



# 20 16

ANNUAL REPORT



NUCLEAR REGULATORY AUTHORITY  
OF THE SLOVAK REPUBLIC





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Dear readers,

As every year, also this year you have the opportunity to obtain information on the activities of the Nuclear Regulatory Authority of the Slovak Republic, as well as about the state and the assessment of nuclear safety of nuclear installations in the Slovak Republic for the year 2016 through this Annual Report.

The Report presents activities in the field of legislation, licensing of activities related to the peaceful uses of nuclear energy, assessment and control of nuclear safety of nuclear installations, and the safe management of radioactive waste, assessment of internal emergency preparedness of nuclear installations, activities in the field of nuclear materials registration and controls. There is also information on independent public information and information on international cooperation. Since UJD SR also has obligations in the field of off - site emergency planning – it operates an independent emergency response centre – you can find information in this Report also from this area.

One of the many tasks of UJD SR is the creation of legislative environment for the peaceful uses of nuclear energy in Slovakia. In this field, UJD SR has as its priority task, the elaboration of an amendment to the law on peaceful uses of nuclear energy (Atomic Act), to ensure the transposition of two important EC Directives in the field of nuclear safety of nuclear installations and in the field of safety standards for protection against the dangers arising from ionizing radiation. The amendment will contribute to the achievement of the objective of a high level of nuclear safety of nuclear installations in the Slovak Republic and to its continuous increase and to the strengthening of the regulatory framework falling within the scope of UJD SR as the competent authority for the regulation of nuclear safety of nuclear installations. In addition to a draft amendment to the Atomic Act, UJD SR completed an amendment to its six decrees and issued several Safety Guides.

In 2016, UJD SR assessed and reviewed safety documentation related in particular to the implementation of works on the construction of NPP Mochovce 3&4, the documentation related to implementation of modifications on selected equipment, and quality assurance for selected facilities and nuclear installations, documentation related to the emergency planning and many others.

In 2016, UJD SR issued 688 Decisions in total. Most of the decisions were issued in connection with the completion of Units 3&4 of NPP Mochovce.

In addition to the assessment and evaluation activities, our inspectors also carried out control activity in the form of inspections. In 2016, nuclear safety inspectors carried out 189 inspections. Based on the results of control and assessment activities, we can state that the nuclear facilities in the Slovak Republic were operated safely and reliably also in 2016.

As part of the international cooperation, in 2016 UJD SR fulfilled the tasks and obligations arising from the membership of the Slovak Republic in the EU. A major agenda was the activities related to the Slovak Presidency in the Council of the EU. Representatives of UJD SR led the Working Party on Atomic Questions, they were responsible for a smooth conduct of negotiations, the factual and expert cover of the relevant agenda, the performance of Presidency duties of the Slovak Republic, the mediation in pursuing interests of individual Member States and the search for compromise solutions.

In 2016 we have set challenging tasks, which we have achieved also thanks to the hard work, perseverance and professionalism of my colleagues. I would like to thank them, and to assure you, dear readers that UJD SR will continue to carry out its activities and duties so that the safety of nuclear installations in the Slovak Republic is at a high level.



# 1. LEGISLATIVE ACTIVITY

UJD SR within the framework of legislative activity in 2016 has set as its priority task further work on the Bill on the peaceful uses of nuclear energy (The Atomic Act). The law under preparation, among other things, was also to transpose Directives 2013/59/Euratom and 2014/87/Euratom. The draft of the new Atomic Act should further take into account also legislative solutions to the practical issues that have developed in practice since 2004, when the current Atomic Act No. 541/2004 Coll. was approved. The final draft version of the new Atomic Act was approved by the UJD SR Management in March 2016. In early May 2016, UJD SR started a process of consultations with the business entities concerned and their representative organizations. Given the high number of comments received and the approaching deadline for transposition of the Directives, the UJD SR decided to prepare only a short purposeful amendment to the Atomic Act in force. From August till December UJD SR worked on the amendment, which was submitted to the Legislative Council of the Slovak Government on 1 December 2016. The draft amendment to the Atomic Act was discussed at the Legislative Council of the Government on 13 December 2016.

In connection with the conclusions from the Follow-up Mission of the Integrated Regulatory Review Service (IRRS) of the International Atomic Energy Agency from March 2015 and the reference levels of WENRA Group (Western European Nuclear Regulators Association) in 2016 completed the amendment of six UJD SR Decrees. Specifically, amendment to the Decree No. 30/2012 Coll., 33/2012 Coll., 57/2012 Coll., 58/2012 Coll., 430/2011 Coll. and 431/2011 Coll. The Decrees were published in the Collection of Laws of SR under No. 101/2016 Coll. to 106/2016 Coll.

During 2016, UJD SR continued to coordinate cooperation with the relevant departments within the Interdepartmental Working Group on Civil Liability for Nuclear Dam-

age. The core activity of the Working Group was intense works on the Report on the status and development of the European legislation on civil liability for nuclear damage as at 31 December 2016 pursuant to the Government Resolution No. 152/2014 of 2 April 2014.

UJD SR also in 2016 prepared several safety guides in order to ensure compliance with the requirements for the safe uses of nuclear energy or operations related to uses of nuclear energy.

This includes the following safety guides:

1. BNS I.7.4/2016 Comprehensive Periodic Safety Review
2. BNS II.3.4/2016 The rules on design, manufacture and operation of the degradation monitoring systems of classified equipment of nuclear installations Part 1. Monitoring of corrosion 2nd edition - revised and supplemented
3. BNS II.3.5/2016 The rules on design, manufacture and operation of the degradation monitoring systems of classified equipment of nuclear installations. Part 2. Monitoring of thermal ageing processes of structural materials of nuclear installations
4. BNS II.3.6/2016 Rules for the design, manufacture and operation of systems monitoring degradation of safety significant components of NI Part 3. Monitoring processes of radiation degradation of structural materials of nuclear installations
5. BNS II.9.1/2016 Direct sampling of small samples from safety important components of nuclear installations
6. BNS II.9.2/2016 Evaluation of mechanical characteristics of materials of the classified engineering-technology components by the Small Punch Test method
7. BNS II.3.1/2016 Evaluation of acceptability of faults detected during the operation inspection of nuclear installation selected equipment

UJD SR also worked on the draft Terminological Dictionary of nuclear safety of the Nuclear Regulatory Authority of the Slovak Republic.

