributions of the authorization holders for operation of nuclear installations generating power,
- b) transfer from the budgetary expenditure account of the Ministry of Economy of the SR as a levy is collected by the system operators (transmission system and distribution systems),
- c) penalties imposed by UJD SR according to a specific legal provision,
- d) interest payments (revenues) from deposits on nuclear fund accounts,
- e) voluntary contributions from natural and legal entities,
- f) subsidies and contributions from the EU funds and other international organizations, financial institutions and funds provided to cover the expenses of back-end nuclear energy,
- g) subsidies from the state budget,
- h) revenues from financial operations,
- i) other resources, if required by a special regulation,
- j) fees from the applicants for issuing permit for activities leading to exposure by a radioactive source represent a financial guarantee.

Currently among the basic (majority) resources of the Fund are the mandatory contributions by the operators of nuclear installations generating electricity, and by Government regulation No. 426/2010 Coll. from 1 January 2011 also the transfer from the budgetary expenditure account of the Ministry of Economy of SR as levies collected by the operators of the transmission system and the distribution systems. Drawing of funds collected according to the mentioned Government Ordinance

was possible only after it was approved by the European Commission by a decision dated 20 February 2013.

The Fund forms targeted sub-accounts from the obtained resources, structured in the following way:

- a) sub-account for decommissioning of nuclear installations operated at the Jaslovské Bohunice site including the management of radioactive waste from their decommissioning, structured as analytical accounts:
 - 1. Nuclear power plant A1,
 - 2. Nuclear power plant V1,
 - 3. Nuclear power plant V2,
- b) sub-account for decommissioning of NPP Mochovce including the management of radioactive waste from its decommissioning,
- c) sub-account for decommissioning of nuclear installations, which will be commissioned after the entry in force of the Act on Nuclear Fund, including the management of radioactive waste from their decommissioning,
- d) sub-account for management of orphan nuclear materials and radioactive waste,
- e) sub-account for siting, geological research, preparation, design, construction, commissioning, operation and closure of radioactive waste or spent fuel repositories including monitoring after the closure of these repositories and including respective research and development,
- f) sub-account for institutional inspection of repositories,
- g) sub-account for storage of nuclear spent fuel at the nuclear installations themselves,
- h) sub-account for reimbursement of expenses determined for administration of the Fund and expenses related to the administration of the Fund,
- i) sub-account for reimbursement of expenses for the management of institutional radioactive waste.

Resources of the Fund are kept on individual sub-accounts and on individual analytical accounts proportionally in relation to the amount of contributions paid by respective authorization holders for operation of nuclear installations generating power, or on the amount of transfer from the budgetary expenditure account of the Ministry of Economy.

Financial means from the Fund are granted upon application for grant of financial means. The applicant can be authorization holder for operation, operation termination, decommissioning, for repository closure and institutional inspection, for radioactive waste and spent nuclear fuel management, for nuclear materials management in the nuclear installation or outside of it or authorization holder for export of nuclear materials or for shipment of radioactive materials including transboundary movement.

Resources of the Fund can be used for reimbursement of legitimate expenses spent on activities related to the back-end of nuclear energy stated in the Act. The means of the Nuclear Fund can be granted to the applicants as targeted subsidies based on a written application with design and technical and economical justification. Financial resources can be granted only upon compliance with

conditions defined by the Act No. 238/2006 Coll. and after the approval of the Board of Trustees of the Fund. After their approval, the resources from the Fund are granted upon contracts on granting financial means.

Financial means of the Nuclear Fund can be used for:

- a) shutdown of nuclear installation,
- b) decommissioning of nuclear installations including management of radioactive waste from this decommissioning,
- c) management of spent nuclear fuel and radioactive waste after termination of operation of originating nuclear installation,
- d) management of nuclear materials and radioactive waste, whose originator is unknown,
- e) purchase of land for placing a spent nuclear fuel and radioactive waste repository,
- f) prospecting, geological survey, preparation, design, construction, commissioning, operation and closure of repositories,
- g) administration and activities relating to Fund administration,
- h) payment of insurance for liability of the operator of nuclear installation, which is in decommissioning,
- i) back-end of management of institutional radioactive waste and for activities related to it up to the amount of contribution paid as financial guarantee.

Units of NPP V1 were shutdown in 2006 and 2008. Costs for shut down and decommissioning of NPP V1 are financed from the following resources:

- from resources of SE, a. s. and JAVYS, a. s., during shut down;
- from the BIDSF funds. When SR acceded to the EU the Bohunice International Decommissioning Support Fund – BIDSF was established, through which the EÚ, in the budgeting period 2007 – 2013 and 2014 - 2020, provides financial resources in order to mitigate the economical impacts of the early shutdown of NPP V1. The MH SR decides about the use of these funds to finance various national projects in the energy sector, besides other also preparation of decommissioning of NPP V1 itself (modifications to the technological systems related to shutdown and decommissioning of NPP V1, licence documentation, conditioning and disposal of RAW and decommissioning activities of NPP V1), improving energy efficiency, modifications in the overhead transmission system focusing on safety and reliability of power supplies. Currently NPP V1 draws these funds through approx. 50 separate or interlinked projects, the number of which may increase further proportionally to the progressing works of the decommissioning itself;
- from resources of the Nuclear Fund on the basis of approved applications and other activities that are eligible under Act No. 238/2006 Coll.

SNF storage costs are paid by the operator of NPP (poluter) based on contract between SE, a. s. and JAVYS, a. s.