Division of legislation and Legal Affairs also in 2016 coordinated works in defending UJD SR, providing opinions and the necessary cooperation in the proceedings or other submissions filed against UJD SR. It can be stated that most of these proceedings relate to the continuation of construction of NPP Mochovce 3&4, with the position of UJD SR as the licensing authority, as well as with activities of environmental organizations.

UJD SR provided assistance to the Ministry of Environment of SR in the process of SR in relation to the Aarhus Convention before the Aarhus Convention Compliance Committee in the matter of continuation of the case on NPP Mochovce 3&4 (ACCC/C/2013/89). Neither at the 52nd session of ACCC from 8 to 11 March 2016, the 53rd

session of ACCC in June 2016 and even at the 54th session held in September 2016 in Geneva, the final decision on the case ACCC/C/2013/89 was not reached. The last (55th) session was held from 6 to 9 December 2016.

In connection with the adoption of Act No. 305/2013 Coll. on electronic form of operation of public bodies, and on amending certain laws (Act on E-Government), a project team was established at UJD SR lead by the Vice-Chairman of UJD SR, the task of which is to identify tasks, propose their solutions in UJD SR and ensuring practical application of the Act on E-Government in every day processes of UJD SR, which are affected by this law.

As part of the inter-departmental commenting procedures UJD SR sent approximately 500 opinions on drafts of legislative and non-legislative materials.



## 2. REGULATORY ACTIVITIES

### 2.1 LICENSING

In order to obtain license for activities in the field of peaceful uses of nuclear energy the applicant must demonstrate its ability to comply with and to meet all the requirements of the laws and decrees in force in Slovakia, in particular the requirements of the Atomic Act and the implementing decrees of UJD SR to this law. The applicant must further demonstrate that the nuclear installation (the "NI") will be or is operated in a safe manner.

In addition to the licensees, which are SE and JAVYS, UJD SR also regulates and issues licenses to other legal entities and organizations that do not operate power NIs, but carry out activities related to the peaceful uses of nuclear energy in accordance with the Atomic Act. One of these representatives of these license holders is VUJE, which deals with training of NI staff, research, design and realization of activities related to NI and nuclear materials (the NM).

### 2.2. REVIEW AND ASSESSMENT ACTIVITIES

Nuclear safety of NI is demonstrated by documentation showing that the systems and equipments, including the ability to operate them, are able to work safely and reliably, and that is both during normal, as well as abnormal operation, and that the impact of NI on the staff, population, environment and on the property is at an acceptable level.

In 2016, UJD SR reviewed and evaluated documentation relating in particular, to:

- Execution of works on construction of NPP Mochovce 3&4,

- Implementation of modifications on classified equipment,
- Building proceedings at NIs,
- Design modifications and changes to documentation reviewed or approved by UJD SR,
- Quality assurance for classified equipment and NI,
- System of feeding the power from all four Units of NPP Mochovce to the power system of SR,
- Quality Management Systems of licensees under the Atomic Act and their suppliers,
- Limits and conditions of safe operation and safe decommissioning,
- Emergency planning,
- Training of selected staff and professionally competent staff of license holders for operation and for decommissioning
- Organizational changes of licensees,
- Physical protection plans of operated NIs,
- Transport of nuclear and radioactive materials,
- Radioactive waste management (hereinafter RAW) at NPP Bohunice A-1 and other NI for RAW management.

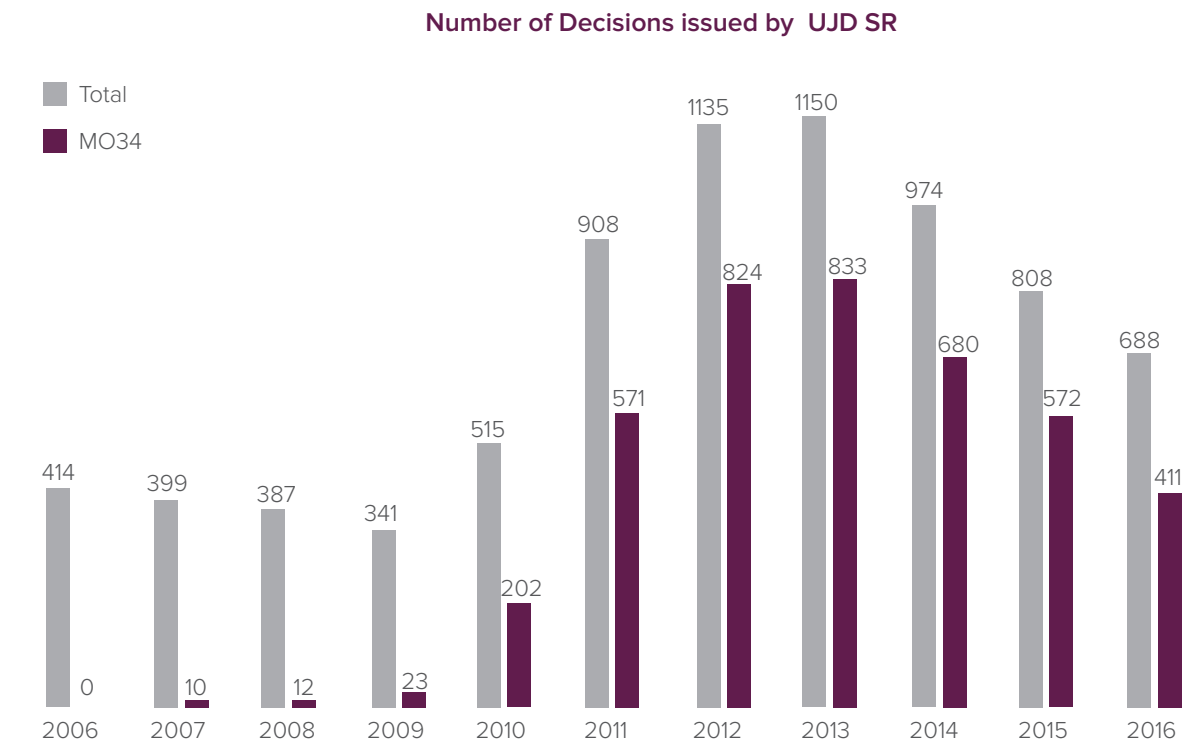
In connection with the completion of Units 3&4 of NPP Mochovce UJD SR performed a number of post-assembly inspections intended to verify the conformity of installed equipment with the design and approved requirements for their quality. The review of the Quality Management System documentation and quality requirements for qualified equipment in accordance with the relevant UJD SR Decrees continued. Approved requirements for quality of qualified equipment were checked by UJD SR also during final acceptance tests directly at the manufacturers of these equipments.

Number of decisions issued by UJD SR is illustrated in Table 1 and on Fig. 1.

TABLE 1 NUMBER OF UJD SR DECISIONS ISSUED IN 2016

Organization/ Nuclear installation	Operation	Design changes	Quality assurance	Building authority	Licence	Suspension of admin. proceeding	Stopping admin. proceeding	Other	Total
SE, a. s.	1	0	2	1	1	1	1	2	9
SE, a. s. NPP Bohunice V-2	27	4	27	3	0	4	1	8	74
SE, a. s. NPP Mochovce 1, 2	24	6	15	5	0	6	3	20	79
SE, a. s. NPP Mochovce 3, 4	1	4	359	0	0	28	4	15	411
JAVYS, a. s.	15	0	13	4	5	4	0	24	65
VUJE, a. s.	1	0	0	0	6	0	0	22	29
Other organizations	0	0	0	0	7	1	0	13	21
Total	69	14	416	13	19	44	9	104	688

FIG. 1 NUMBER OF UJD SR DECISIONS ISSUED IN THE PERIOD 2006-2016



Note: MO3&4 – NPP Mochovce 3&4



## 2.3. INSPECTIONS

Inspection activity means a process, which is used to control compliance with the requirements and fulfilment of obligations established in the Atomic Act and its implementing regulations, in the Building Act and its implementing regulations, fulfilment of obligations resulting from UJD SR Decisions, as well as fulfilment of measures to remove shortcomings from the protocols. Inspection activities are performed by nuclear safety inspectors of UJD SR. Schedule of planned inspections is set by the Inspections Plan, which is designed to make it possible to carry out continuous and systemic evaluation of compliance with the legislative requirements. UJD SR develops a Preliminary Inspection Plan for three years, as well as Inspection Plan for the relevant year. In addition to planned inspections the inspectors conduct also unplanned inspections, which are caused by the state in NI (for example, construction and installation,

commissioning stages) or operational events. Unplanned inspections include also inspections of the International Atomic Energy Agency (the IAEA) in the field of accounting and control of NM, the dates of which is announced to UJD SR and to the relevant licensee only immediately prior to carrying out the inspection itself. For 2016 there were 152 planned inspections, of which 3 were cancelled due to objective reasons. In 2016 there were 40 unplanned inspections.

In total there were 189 inspections, of which 16 resulted in protocol, the rest of them as a record from the inspection (Table 2).

TABLE 2 OVERVIEW OF PERFORMED INSPECTIONS

Nuclear installations/other	Team	Special	Routine	Unplanned	Total
NPP Bohunice V-1	3	6	4	1	14
NPP Bohunice V-2	13	17	4	3	37
NPP Mochovce 1, 2	11	19	4	2	36
NPP Mochovce 3, 4	2	9	4	19	34
JAVYS, a. s.	3	13	4	0	20
VUJE, a. s.	0	2	0	0	2
Transport of NM and RAW	0	3	0	6	9
Accounting and control of NM	0	27	0	9	36
Other inspections	0	1	0	0	1
<b>Total</b>	<b>32</b>	<b>97</b>	<b>20</b>	<b>40</b>	<b>189</b>

## 2.4. LAW ENFORCEMENT

In case the inspections reveal deficiencies in any of the areas under regulation, in the Protocol from the inspection the licensee is ordered elimination of deficiencies together with binding deadlines for their fulfilment. The licensee is then required to notify UJD SR about the method and the deadline for eliminating the deficiency.

If the regulated entity does not fulfil the measures, as well as in case of serious infringements of the provisions of the Atomic Act or the requirements of its implementing decrees, UJD SR may initiate administrative procedure, which may lead to:

- Imposition of fine,
- Limiting the scope or validity of the license,
- Imposition of necessary measures,
- Suspending the operation of NI,

- Withdrawal of certificate of special professional competence or certificate of professional competence permanently.

In 2016, UJD SR did not impose any fine, did not limit the scope or validity of license and did not suspend operation of any JI.





## 3. NUCLEAR SAFETY OF NUCLEAR INSTALLATIONS

### 3.1. ASSESSING THE STATE OF NUCLEAR SAFETY OF NPPS AND NIS IN THE SLOVAK REPUBLIC

#### 3.1.1. NUCLEAR POWER PLANTS

##### 3.1.1.1. NUCLEAR POWER PLANTS IN OPERATION

###### a) Nuclear Power Plant Bohunice V-2

On both Units of NPP Bohunice V-2 in 2016 there was standard inspection and assessment activity associated with the daily operation of NPP. From 23 April until 21 June there was a general overhaul (GO) of Unit 4, and from 14 May until 26 June there was GO on Unit 3. Measures from the Action Plan to increase safety of NPP Units were implemented as lessons learned from the accident at NPP Fukushima - Daiichi. Measures were adopted based on the results of the Stress Tests.

###### Operational Controls

Operational controls were performed in accordance with the annual plans of operational controls. The results of operational controls demonstrated satisfactory condition on both Units. During the planned GO of Unit 3 of NPP Bohunice V-2 for refuelling has been extended by 8 days against the schedule as a result of operational event on Unit 4 and a larger scope of works on the system of essential service water (ESW). During the scheduled GO of Unit 4 for refuelling, a foreign object fall was recorded into the reactor, resulting in the block of protective tubes not reaching the desired position. Said event together with a larger scope of works on ESW caused an extension of outage by 14 days.

The operator also provides for an assessment of fatigue life of the main components and piping systems, as well as the assessment of resistance of materials of pressure vessels against brittle fracture. From the assessment carried out shows that even fatigue life, or results of analyses in the field of brittle fracture of reactor pressure vessels do not limit the life and create conditions for long-term operation of both Units. Containment integrity tests

on both Units confirmed that the tightness of the hermetic zones is in compliance with the requirements of the Limits and Conditions (the L&C), has been permanently monitored and the program for removal of leaks is being fulfilled.

###### Operational Events

The number and the nature of events in 2016 were within the normal operational failures without having special significance in terms of nuclear safety. There were 11 operational events registered that are subject to reporting to UJD SR.

At NPP Bohunice V-2 there was no reactor scram.