ART. 10 TRANSPARENCY

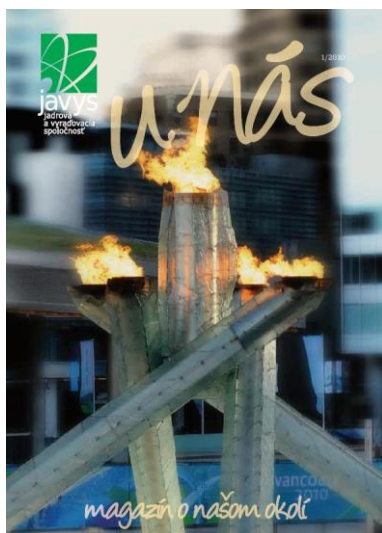
1. *Member States shall ensure that necessary information on the management of spent fuel and radioactive waste be made available to workers and the general public. This obligation includes ensuring that the competent regulatory authority informs the public in the fields of its competence. Information shall be made available to the public in accordance with national legislation and international obligations, provided that this does not jeopardise other interests such as, inter alia, security, recognised in national legislation or international obligations.*
2. *Member States shall ensure that the public be given the necessary opportunities to participate effectively in the decision- making process regarding spent fuel and radioactive waste management in accordance with national legislation and international obligations.*

The access to information is guaranteed by the Constitution and by other documents on human rights since the beginning of 90-ties. The Act No. 211/2000 Coll. (Act on Free Access to Information) ensures the access of the public to information. This Act together with the Act No. 541/2004 Coll. (the Atomic Act) and Act No. 24/2006 Coll. (Act on Environmental Impact Assessment) form the legislative framework for communication with the public in the field of nuclear energy. Pursuant to the Act of NC SR No. 541/2004 Coll. (section 27, par. 4) the operator is obliged to inform UJD SR on events in the operated nuclear installations and in case of incident or accident in accordance with section 28 par. 3 of the law, he must also inform the public. Among the obligations of the holder of authorization, according to the Atomic Act (Section 10, par 1, letter m), is to inform the public also about assessment of nuclear safety at nuclear installations.

Act No. 24/2006 Coll. on Environmental Impacts Assessment transposes the Directive of the European Parliament and the Council 2011/92/EU on the assessment of the effects of certain public and private projects on the environment, as well as the Aarhus Convention. The operation, safety improvements at NIs at Bohunice V2 and Mochovce, as well as construction of Units 3&4 in Mochovce, influenced the life in those regions significantly, which has required necessary communication with the regions in the vicinity of NIs, as well as on a national level. Transparent information on all aspects of construction, operation and decommissioning and disclosure of publicly available information channels has become an integral part of an open policy of operator and regulators. Among the most significant communication channels are:

- Information Centres at Mochovce and Bohunice + field trips directly in the nuclear installations. Every year Bohunice and Mochovce plants are visited by 12 to 15 thousand visitors from across the SR and from abroad + external lectures for schools,
- Monthly magazine “atóm.sk” distributed free of charge in the regions of Mochovce and Bohunice and other printed materials (information brochures and leaflets at the Info-centres and on the web sites of operators), where information is made accessible in a comprehensible form,
 - Web sites of the operators – www.seas.sk, www.javys.sk, and the regulatory authority UJD SR – www.ujd.gov.sk.

- Civil Information Commissions (hereafter only as CIC) Mochovce and Bohunice, consisting of elected and other representatives of the regional public. Members of CIC hold regular meetings with the management of operators and thus they are getting qualified firsthand information,
- Regional associations of towns and municipalities, which also communicate and solve their problems in conjunction with the NI operators in the given region,
- Programs of local sponsorship of operators assisting in areas, which need it the most and which bring win-win benefits (education, medical services and charity, culture, sports, environment),
- Open Plant for the staff and the public organized every year in each NIs,
- Other: seminars for journalists, mayors and representatives of self-government; press conferences and briefings at significant events, press releases for the media, active participation at national and foreign exhibitions, conferences, etc.



UJD SR provides information upon request and at the same time is active in disclosing information on the condition of nuclear installations in SR and on its activity as a regulatory body, by which it allows to the public and the mass-media to check the data and information on nuclear installations, as well as on UJD SR. The web site of the authority (www.ujd.gov.sk) besides the above mentioned information discloses also the initiated, ongoing and completed administrative proceedings according to the Act No. 71/1967 Coll. on administrative proceedings as amended, as well as decisions issued by UJD SR in full together with the rationale.

UJD SR has competencies in the field of public information regarding nuclear safety and monitors other media sources with the aim to obtain the necessary overview on the information policy of the given entity. UJD SR is a regulatory body, which independently from operators of nuclear installations provides information on nuclear safety of nuclear installations including information on the safety of radioactive waste, spent nuclear fuel management, nuclear materials, their control and record keeping, as well as information on other stages of fuel cycle.

Every year, in accordance with the Atomic Act, UJD SR prepares an Activity Report on the results of activities of UJD SR and on safety of nuclear installations for the past year, which is submitted to the Government and to the National Council. In addition an Annual Report is published in Slovak-English version, which is distributed to libraries, to the ministries, to other bodies of state administration, to state organizations, to the embassies of foreign countries in Slovakia, the embassies of SR abroad, foreign regulatory bodies, international and other organizations and schools.

UJD SR places extraordinary emphasis on communication with the public in the region with nuclear installations, striving for continuous improvements in a form of cooperation with Civic Information Commission, the representatives of municipalities, as well as by distribution of information materials, such as annual reports, leaflets and by making contributions to the regional press and TV.

In cooperation with Civic Information Commission or with the municipalities discussions are being organized with the public both on nuclear safety, as well as radioactive waste management.

Every year UJD SR sends contributions on its domestic and foreign activities to the press agencies of SR, to the daily papers and to electronic media and organizes press conferences for the journalists. UJD SR together with the State Authority for Nuclear Safety of the Czech Republic (SÚJB) is a publisher of a "Safety of Nuclear Energy Sector" journal focusing on presenting the latest knowledge in the field of nuclear safety in SR and in CR.

With regard to emergency preparedness the district offices and the municipalities according to the Act No. 42/1004 Coll. on civil protection of the public publish information for the public on the web site or on a public information board, while there is a 30 days period, during which the affected public may file comments. Justified comments are adequately taken into account when developing a public protection plan. Information are reviewed and updated as needed; they are published in the updated form at least once in three years. Information for the public include in particular information on the source of threat, information on the possible extent of an extraordinary event and consequences on the affected area and on the environment, hazardous properties and identification of substances and preparations that may cause an incident, information about the method of warning the public and on rescue works, tasks and measures after an extraordinary event, details on where to obtain further information relating to the public protection plan. Bodies of state administration and of self-government publish manuals for the public containing advice for the public, the aim of which is to provide as much information as possible on how to proceed and how to behave in case of natural disasters, accidents or disasters. Since 1999 the Ministry of Interior of the Slovak Republic has been publishing a non – fiction periodical, Civil protection, a review for the civil protection of the public. It is addressed to all those, who are actively involved in fulfilment of tasks resulting from Act No. 42/1994 Coll., but also to all readers, who are interested in the issues of civil protection. In the individual categories the review brings up-to-date information, publishes methodological inserts dedicated to practical fulfilment of tasks of civil protection, etc. Separate room is given also to the self-government.