In one case there was a violation of L&Cs for safe operation of NPP, which is one of the basic safety documents of NIs. The reason was exceeding the trend of cooling the pressurizer and exceeding the allowable temperature difference of the pressurizer coolant and the primary circuit during the shutdown of Unit 3 for GO. UJD SR responded to this incident by unscheduled inspection. From this unscheduled inspection UJD SR prepared a Protocol. Detailed investigation of the present operational event was conducted as part of the scheduled inspection, which was aimed at checking the records on drawing L&Cs, L&C documentation and records, familiarization of service personnel with the changes in L&Cs. Protocol was prepared from the inspection. Based on the findings from the Protocol, UJD SR has withdrawn the certificate from the serving reactor unit supervisor and from the operator of the primary circuit for performing this function by the licensee. Both of them were re-examined and after passing exams UJD SR issued the certificate.

Another safety significant event was destruction of the starter batteries for diesel generator for severe accident management (DG SAM). The incident was caused by lack of control of electrolyte levels in the batteries. The reason for insufficient control was incorrect internal instruction







manual and maintenance of the starter batteries. UJD SR responded also to this incident by unscheduled inspection, prepared a Protocol and ordered measures to remedy the deficiencies found.

#### b) Nuclear Power Plants Mochovce 1&2

In 2016, UJD SR inspectors conducted standard inspection and assessment activities, related to everyday operation of NPP. The GO on Unit 1 took from 26 March till 19 April and on Unit 2 from 1 October until 21 October. NPP Mochovce 1&2 in the course of the year realized measures from the Action Plan to increase safety of NPP Units as lessons learned from the accident at NPP Fukushima - Daiichi. Measures were adopted based on results from the Stress Tests.

#### Operational Controls

Operational controls were conducted on both Units of NPP Mochovce. These operational controls were realized in accordance with the annual plans of operational controls. UJD SR conducted inspection on fulfilment of action from operational controls, while the regulator checked mainly the completeness in fulfilment of the planned scope of operational controls and their documentation. The operator submits to UJD SR every year assessment reports on the use of life of major components and selected pipelines. Monitored parameters of all equipment under assessment, as well as the conditions of materials of reactor pressure vessel are well below established limits.

Containment integrity tests confirmed that the tightness of hermetic zones on both Units is in accordance with the requirements of L&C, and is permanently monitored and the program to remove the leaks is being fulfilled. In 2016 UJD SR conducted inspections focusing on verification of operational controls of welded joints of qualified equipment. For identified deficiencies UJD SR imposed measures for their elimination in the protocols from inspections.

#### Operational Events

The number and the nature of incidents in 2016 were within the normal operational failures without any special significance in terms of nuclear safety. There were 12 incidents registered that are subject to reporting to the regulator.

The most important operating incident at Unit 1 NPP Mochovce 1&2 was reactor scram AO-1. The cause of this incident was a false rise in the water level in the steam generator during handling valves measuring water level. Automatic protections operated normally during the incident, according to the design.

### 3.1.1.2. NUCLEAR POWER PLANTS UNDER CONSTRUCTION

#### Nuclear Power Plants Mochovce 3&4

In 2016, a number of post-assembly checks were performed on Unit 3, intended to verify the conformity of the installed equipment with the design and approved requirements for their quality. The first stage of reactor tests and of the concrete shaft equipment (control assembly of reactor internals) was successfully completed. Individual testing of the main control system continued, including implemented modifications. Tightness and strength of the pipeline systems, pools and storage tanks was verified with pressure tests. Several systems were installed to manage accidents under expanded design. Equipment for storage and handling of fresh fuel was also verified. Installation of the physical protection system and electronic fire detection system continued. All activities focused on the pressure test of separable parts of the primary circuit planned for 2017.

UJD SR has regularly checked and evaluated the state of NI under construction, quality of installations of classified equipment and building structures, implementation of post-assembly inspections of assembled technological units or parts thereof, as well as the progress of tests, whether on-site or at the manufacturer during acceptance testing of safety-relevant equipment.

UJD SR continued in verification of competences of selected staff of the licensees for the future operation of new Units and assessment of operational procedures.

UJD SR reviewed and approved requirements for quality of qualified equipment of Unit 4. The Authority also assessed selected programs of inactive tests, staged commissioning programs of NI and operating and emergency procedures.

### 3.1.1.3. NUCLEAR POWER PLANTS IN DECOMMISSIONING

#### a) Nuclear Power Plant Bohunice A-1

At the beginning of 2016 last parts of works were implemented at NPP Bohunice A-1 related to the second stage of decommissioning, aimed at scraping the unnecessary original technological equipment and eliminating the negative effects of operation of NPP Bohunice A-1. At the end of February JAVYS submitted to UJD SR application for license for the stage 3 and stage 4 of decommissioning of NPP Bohunice under the legislation applicable for A-1. UJD SR, after reviewing the submitted documentation, issued its Decision No. 369/2016, which licensed JAVYS for stage 3 and stage 4 of decommissioning of NPP Bohunice A-1, as well as authorization for RAW management during stage 3 and stage 4 of decommissioning of NPP. Works related to these stages of decommissioning are scheduled until the end of 2024 and will focus on activities related to

decommissioning of two objects: reactor building and the adjacent building. After their completion, stage 5 of decommissioning will follow. Completion of the decommissioning process of NPP Bohunice A-1 is scheduled for 2033.

In 2016, UJD SR issued a decision relating to putting the equipment for sludge fixation SUZA II into operation. As part of putting the VICHK line into service, UJD SR reviewed programs for modifications of the line and putting the line into operation continued with gradual increase of the processed activity.

Planned inspections in NPP Bohunice A-1 were designed to control the achievement of a final state of stage 2 of the power plant decommissioning in accordance with the plan for stage 2 of its decommissioning in relation to the application for license for stage 3 and stage 4 of the decommissioning. Inspections were also aimed at monitoring performance of tasks and binding measures from previous decisions issued by UJD SR, as well as control of the use of technology for treatment of RAW located in the main reactor building.

#### b) Nuclear Power Plant Bohunice V-1

Decommissioning of NPP Bohunice V-1 continued in accordance with the Decision No. 900/2014, by which UJD SR issued license to JAVYS for stage 2 of decommissioning of NPP Bohunice V-1, and at the same time for RAW management and for management of NM during stage 2 of decommissioning of this NI. The licence came into force on 1 January 2015.

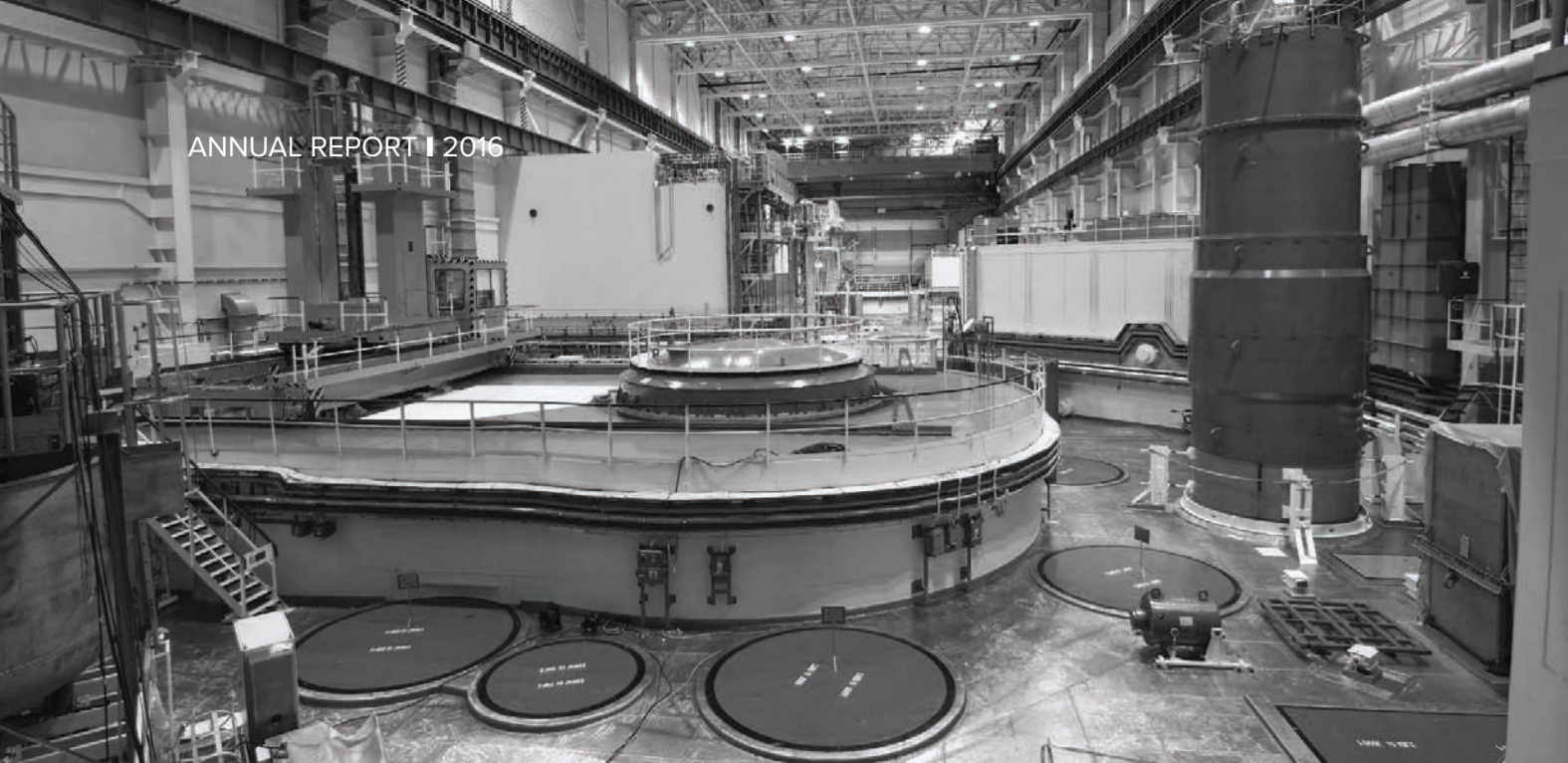
Decommissioning activities in stage 2 are mainly focused on decommissioning of components, systems and structures of the primary side of the NPP. In parallel also those activities continue, which passed from stage 1 of decommissioning.

Stage 2 includes mainly decommissioning of objects of the main reactor building, buildings of ancillary services and remaining ancillary facilities. The most important activities are dismantling of reactors, removal of equipment of primary circuit a removal of other equipment in the controlled zone and outside the controlled zone, their decontamination and radiation control.

In 2016, a number of projects were implemented, the most important of them: removal of thermal insulations in the controlled zone, dismantling of equipment of the machine room, modification of storage facilities. The following projects are in progress: construction of integral storage facility for radioactive waste, continuing decontamination of the primary circuit and removal of systems in the building of auxiliary services – cementation line of NPP Bohunice V-1.

Equally important was the preparation of new projects, such as demolition of the cooling towers, dismantling systems in the controlled zone, construction of facility for melting of metal RAW, decontamination of pools and





tanks, removal of large size components of primary circuit, dismantling and demolition of external objects.

Completion of stage 2 of the decommissioning of NPP Bohunice V-1, according to the submitted documentation, is expected by 2025, when the final state of the site at the end of stage 2 will be - release of the site for limited use. After the final inspection the site will be released from control of regulatory authorities.

Scheduled inspections at NPP Bohunice V-1 focused on control of compliance between the state of decommissioning and the state described in the plan for stage 2 decommissioning of NPP Bohunice V-1.

In the course of 2016 there were no operational events recorded at these NIs having a special impact on nuclear safety.

### 3.1.2. OTHER NUCLEAR INSTALLATIONS

**a) Interim Spent Fuel Storage Jaslovské Bohunice (ISFS)**  
ISFS Bohunice is used for temporary storage of spent nuclear fuel (SNF) from NPP Bohunice V-1 (end of production of SNF) and NPP Bohunice V-2 and NPP Mochovce 1&2. As at 31 December 2016, the ISFS is filled up to approx. 83.4 % of its total capacity.

In the course of 2016, the assessment activity focused on assessment of the status of operational control of buildings and technological parts and systems of ISFS Bohunice and the stored SNF.

As part of inspections in ISFS Bohunice there were two inspections of SNF storage. The aim of the inspections was to check compliance with L&Cs and operating procedures for the operation of each facility. There was

no case of violation of conditions for nuclear and radiation safety and operating procedures.

#### **b) Technology for Treatment and Conditioning of RAW (TTC RAW)**

TTC RAW include two bituminization plants, Bohunice treatment centre for radioactive waste (BTC RAW), fragmentation plant, large-capacity decontamination plant, workplace for treatment of used ventilation filters, waste water treatment plant and RAW storage. Bituminization plant is intended for treatment of radioactive concentrates from operation of NPP into 200 litre barrels, which before their final disposal, are placed into fibre-concrete containers (FCCs). Part of the treatment technology of bituminisation plant is a discontinuous bituminisation line (DBL) used for fixation of sorbents into a bitumen matrix. BTC RAW is the core facility for final treatment of RAW before their disposal at the National Repository of Radioactive Waste in Mochovce (NR RAW). For treatment and conditioning of RAW, in addition to cementation, also incineration, fragmentation, high pressure compacting and increasing concentration by evaporation. Resulting products from treatment and conditioning of RAW are placed into FCC, which comply with the conditions for disposal at the NR RAW in Mochovce.