Fig. Open Plant in NPP Mochovce

Following the amendment of the Act No. 24/2006 Coll., in 2010 and in 2014 the term “public” was broadened in such a way that it includes any natural or legal person or their organizations and groups. The public concerned is the public that is affected or likely to be affected by the given proceeding. Sections 24 and 25 govern the public participation and of the public concerned in the proceedings pursuant to the EIA law, including ensuring participation in the licensing procedure, which follows and which is governed by special regulations. The public is informed of the proceedings through a website of the competent authority. The public concerned has a status of a party in the screening procedure and in the procedure of environmental impacts assessment and consequently a status of a party in the licensing procedure regardless of its legal interest in the matter.

The public concerned is the public affected or likely to be affected by the given proceedings concerning the environment or is interested in such proceedings.

The law regulates public participation and participation of the public concerned in the proceedings including ensuring participation in the licensing procedure.

The public concerned has the status of a party in the screening procedure and in procedures for assessing the environmental impacts and consequently the status of a party in the licensing procedure regardless of its legal interest in the matter.

The public is informed of the proceedings through the web site of the competent authority. The public has a right to express an interest in the proposed activity by filing a written opinion or comments, as well as the right to appeal, for example against the final opinion issued by MŽP SR.

Subsequently the public may participate and file an appeal also in the subsequent licensing procedure under the Atomic Act.

ART. 11 NATIONAL PROGRAMMES

1. *Each Member State shall ensure the implementation of its national programme for the management of spent fuel and radioactive waste ('national programme'), covering all types of spent fuel and radioactive waste under its jurisdiction and all stages of spent fuel and radioactive waste management from generation to disposal.*
2. *Each Member State shall regularly review and update its national programme, taking into account technical and scientific progress as appropriate as well as recommendations, lessons learned and good practices from peer reviews.*

ART. 12 CONTENTS OF NATIONAL PROGRAMMES

1. *The national programmes shall set out how the Member States intend to implement their national policies referred to in Article 4 for the responsible and safe management of spent fuel and radioactive waste to secure the aims of this Directive, and shall include all of the following:*
 - a) *the overall objectives of the Member State's national policy in respect of spent fuel and radioactive waste management;*
 - b) *the significant milestones and clear timeframes for the achievement of those milestones in light of the over-arching objectives of the national programme;*
 - c) *an inventory of all spent fuel and radioactive waste and estimates for future quantities, including those from decommissioning, clearly indicating the location and amount of the radioactive waste and spent fuel in accordance with appropriate classification of the radioactive waste;*
 - d) *the concepts or plans and technical solutions for spent fuel and radioactive waste management from generation to disposal;*
 - e) *the concepts or plans for the post-closure period of a disposal facility's lifetime, including the period during which appropriate controls are retained and the means to be employed to preserve knowledge of that facility in the longer term;*
 - f) *the research, development and demonstration activities that are needed in order to implement solutions for the management of spent fuel and radioactive waste;*
 - g) *the responsibility for the implementation of the national programme and the key performance indicators to monitor progress towards implementation;*
 - h) *an assessment of the national programme costs and the underlying basis and hypotheses for that assessment, which must include a profile over time;*
 - i) *the financing scheme(s) in force;*
 - j) *a transparency policy or process as referred to in Article 10;*
 - k) *if any, the agreement(s) concluded with a Member State or a third country on management of spent fuel or radioactive waste, including on the use of disposal facilities.*

2. *The national programme together with the national policy may be contained in a single document or in a number of documents.*

National Programme (historical overview)

The Slovak Government approved the “Strategy for the back-end of the nuclear energy in SR” by its Resolution No. 328 at its session held on 21 May 2008.

Provisions of Section 3 par. 2 sub-par. d) of the Act No. 238 on the NNF requires the Board of Trustees of NNF to submit a draft Strategy update to the Ministry of Economy every five years.

The updated document was made public on the web pages of the MŽP SR, MH SR and the NNF (including in mass media) in late 2012. The above mentioned web sites published the entire updated “Strategy for the back-end of peaceful uses of nuclear energy in the Slovak Republic”.

During the screening procedure no comments have been delivered on the Notice of a strategic document having national importance: The “Strategy for the back-end of peaceful uses of nuclear energy in the Slovak Republic”. The public did not comment during the screening procedure specifically. A public hearing was held on 22 January 2013.

The Strategy for the back-end of peaceful uses of nuclear energy in the Slovak Republic was approved by the Government by its resolution No. 26/2014.

Following the publication of the Council Directive 2011/70/Euratom establishing a Community framework for the responsible and safe management of spent fuel and radioactive waste and its transposition by the Act No. 143/2013 Coll. the Board of Trustees of NNF decided to prepare an update of the document “Strategy for the back-end of peaceful uses of nuclear energy in the Slovak Republic”.

The Ministry of Economy, in cooperation with the Ministry of Environment according to the Act No. 24/2006 Coll. and after the completion of the screening procedure issued a decision that the update of the “Strategy for the back-end of peaceful uses of nuclear energy in the Slovak Republic” shall no longer be reviewed according to the Act No. 24/2006 Coll. on environmental impact assessment.

The updated “Strategy for the back-end of peaceful uses of nuclear energy in the Slovak Republic” according to the Act No. 143/2013 Coll. (transposing Directive No. 2011/70/Euratom) was approved by the Government resolution No. 387/2015 entitled National Policy and the National Programme which replaced the previously valid “Strategy for the back-end of peaceful uses of nuclear energy in the Slovak Republic”.

The National Programme for management of SNF and RAW is based on the documents:

- the National Policy for the management of SNF and RAW,
- the “Strategy for the back-end of peaceful uses of nuclear energy in the Slovak Republic” approved by the Government Resolution No. 26/2014,

- Supporting documentation submitted by the license holders for the management of SNF and RAW and decommissioning of NIs.