UJD SR inspections aimed primarily at control of safe operation of individual treatment plants and on control of RAW storage.

#### **c) National Repository for Radioactive Waste Mochovce (NR RAW)**

In the first half of 2016, UJD SR issued authorization for commissioning and operation of part of the repository for disposal of very low level RAW. In November 2016, an application for building permit was delivered for phase 3 of double row of disposal boxes. Other activities in disposal of low level radioactive waste in FCC into the

second double row were realized in a standard manner. By the end of 2016, there were 4,804 FCCs disposed, of which 420 FCCs were disposed in 2016. In 2016, 600 m<sup>3</sup> handling packages with very low level waste (MEVA drums and bulk bags) were disposed.

Inspection activity in NR RAW in 2016 focused on control of disposal of FCCs and bulk bags in NR RAW, inventory of stored RAW, the current enlargement of NR RAW, checking data on monitoring NR RAW and control of conditioning of RAW into FCCs.

#### **d) Final Treatment of Liquid RAW, Mochovce (FTLRAW)**

The purpose of the facility FTL RAW is final treatment and conditioning of liquid RAW (radioactive concentrates, saturated sorbents and sludge) produced in NPP Mochovce, some types of solid RAW from the operation of NPP Mochovce Units and conditioning of treated solid RAW from other NIs. Capacity of technological lines far exceeds the production of RAW from Mochovce nuclear units. In FTL RAW there are technologies for treatment of radioactive concentrates by bituminisation in film rotor evaporator and by thickening at the concentration evaporator. Discontinuous bituminisation facility is used for fixation of radioactive sorbents. On the cementation line such treated RAW is then conditioned into FCC, which is then disposed in the NR RAW.

To assess the effects on environment, the operation of FTL RAW, as integral part of the strategy for management of selected types of liquid radioactive waste (concentrates,

saturated ion exchangers and sorbents) from operation of NPP Mochovce was contemplated in the documentation for the completion of NPP Mochovce Units 3&4, but it was assessed also in the strategic document "Strategy for the back-end of nuclear energy" of the National Nuclear Fund. Since the proposer was fully aware of less detailed assessment of the operation as part of the technology complex of the NPP, or as part of a set of facilities in Slovakia intended for management of radioactive materials in the back-end of nuclear energy cycle, after consideration and consultations with the competent and authorizing bodies, retrospectively used a solution in a form of separate process to assess the impacts of the proposed activity on the environment and population concerned. Thus the activity was submitted to the assessment process in October 2012 due to the above described specific situation in one variant solution. In 2014, the Ministry of Environment of SR issued its Final Opinion on the activity in question, in accordance with the Act No. 24/2006 Coll. on environmental impacts assessment. In 2016 the operator of FTL RAW submitted the report on periodic safety review of this NI, which UJD SR is currently assessing and preparing its final opinion.

Inspections at FTL RAW in 2016 focused on control of compliance with the conditions of nuclear safety and the requirements of the regulator in management of RAW, RAW minimization, and also control of the method of sampling, analyzing and keeping representative samples for documentation and evaluation of RAW management.





## 4. NUCLEAR MATERIALS

UJD SR is a national authority responsible for regulatory activities in the field of nuclear materials management, keeping records and their control. The national system of accounting and control of NM is an important tool in the field of safeguards for NM, the introduction of which is the first important step in the use of nuclear energy arising from international commitments, by which Slovakia is bound. Under the Slovak jurisdiction, NM may be used only for peaceful purposes and in accordance with the authorisation from UJD SR, which is issued only to those applicants, who can demonstrate their ability to manage NM in accordance with applicable laws and international commitments of SR.

International obligations arise under the Treaty on the Non-proliferation of Nuclear Weapons and the resulting Agreement on Safeguards on nuclear materials. By Slovakia's accession to the EU, also the trilateral Safeguards Agreement between the IAEA, Euratom and Slovakia, and its Additional Protocol are binding on Slovakia. At the same time Slovakia is obliged to fulfil the requirements of the EU legislation stemming from the Euratom Treaty and its associated legislation, such as Commission Regulation (Euratom) No. 302/2005 on the application of Euratom safeguards. Also, the UN Security Council Resolution No. 1540/2004 obliges the UN member states in the field of nuclear energy use, to adopt transparency measures to enhance non-proliferation controls. These measures aim to prevent illicit trafficking of NM and other nuclear items.

### 4.1. ACCOUNTING AND CONTROL OF NUCLEAR MATERIALS

UJD SR maintains a national system of accounting and control of NM in accordance with the Atomic Act.

Performance of inspection activity in the field of record keeping and control of NM continued also in 2016 under the Integrated Safeguards, which is an optimal and effective combination of all safeguards activities in accordance with the legal framework. As part of inspection activity in the field of accountancy and control of NM, in 2016 UJD SR performed 38 inspections.

Activity of UJD SR includes also control and processing accounting reports sent to UJD SR by the licensees, which are then fed into the national system of accounting and control of NM, while also checking the correctness of data. UJD SR is fully responsible for keeping records on NM in the material balance, where there are 48 holders of authorization for management of NM outside NI. For the given material balance UJD SR sends monthly accounting reports to Euratom.

UJD SR within its competence is also responsible for timely transmission of reports drawn up under the requirements of Article 2 of the Additional Protocol to the Trilateral Safeguards Agreement of Euratom and to the IAEA. These reports are further confirmation of the fact that in the whole of Slovakia there are only such activities carried out that relate to the peaceful uses of nuclear energy and that the commitments in the field of non-proliferation are respected.

Part of the activities in the field of accountancy and control of NM is issuing authorizations for management of NM. In 2016, 4 authorizations were issued for management of NM outside of NI according to Section 5 par. 2 n) of the Atomic Act.

Based on the results of inspections and checks of accounting and operating records of authorization holders it can be clearly stated that in 2016 there was no

abuse of NM in Slovakia for other than peaceful purposes and Slovakia fully meets its international obligations in the field of safeguards for NM. The data in the national system of accounting and control of NM are in full compliance with the data of international organizations, Euratom and the IAEA.

### 4.2. TRANSPORT OF NUCLEAR MATERIAL

Regulatory activity in securing nuclear safety during transports of NM was carried out in accordance with the Atomic Act, Decree No. 57/2006 Coll., which was amended by Decree No. 105/2016 Coll., and international standards and recommendations.