Contents of National Programme

The document “National Programme for management of spent nuclear fuel and radioactive waste” (www.economy.gov.sk) contains, inter alia the following objectives (targets):

1. Decommissioning of nuclear installations
2. Spent nuclear fuel and radioactive waste management
3. Access to repositories of radioactive waste and spent nuclear fuel after their closure
4. The need for research, development and demonstration activities
5. Responsibilities, monitoring implementation
6. The cost plan for decommissioning, management, financing scheme
7. Transparency – public information
8. International treaties on the management of spent nuclear fuel and radioactive waste
9. Projected impacts of contributions and levies on electricity prices, prices of other goods and services on the economic and social development of the State
10. Projected impacts of contributions and levies to the competitiveness of electricity producers in nuclear installations on the electricity market in Slovakia, internal electricity market of the EU
11. The impact of the national programme on balance and operational reliability of the energy system of the Slovak Republic in the EU
12. Opinions of state administration authorities in the field of public health in terms of radiation protection and health protection, and the opinion of MŽP SR in terms of impacts of programme implementation on the environment

Significant targets and the timeframes for achieving these targets with regard to the general objectives of the national programmes

Background

The targets are determined primarily on the historical development which can be summarized as follows:

- Since 1999 ongoing decommissioning of NPP A1 with the need to resolve management of atypical radioactive waste, which due to their content of long-lived radionuclides and higher levels of other safety significant radionuclides cannot be disposed in the existing National Repository;
- NPP V1 has been in decommissioning since 2011;

- Available RAW repository, where disposable very low level and low-level operational RAW from the VVER power plants and disposable waste from their decommissioning can be disposed, when considering the planned operating life;
- No deep disposal repository available for disposal of SNF, as well as intermediate level of RAW and high-level RAW,
- Centralized collection of institutional RAW started to operate; most of them are disposable in the National Repository in Mochovce,
- Sufficient technological base is in operation for treatment and conditioning of radioactive waste,
- Spent fuel is stored in the Interim Storage Facility for SNF. The capacity of the Interim Storage for SNF is currently not sufficient to store all SNF (its capacity will be sufficient until 2023 – 2024). Due to lack of capacity of the Interim Storage for SNF it will be necessary to build and put into operation new storage capacities for SNF,
- The operator of nuclear power plants declared his intent to operate the existing NPPs for a period of 60 years;
- Due to the fact that the development and a deep geological repository has been suspended for 12 years; mainly the outputs regarding selection of the repository site would be useful,
- After its establishment, JAVYS, a. s. became responsible for activities that should lead to implementation of a deep geological repository,
- The preparatory phase of the project for a new nuclear power plant is ongoing in the Jaslovské Bohunice site and the operation of a new NPP being connected to the grid is considered in the horizon of 2029 and a period of operation of 60 years;
- The whole issue of the back-end of peaceful uses of nuclear energy is currently sufficiently covered by legislation.

Significant milestones and the timeframes for their achievement are shown in the Table below:

No.	Measure	Deadline	Responsible
For the area of infrastructure and legislation			
1.	Amend the law on the National Nuclear Fund in a principal manner and other related pieces of legislation, in order to: <ul style="list-style-type: none"> - Ensure that the State assumed responsibility for decommissioning, management of RAW from decommissioning and for the long-term storage of SNF, - Ensure that the amendment introduced a secure way of transferring nuclear facilities by the operator to the organization entrusted by the State for decommissioning, - Ensure that the level of contributions and payments to the NNF is determined by an independent body (NNF) under the rules specified by the legislation, - Ensure that the recipient of NNF funds submitted to NNF eligible costs within the scope and dates given by the legislation, - Ensure that the scope and the structure of eligible costs for activities of back-end of nuclear energy cycle is defined by the legislation, - Ensure that also the operator of non-reactor nuclear facilities makes payments to NNF in order to finance their decommissioning. 	2016	MH SR
In the field of decommissioning of nuclear installations			
2.	Finalize stage II of NPP A1 decommissioning	2016	JAVYS, a.s.
3.	Implement the next stages of NPP A1 decommissioning	2033	JAVYS, a.s.
4.	Implement stage II of NPP V1 decommissioning	2025	JAVYS, a.s.
5.	Utilize funding from the BIDSF in a maximal extent for projects of decommissioning NPP V1	2025	JAVYS, a.s.
6.	Prepare decommissioning of other NIs	permanent	JAVYS, a.s. SE, a.s.
In the field of radioactive waste and spent fuel management in general			
7.	Build and put into operation an Integrated RAW storage facility in Jaslovske Bohunice	2018	JAVYS, a.s.
8.	Build new storage capacities for SNF	2020	JAVYS, a.s.
9.	Create a database of all radioactive waste from nuclear facilities in SR and ensure its continuous update	2016	JAVYS, a.s. in cooperation with MH SR and competent regul.bodies
10.	Build a facility for remelt of metal radioactive waste	2018	JAVYS, a.s.
11.	Build and put into operation a facility for IRAW and ZRAM management	2016	JAVYS, a.s.
In the field of radioactive waste and spent nuclear fuel disposal			
12.	Build a repository for very low-level waste	2018	JAVYS, a.s.
13.	Build additional storage structure after filling the second double row at the National RAW Repository	2018	JAVYS, a.s.
14.	Take a decision to continue or stop the double path in development of deep geological disposal – to comprehensively assess the idea of shared international deep repository	2020	MH SR
15.	Develop a plan for next stages of renewed development of deep geological disposal	2016	JAVYS, a.s.
16.	Decision on siting the deep geological repository of SR (in case of cancelling the dual path)	2030	JAVYS, a.s.
17.	Putting the deep geological repository in operation	≈ 2065	JAVYS, a.s.

No.	Measure	Deadline	Responsible
In the field of Research and Development			
18.	Develop a framework programme for R&D in the field of deep geological disposal and create internal conditions for its implementation	2018	JAVYS, a.s.
In the field of transparency			
19.	Create and prepare the implementation of a system of economic stimulus for sites affected by the development and operation of repositories Focus only on economic stimulus of sites is not sufficient. There should be a system for informing and working with the public in long-term.	2018	MH SR JAVYS, a.s. National Nuclear Fund

Development of a Deep Geological Repository

Directive 2011/70/Euratom recommends that each EU State with a nuclear programme had a comprehensive vision and plans for disposing all types of RAW and SNF, which are produced in the given State, including the creation of resources for implementation. The present document established for disposal of SNF and RAW not disposable in the National Repository this double path:

- Disposal in a deep geological repository in Slovakia,
- Monitoring and support for building an international repository.

Sub-activities:

1. Development and preparation of a deep geological repository built in the SR.
2. Ensure and guarantee professional and safe solution of a deep geological repository:
 - Characterization of the geological properties of selected sites,
 - Development of geological models of selected sites,
 - Directing geological works to select a suitable site,
 - Providing important geological information for solving safety analyses.
3. Cooperation in development of an international repository, if the international repository is feasible, involvement in implementation of international scientific and research projects.
4. When updating this programme to evaluate the development of an international repository and based on the evolution to decide whether the Slovak Republic will continue in the cooperation on the international repository.

Public Participation

- Ensure public information in the field of RAW and SNF management and to ensure public participation in the decision-making process in accordance with applicable legislation.
- Create and prepare the implementation of a system of economic stimulus for sites affected by the development and operation of repositories.

ANNEXES

- I. List of Nuclear Facilities for Spent Nuclear Fuel (SNF) and Radioactive Waste (RAW) Management
- II. Matrix
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Annex I. List of Nuclear Facilities for Spent Nuclear Fuel and Radioactive Waste (RAW) Management

Slovenské elektrárne, a. s. (SE, a. s.) operates:

- Nuclear Power Plants Bohunice, SE – EBO plant NPP V2 - Units 3&4
- Nuclear Power Plants Mochovce, SE- EMO plant Units 1&2

Jadrová a vyraďovacia spoločnosť, a. s., (JAVYS, a. s.) operates:

- Interim Spent Fuel storage at Jaslovské Bohunice
- Technologies for RAW treatment and conditioning at Jaslovské Bohunice
- National RAW Repository Mochovce
- Final treatment of liquid RAW Mochovce
- Nuclear Power Plant A1 (incl. Technology for RAW management from this NPP installed within its premises),
- Nuclear Power Plant V1 - Units 1 and 2.

Annex II. Matrix

Type of Liability	Long term Management Policy	Funding of Liabilities	Current Practice / Facilities	Planned Facilities
Spent Fuel	Geological disposal or multilat. solution	National Nuclear Fund	Long term storage	Geological Disposal
Nuclear Fuel Cycle Waste	Geological / surface disposal	National Nuclear Fund	Disposal of LLW	Geological disposal for HLW
Application Wastes	Under approval	Re-export or financial guarantee	Storage	Disposal (with some exceptions)
Decommissioning Liabilities	Immediate decommissioning	National Nuclear Fund	Immediate decommissioning	Low active soil and concrete debris dispos. facility
Disused Sealed Sources	Disposal	Re-export or financial guarantee	Storage	Disposal (with some exceptions)

Annex III. Inventory of Stored Spent Nuclear Fuel (t TĚK) (as at 31 December 2014)

In the Interim Spent Fuel Storage of JAVYS, a. s., there were 11,285 SNF assemblies. *The maximal design storage capacity of ISFS 14,112 of SNF has been used up to 79.97 %.*

In the pools at reactors that are operated by SE, a. s. there were 1,259 of SNF assemblies.

Annex IV. Inventory of stored RAW by UJD SR Decree No. 30/2012 Coll., resp. by IAEA Safety Guide GSC-1

Criteria Used to Define and Classify Waste

According to the Act No. 541/2004 Coll. (Atomic act) radioactive waste shall mean any unusable material in gaseous, liquid or solid form, which due to the content of radio-nuclides or due to the level of their contamination with radionuclides cannot be released into the environment.

Classification of radioactive waste is based on their ability to be disposed and is defined in Section 5 of Decree of UJD SR No. 30/2012 Coll., setting the details of requirements for handling nuclear materials, radioactive waste and spent nuclear fuel. According to this Decree Radwaste is divided *by activity* into the following categories: (by IAEA Safety Guide „Classification of GSC-1).

Occupational exposure limits allowing release into the environment of individual radionuclides are listed in Annex 3 of the Government Regulation No. 345/2006 Coll. on Basic safety requirements for health protection of workers and the population from ionizing radiation.

Transposition table for the types of Radioactive Waste			
UJD SR Decree No. 30/2012 Coll.	IAEA Safety Guide GSC-1	m ³	kg
	Exempt waste (EW): Waste that meets the criteria for clearance, exemption or exclusion from regulatory control for radiation protection purposes as described in Ref. [6].		
Transient radioactive wastes whose activity falls below the limit value for their introduction to the environment during storage;	Very short lived waste (VSLW): Waste that can be stored for decay over a limited period of up to a few years and subsequently cleared from regulatory control according to arrangements approved by the regulatory body, for uncontrolled disposal, use or discharge. This class includes waste containing primarily radionuclides with very short half-lives often used for research and medical purposes.		Solid RAW 6 495