During the assessed period there were 5 transports of fresh nuclear fuel (the FNF) from the Russian Federation to NPP Bohunice and to NPP Mochovce. Transportation was provided by rail, or combined air and road transport. In 2016 there was one shipment of SNF from NPP Mochovce to ISFS Bohunice. The preparation of transports involved besides UJD SR, JAVYS a SE, also other organizations – Police Force of SR, ÚCO MV SR, Public Health Authority, Ministry of Transport and Construction SR, Fire and Rescue Services, and other. Nuclear safety and physical protection during transports were provided under the current legislation. SNF from the Units of NPP Bohunice V-2 were transported to ISFS Bohunice.

In 2016, UJD SR inspectors conducted 8 inspections of all shipments of FNF and SNF. During inspections of NM shipments, inspectors did not establish any material

shortcomings. Conditions required by the law and by the UJD SR decisions were complied with.

### 4.3. CONTROL OF STORAGE OF FRESH AND SPENT NUCLEAR FUEL

Given the international nature of the fight against illicit trafficking of NM, various public authorities coordinate their actions aimed at prevention and detecting illicit trafficking of NM not only between themselves, but also engage in cooperation with international organizations. Illicit trafficking of NM is international crime and international cooperation enables the early and successful detection. Cooperation is developed with the IAEA, the Joint Research Centre in Karlsruhe, but also with Interpol and Europol. Cooperation also continued with the US under the Joint Action Plan agreed between the Slovak Government and the US Government to combat illicit trafficking of NM, radioactive materials and related technologies.

An important part of this cooperation is exchange of information. At the national level, the information exchange is provided by electronic information system ILTRAM, at international level it is the Illicit Trafficking Database operated by the IAEA in Vienna. At present, 134 countries around the world, including Slovakia contribute to this database.

Representatives of UJD SR cooperated also in 2016 with the law enforcement agencies in detecting illicit trafficking of NM.





#### 4.4. CONTROL OF STORAGE OF FRESH AND SPENT NUCLEAR FUEL

In 2016, there were 6 planned inspections focusing on inspection of storage of FNF and SNF in NPP Bohunice V-2, NPP Mochovce 1&2 and NPP Mochovce 3&4. In NPP Bohunice and NPP Mochovce 1& 2 no material shortcomings were found, and the operation of storage of FNF and SNF was evaluated as safe in accordance with the requirements of the Atomic Act and the relevant regulations. In NPP Mochovce 3&4 inspectors checked the status of preparation of technology systems of the storage facility for FNF and pools for storing SNF to receive NM. In NPP Mochovce 3&4 so far there is no nuclear fuel.

#### 4.5. PHYSICAL SECURITY OF NUCLEAR INSTALLATIONS AND NUCLEAR MATERIALS

Physical protection (PP) consists of a set of technical, regime or organizational measures needed to prevent unauthorized action in NIs with NM, special materials and equipment, in the management of RAW, SNF, during transport of radioactive materials, as well as unauthorized intrusion into NI and carrying out sabotage.

Slovakia's commitments in the field of physical protection of NM arise from the accession to the Convention on the Physical Protection of Nuclear Materials. The Slovak Government also approved accession to the Amendment to the Convention on the Physical Protection of Nuclear Materials. Amendment extends the Convention with measures relating to offenses regarding sabotage at NI and the provisions on international cooperation in criminal offenses leading to abuse of NM and endangering safety

of NI. Amendment to the Convention entered into force on 8 May 2016. On the basis of Government Resolution No. 229/2009 the Chairperson of UJD SR established a permanent inter-ministerial working group to update determination of the threat by NI, and for NI and NM within the design-based threat to the state, which actively worked also in 2016. The group, besides updating the document "Determination of threat by the nuclear installation and for NIs and nuclear materials within the design-based threat to the state", which was submitted to the chairman of the Security Council of SR for information, addressed also updating design threat for NI, by regular review of the threat, operative handling of situations, arising from incidents either in Slovakia or abroad, which affected the physical protection of NM and NI. Requirements for the physical protection of NM and NIs are defined in the Atomic Act.

Given the fact that UJD SR in the assessment of nuclear safety of NIs in an administrative proceeding reviews also the level of securing PP on the basis of data, which the license holder states in the PP plan, approval of the Physical Protection Plan, according to Section 7 par. 5 of the Atomic Act, is a special condition for issuing license. Physical Protection Plan is supplemented also by contingency plans, which define and describe implementation of activities, procedures and measures to respond to unauthorized action or sabotage during the transport of radioactive materials resulting in effective suppression of these actions.

Regulatory activity of UJD SR in this field focused on checking the operation of technical systems of physical protection, control of the level of performance of regime protection in NPP Bohunice V-2, NPP Mochovce 1&2, JAVYS and NPP Mochovce 3&4 and for ensuring physical protection during transports of FNF and SNF. Ensuring PP

was in compliance with the approved plan of PP of NPP Bohunice V-2. UJD SR in 2016 approved several changes in the Plan of physical protection of NPP Bohunice V-2, NPP Mochovce 1&2 as well as JAVYS. Providing for PP at the NR RAW also in 2016 was in compliance with the approved documents "Plan of physical protection for NR RAW Mochovce" and its amendments. In 2016, UJD SR approved also change to the Plan of physical protection for NR RAW Mochovce. Subject of the proposed change was technical, regime and organizational support for PP of NR RAW relating to facility for handling institutional RAW (IRAW) and captured radioactive materials.

Physical protection of the sites throughout the period under review, in NPP Bohunice, NPP Mochovce was provided by private security service, "Ochrana a bezpečnosť SE Mochovce", and by the Police of SR (emergency police department).

In JAVYS, exercising regime protection is provided by private security service BONUL.

In 2016, UJD SR approved also several changes in the Preliminary plan of physical protection of NPP Mochovce 3&4 relating to construction of this NI.

UJD SR further reviewed and approved the plans for providing physical protection for the transport of SNF from NPP Mochovce to the ISFS, which was in March 2016, then the plan of PP to provide PP during transports of SNF from NPP Bohunice V-2 to JAVYS, site Jaslovské Bohunice, and plan of providing PP for transports of FNF from the Russian Federation to NIs in Slovakia.

Every quarter, exercises of physical protection services were conducted at the sites with the participation of UJD SR representatives, to verify effectiveness of the PP

system. Exercises focused on response and coordination of activities of all PP services to the situation. They verified readiness of the personnel of the authorization holder, operators of PP control centres, PP services - the private security services "Ochrana a bezpečnosť SE Mochovce", BONUL and the Police of SR, responding to cope with simulated situation, as well as verification of the system of connection and communication between various services of PP.