<p><i>Very low-activity radioactive waste, whose activity is slightly higher than the limit value for their introduction to the environment, contain mainly radionuclides with a short half-life, or also a low concentration of radionuclides with a long half-life, and which during storage require a lower degree of isolation from the environment through a system of engineered barriers, as in the case of surface-type radioactive waste repositories;</i></p>	<p>Very low level waste (VLLW): Waste that does not necessarily meet the criteria of EW, but that does not need a high level of containment and isolation and, therefore, is suitable for disposal in near surface landfill type facilities with limited regulatory control. Such landfill type facilities may also contain other hazardous waste. Typical waste in this class includes soil and rubble with low levels of activity concentration. Concentrations of longer lived radionuclides in VLLW are generally very limited.</p>		<p><i>Solid RAW</i></p> <p>7 043 400</p>
<p>Low-activity radioactive waste, whose average specific activity of radionuclides with a long half-life, especially radionuclides emitting alpha radiation, is less than 400 Bq/g, maximum specific activity of radionuclides with a long half-life, especially radionuclides emitting alpha radiation, is locally less than 4000 Bq/g, does not produce residual heat, and following treatment meet safe operating limits and conditions for surface-type radioactive waste repositories;</p>	<p>Low level waste (LLW): Waste that is above clearance levels, but with limited amounts of long lived radionuclides. Such waste requires robust isolation and containment for periods of up to a few hundred years and is suitable for disposal in engineered near surface facilities. This class covers a very broad range of waste. LLW may include short lived radionuclides at higher levels of activity concentration, and also long lived radionuclides, but only at relatively low levels of activity concentration.</p>	<p><i>Liquid RAW</i></p> <p>721,05</p>	<p><i>Solid RAW</i></p> <p>9 895,175</p>
<p>Medium-activity radioactive waste, whose average specific activity of radionuclides with a long half-life, especially radionuclides emitting alpha radiation, is equal to or over 400 Bq/g,</p>	<p>Intermediate level waste (ILW): Waste that, because of its content, particularly of long lived radionuclides, requires a greater degree of containment and isolation than that provided by near surface disposal. However, ILW needs no</p>	<p><i>Liquid RAW</i></p> <p>13,5</p>	<p><i>Solid RAW</i></p> <p>31 638</p>

<p>may produce residual heat and measures for its removal are less than in the case of highly active radioactive waste, and which following treatment do not meet safe operating limits and conditions for surface-type radioactive waste repositories;</p>	<p>provision, or only limited provision, for heat dissipation during its storage and disposal. ILW may contain long lived radionuclides, in particular, alpha emitting radionuclides that will not decay to a level of activity concentration acceptable for near surface disposal during the time for which institutional controls can be relied upon. Therefore, waste in this class requires disposal at greater depths, of the order of tens of metres to a few hundred metres.</p>		
<p>Highly-active radioactive waste, whose average specific activity of radionuclides with a long half-life, especially radionuclides emitting alpha radiation, exceeds values specified for low-activity radioactive waste requiring measures for the removal of residual heat and can be deposited only in an underground-type radioactive waste repository.</p>	<p>High level waste (HLW): Waste with levels of activity concentration high enough to generate significant quantities of heat by the radioactive decay process or waste with large amounts of long lived radionuclides that need to be considered in the design of a disposal facility for such waste. Disposal in deep, stable geological formations usually several hundred metres or more below the surface is the generally recognized option for disposal of HLW.</p>		

Currently spent nuclear fuel is not considered as high-level radioactive waste.

Annex V. List of Selected National Laws and implementing legal regulations

- Act No. 71/1967 Coll. on Administrative Procedure – the latest amendment as Act No. 204/2011 Coll.
- Act of NC SR No. 50/1976 Coll. on land use planning and the building code (the Building Act) – the latest amendment as Act No. 394/2014 Coll.
- Act of NC SR No. 42/1994 Coll. on civil protection of the population – the latest amendment as Act No. 345/2012 Coll.
- Act of NC SR No. 264/1999 Coll. on technical requirements for products and on conformity assessment and on amendments and complements to certain laws – the latest amendment as Act No. 133/2013 Coll.
- Act of NC SR No. 575/2001 Coll. on organization of government activities and on organization of the central state administration – the latest amendment as Act No. 335/2014 Coll.
- Act No. 215/2004 Coll. on protection of classified information and on amendments to certain laws – the latest amendment as Act No. 362/2014 Coll.
- Act No. 220/2004 Coll. on protection and utilization of agricultural land and on amendment to Act No. 245/2003 Coll. on integrated prevention and on environmental pollution control and on amendments to certain laws as amended – last amendment, Act No. 34/2014 Coll.
- Act of NC SR No. 541/2004 Coll. on peaceful use of nuclear energy (the Atomic Act) and on amendments and complements to certain laws – the latest amendment as Act No. 54/2015 Coll.
- Act No. 54/2015 Coll. on civil liability for nuclear damage and its financial coverage
- Act of NC SR No. 251/2012 Coll. on energy sector and on amendments and complements to certain laws – the latest amendment as Act No. 321/2014 Coll.
- Act of NC SR No. 24/2006 Coll. on environmental impact assessment and on amendments to certain laws as amended – the latest amendment as Act No. 314/2014 Coll.
- Act of NC SR No. 124/2006 Coll. on occupational health and safety and on amendments to certain laws – the latest amendment as Act No. 204/2014 Coll.
- Act of NC SR No. 125/2006 Coll. on labour inspection and on amendment to Act No. 82/2005 Coll. on undeclared work and illegal employment and on amendments to certain laws – the latest amendment as Act No. 307/2014 Coll.
- Act of NC SR No. 355/2007 Coll. on protection, support and development of public health and on amendments and complements to certain laws – the full text of the law is published under No. 103/2015 Coll.

- Act of NC SR No. 238/2006 Coll. on the National Nuclear Fund for decommissioning of nuclear installations and on spent nuclear fuel and radioactive waste management (Act on Nuclear Fund) and on amendments to certain laws – the latest amendment as Act No. 143/2013 Coll.
- Act No. 309/2009 Coll. on promotion of renewable sources of energy and high efficiency cogeneration and on amendments to certain laws – last amendment Act No. 321/2014 Coll.
- Act No. 254/2011 Coll. on transportable pressure equipment and on amendments to certain laws.
- Act of NC SR No. 250/2012 Coll. on regulation in network industries as amended by the Act No. 321/2014 Coll.
- Act No. 133/2013 Coll. on construction products and on amendments to certain laws.
- Government Ordinance No. 35/2008 Coll. laying down the details of technical requirements and conformity assessment procedures for personal protective equipment.
- Government Ordinance No. 117/2001 Coll. laying down the details of technical requirements and conformity assessment procedures for equipment and protective systems intended for use in potentially explosive environment, in the wording of Government Ordinance No. 296/2002 Coll.
- Government Ordinance No. 513/2001 Coll. laying down the details of technical requirements and conformity assessment procedures for simple pressure vessels, in the wording of Government Ordinance No. 328/2003 Coll.
- Government Ordinance No. 576/2002 Coll. laying down the details of technical requirements and conformity assessment procedures for pressure equipment, in the wording of Government Ordinance No. 41/2015 Coll.
- Government Ordinance No. 308/2004 Coll. laying down the details of technical requirements and conformity assessment procedures for electric equipment used within a certain voltage range, in the wording of Government Ordinance No. 449/2007 Coll.
- Government Ordinance No. 436/2008 Coll. laying down the details of technical requirements and conformity assessment procedures for machinery – as amended by Act No. 140/2011 Coll.
- Government Ordinance No. 194/2005 Coll. on electromagnetic compatibility in the wording of Government Ordinance No. 318/2007 Coll.
- Government Ordinance No. 276/2006 Coll. on minimal safety and health requirements for work with display units.
- Government Ordinance No. 340/2006 Coll. on requirements for health protection of individuals against the dangers of ionizing radiation in relation to medical exposure – as amended by Government Ordinance No. 85/2007 Coll.
- Government Ordinance No. 345/2006 Coll. on the basic safety standards for the protection of health of workers and the general public against the dangers arising from ionizing radiation (transposing the Council Directive 96/29/Euratom of 13 May 1996).

- Government Ordinance No. 346/2006 Coll. on the operational protection of outside workers exposed to the risk of ionizing radiation during their activities in controlled area (transposing the Council Directive 90/641/Euratom of 4 December 1990).
- Government Ordinance No. 348/2006 Coll. on requirements for the control of high activity sealed sources and orphan sources - as amended by Government Ordinance No. 497/2011 Coll. (transposing Council Directive 2003/122/Euratom of 22 December 2003).
- Government Ordinance No. 387/2006 Coll. on requirements for ensuring safety and health signs at work.
- Government Ordinance No. 391/2006 Coll. on minimal safety and health requirements for a workplace.
- Government Ordinance No. 392/2006 Coll. on minimal safety and health requirements when using work equipment.
- Government Ordinance No. 393/2006 Coll. on minimal requirements for safety and health at work in potentially explosive environment.
- Government Ordinance No. 395/2006 Coll. on minimal requirements for provision and use of personal protective equipment.
- Government Ordinance No. 396/2006 Coll. on minimal safety and health requirements for a construction site.
- Government Ordinance No. 312/2007 Coll. laying down the details on the method of collection and payments of mandatory contribution to the National Nuclear Fund for decommissioning of nuclear installations and for spent nuclear fuel and radioactive waste management as amended by Government Ordinance No. 145/2012 Coll.
- SÚBP Decree No. 59/1982 Coll., setting out the basic requirements to ensure safety at work and safety of technical equipment as amended by SÚBP Decree No. 484/1990 Coll.
- SÚBP Decree No. 25/1984 Coll. to ensure safety at work in low pressure boiler houses as amended by the Decree No. 75/1996 Coll.
- Regulation of MPSVaR SR No. 147/2013 Coll., establishing details for ensuring safety and protection of health at construction works and related works, and details on professional competence for performance of certain work activities in the wording of Decree No. 100/2015 Coll.
- SÚBP Decree No. 208/1991 Coll. on safety at work and safety of technical equipment in operation, maintenance and repair of vehicles.
- MŽP SR Decree No. 453/2000 Coll. implementing certain provisions of the Building Act.
- MŽP SR Decree No. 55/2001 Coll., on land use planning supporting documents and land use planning documentation;

- MPSVR Decree No. 508/2009 Coll. laying down the details for ensuring occupational health and safety for working with pressure, lifting, electric and gas technical equipment and determining technical equipment considered as classified technical equipment as amended by Decree No. 234/2014 Coll.
- MDVRR SR Decree No. 162/2013 Coll., establishing a list of groups of construction products and systems for assessing parameters.
- MZ SR Decree No. 524/2007 Coll. setting out the details on the Radiation Monitoring Network.
- MZ SR Decree No. 528/2007 Coll., setting out the details on the requirements for limitation of exposure from natural radiation.
- MZ SR Decree No. 545/2007 Coll., laying down the details on requirements for ensuring radiation protection in activities leading to exposure and activities important in terms of radiation protection.
- MV SR Decree No. 533/2006 Coll. on details regarding protection of the public against effects of hazardous substances as amended by Decree of MV SR No. 160/2012 Coll.
- UJD SR Decree No. 46/2006 Coll. on special materials and equipment, which fall under the regulation by the Nuclear Regulatory Authority of the Slovak Republic.
- UJD SR Decree No. 47/2006 Coll. on details of maximal limits of quantities of nuclear materials and radioactive waste, where nuclear damage is not anticipated.
- UJD SR Decree No. 48/2006 Coll. laying down the details on the method of notification of operational events and events during transportation and the details on investigating their causes as amended by UJD SR Decree No. 32/2012 Coll.
- UJD SR Decree No. 33/2012 Coll. on periodical, comprehensive and systemic assessment of nuclear safety of nuclear installations.
- UJD SR Decree No. 430/2011 Coll. on requirements for nuclear safety.
- UJD SR Decree No. 51/2006 Coll. laying down the details on the requirements for ensuring physical protection.
- UJD SR Decree No. 52/2006 Coll. on professional competence as amended by UJD SR Decree No. 34/2012 Coll.
- UJD SR Decree No. 30/2012 Coll. laying down the details on the requirements for nuclear materials, radioactive waste and spent nuclear fuel management.
- UJD SR Decree No. 54/2006 Coll. on registration and control of nuclear materials and on notification of selected activities.
- UJD SR Decree No. 55/2006 Coll. on the details in emergency planning for the case of incident or accident as amended by UJD SR Decree No. 35/2012 Coll.
- UJD SR Decree No. 431/2011 Coll. on quality management system.

- UJD SR Decree No. 57/2006 Coll. laying down the details on the requirements during transportation of radioactive materials.
- UJD SR Decree No. 58/2006 Coll. laying down the details of the scope, content and the method of preparation of documentation of nuclear installations necessary for individual decisions as amended by UJD SR Decree No. 31/2012 Coll.
- The Treaty establishing the European Atomic Energy Community (1957).
- Council Regulation (Euratom) No. 87/3954/Euratom of 22 December 1987 laying down maximum permitted levels of radioactive contamination of foodstuffs and of feeding stuffs following a nuclear accident or any other case of radiological emergency as amended by Council Regulation No. 89/2218/Euratom of 18 July 1989.
- Commission Regulation (Euratom) No. 90/770 of 29 March 1990 laying down maximum permitted levels of radioactive contamination of foodstuffs and of feeding-stuffs following a nuclear accident or any other case of radiological emergency.
- Council Regulation (Euratom) No. 1493/93 of 8 June 1993 on shipments of radioactive substances between member states as amended.
- Council Regulation (Euratom) No. 2587/1999 of 2 December 1999 defining investment projects, which must be notified to the European Commission in compliance with the Article 41 of the Treaty establishing the European Atomic Energy Community.
- Commission Regulation (EC) No. 1209/2000 of 8 June 2000 determining procedures for effecting the communications prescribed under Article 41 of the Treaty establishing the European Atomic Energy Community as amended by the Commission Regulation (Euratom) No. 1352/2003 of 23 July 2003.
- Commission Regulation (Euratom) No. 302/2005 of 8 February 2005 on the application of Euratom safeguards.
- Council Regulation (EC) 428/2009 of 5 May 2009, setting up a Community regime for the control of exports, transfer, brokering and transit of dual-use items, as amended.
- Commission Regulation (Euratom) No. 66/2006 of 16 January 2006 exempting the transfer of small quantities of ores, source materials and special fissile materials from the rules of the chapter on supplies.
- Directive 62/302/EC of 5 March 1962 on freedom to take skilled employment in nuclear energy.
- Council Directive No. 89/618/Euratom of 27 November 1989 on informing the general public about health protection measures to be applied and steps to be taken in case of radiological emergency.
- Council Directive No. 90/641/Euratom of 4 December 1990 on the operational protection of outside workers exposed to the risk of ionizing radiation during their activities in controlled areas.

- Council Directive No. 96/29/Euratom of 13 May 1996 laying down basic safety standards for the protection of the health of workers and the general public against the dangers arising from ionizing radiation.
- Council Directive 2013/59/Euratom of 5 December 2013 laying down basic safety standards for protection against dangers arising from ionizing radiation, repealing Directives 89/618/Euratom, 90/641/Euratom, 96/29/Euratom, 97/43/Euratom and 2003/122/Euratom
- Council Directive 2006/117/Euratom of 20 November 2006 on the supervision and control of shipments of radioactive waste and spent nuclear fuel.
- Council Directive 2009/71/Euratom of 25 June 2009 establishing a Community framework for the nuclear safety of nuclear installations.
- Council Directive 2011/70/Euratom of 19 July 2011 establishing the Community framework for the responsible and safe management of spent fuel and radioactive waste.
- Directive of the European Parliament and the Council 2012/18/EU of 4 July 2012 on the control of major accident hazards involving dangerous substances, amending and subsequently repealing Council Directive 96/82/EC.
- Council Directive 2014/87/Euratom of 8 July 2014 amending Directive 2009/71/Euratom, establishing a Community framework for nuclear safety of nuclear installations.
- Council Decision 87/600/Euratom of 14 December 1987 on Community arrangements for the early exchange of information in the event of radiological emergency.
- Commission Recommendation of 15 December 2005 on guidelines for the application of Regulation (Euratom) No. 302/2005 on application of Euratom safeguards.
- Commission Recommendation of 11 February 2009 on implementation of accounting and record keeping and control of nuclear materials by the operators of nuclear installations.
- Commission Recommendation of 7 July 2009 for safe and effective system of sending documents and information in connection with the provisions of Council Directive 2006/117/Euratom.

Annex VI. List of UJD SR Safety Guides

BNS III.4.1/2000	Requirements for issuing authorization by UJD SR for use of fuel in WWER-440 reactors.
BNS III.4.3/2000	Requirements on assessment for fuel loading.
BNS I.8.1/2005	Specification on the scope of Preliminary plan of physical protection and Plan of physical protection in line with the Decree 186/1999 Coll. laying down the details concerning physical protection of nuclear installations, nuclear materials and radioactive waste.
BNS IV.1.3/2005	Requirements for design and operation of spent nuclear fuel storage facility.
BNS I.2.5/2005	Requirements of UJD SR on chap. 16 of the Pre-operational safety report "Limits and Conditions".
BNS II.3.4/2006	Rules for the design, manufacturing and operation of monitoring systems to monitor degradation of safety important components of NI. Part 1. Corrosion Monitoring.
BNS I.4.2/2006	Requirements on elaboration of analysis and PSA studies.
BNS II.3.1/2007	Evaluation of acceptability of faults detected during in-service control of classified equipment of nuclear installations.
BNS III.4.4.2007	Requirements for realization and evaluation of test results of the physical start-up.
BNS II.1.1/2008	Registration and control of nuclear materials.
BNS I.7.4/2008	Complex periodic safety review.
BNS II.5.4/2009	Qualification of systems for non-destructive test in nuclear power engineering. Requirements and instructions.
BNS II.5.6/2009	Rules on design, manufacturing, assembly, repairs, replacements and reconstruction of mechanical and technological components of classified equipment of WWER 440 nuclear power plants.
BNS II.5.5/2009	Examining of mechanical properties, chemical composition a selected characteristics of resistance of material and welded joints against rupture under limit load conditions of mechanical and technological components of equipment of WWER 440 nuclear power plants.
BNS II.3.3/2011	Metallurgical products and spare parts for nuclear installations. Requirements.
BNS II.5.3/2011	Welding materials for welding mechanical-technology components of nuclear power plants. Technical requirements and selection rules.
BNS II.5.2/2012	Control of welding and quality of welds of components of classified equipment of nuclear power plants. Requirements.

BNS II.5.1/2012	Welding of nuclear equipment. Basic requirements and rules.
BNS II.2.1/2012	Requirements for securing protection against fire and fire safety of nuclear installations in terms of nuclear safety.
BNS I.6.2/2013	Requirements for reactor description and its design basis in the safety report.
BNS I.11.1/2013	Requirements for deterministic analyses of safety of NPPs with WWER-440/V213.
BNS I.1.2/2014	Scope and content of safety report.
BNS I.9.2/2014	Ageing management of NPPs – requirements.
BNS I.4.4/2014	Operation of a nuclear facility after reaching its design life. Requirements and instructions.
BNS I.12.3/2014	PSA quality for PSA applications