In the course of 2016, UJD SR performed inspections focused on PP of NIs and NMs and on PP during shipments of FNF, SNF and uranium concentrate. During 2016, UJD SR conducted 13 inspections focusing on PP of NI, NM, RAW, and at the same time inspections focused on PP during shipments of radioactive materials.



# 5. COMPETENCE OF A BUILDING AUTHORITY

UJD SR has the competence of a building authority under the Act No. 50/1976 Coll. on spatial planning and building code (the Building Act) for projects of NIs and projects related to NI located in the area enclosed by the boundaries of NI. That means authorizing designs, modifications to the designs, maintenance works, issuing decisions on the use of buildings and demolition of buildings.

At the site of NPP Bohunice V-2 three buildings were put into use. UJD SR issued a decision to change the deadline for completion of one building.

For the site of NPP Mochovce 1&2, building permits were issued to change completed buildings in connection with the seismic reassessment of NPP Mochovce 1&2 to a new value of seismic load and other permits for building at the site of NPP Mochovce 1&2.

In JAVYS, NPP Bohunice V-1 removal of unused buildings continues, and the following buildings were put into use: "Repository for very low activity waste, stage 1, Mochovce RU RAO" and "Treatment and conditioning of Chrompik on the line for Chrompik vitrification".



## 6. EMERGENCY PLANNING AND PREPAREDNESS

Emergency preparedness is the ability of the license holder and of the public authorities to activate and implement actions and measures that lead to the identification and effective coping with incidents and accidents at NIs or during transports of radioactive materials and to effective suppression of possibilities that threaten the life, health of employees, population, or their property and environment.

### 6.1. ON - SITE EMERGENCY PLANNING

To manage emergency situation at NIs and their impact on the surrounding environment, the license holders develop their emergency documentation that establishes the procedure and organization of work at various levels of emergency situation.

Holders of licence for operation of NI have developed their:

- On-site emergency plans, which provide for the organization of emergency response and its implementation concerning the management of emergency situation and protection of staff, including protection of health of the staff.
- Preliminary on-site emergency plan containing planned measures on the territory of NI or several NIs during their construction.

To ensure emergency preparedness activities, such as planning and preparation of organizational, personnel and material and technical means and measures to successfully manage crisis and emergency situations according to classified event, the license holder formed organization of emergency response, emergency committee and emergency management centre. Employees of the license holder annually participate in exercises and trainings to acquire and maintain skills for activities under emergency conditions, while exercises

involving the entire emergency response organization are preformed at least once a year. For 2016, the on-site emergency plans for all NIs in operation in Slovakia remain valid. From 2016, preliminary on-site emergency plan for Units 3&4 of NPP Mochovce is in force.

For the purposes of shipments and transport of FNF and SNF, NM and RAW, the applicant for authorization for transport prepares emergency transport orders (the ETO). The aim of these ETO is to secure preventive and protective measures in case of incident or accident during transport. UJD SR assesses, within its competence, the emergency transport orders, approved by the Ministry of Transport and Construction SR. In 2016, UJD SR reviewed emergency transport orders for rail transport of FNF for VÚJE.

### 6.2. OFF - SITE EMERGENCY PLANNING

To ensure protection of life, health and property of the population and protection of environment, the competent public authorities develop Emergency Plans for the population. This documentation contains radiation protection measures and tasks related to their implementation, as well as other technical information and various overview necessary to ensure immediate and rapid decision-making, the implementation of population protection in case of an emergency caused by an accident at NI, as well as the links to on-site emergency plans of the holder of license for operation of NI. It specifies management, control, organizational and implementation mechanisms with regard to ensuring the preparation of management bodies for crisis management, enforcement services, as well as the population to cope with emergency response to specification of possible procedures for the implementation of these tasks. For 2016, all approved population protection plans (for the Banská Bystrica, Nitra, Trnava and Trenčín regions) remain valid.



### 6.3. INSPECTIONS IN THE FIELD OF EMERGENCY PLANNING AND PREPAREDNESS

Inspections in the field of emergency preparedness in 2016 were aimed at checking the course of shift emergency exercises, verification of interaction of the emergency response organization during site exercises, inspections of equipment and resources earmarked for emergency preparedness, verifications of compliance with obligations arising for the license holder from the law, during on-line data transmission from NIs at UJD SR. UJD SR performed also inspections of the system of training and updating of preliminary on-site emergency plans and checking the system of trainings on emergency transport orders linked with the control of documentation and exercising emergency transport orders of holders of authorizations for shipments of radioactive materials.

### 6.4. EMERGENCY RESPONSE CENTRE OF UJD SR

UJD SR has established Emergency Response Centre (the ERC), which in the case of incident or an accident would ensure evaluation of its course and consequences, their seriousness in terms of potential impact on the environment, and prepare draft recommended actions to protect the population. All these activities in ERC are regularly tested and exercised by the Emergency Staff of UJD SR. The Emergency Staff, with the support of software evaluation tools can, within a short time, provide prognose of development of events with recommended measures to eliminate, or mitigate consequences of an incident or accident. ERC is integrated also in the system of emergency preparedness of Slovakia, as one of the technical support resources of the Central Crisis Staff.

### 6.5. NATIONAL AND INTERNATIONAL EXERCISES

In 2016, the ERC of UJD SR was involved in several national, but also international exercises. The Emergency Staff practiced its activities during site exercises at NI, at the Bohunice site and also at NIs at the Mochovce site, and some shift operations exercises. Every year, members of the Emergency Staff attend also regular trainings for expert groups to learn the skills for the use of emergency documentation and use of software support resources. From among the international exercises, in 2016 UJD SR was again involved into exercises of ConvEx series, organized by the IAEA.

#### INES Training

In view of the need for a uniform approach to the assessment of incidents by UJD SR and license holders under the Atomic Act and the coordination of informing the population about the events related to the peaceful uses of ionizing radiation, in 2016 UJD SR prepared training on evaluation of incidents using INES scale. INES scale was created as a tool for communication between radiation experts, authorities and the public about the seriousness of nuclear and radiation incidents. The training program was divided into four blocks, taking into account different uses of INES scale by various stakeholder groups within NI operators, employees of radiological and nuclear regulator. The training was attended by 42 employees from departments that work with the INES scale.



## 7. INTERNATIONAL ACTIVITIES

### 7.1. EUROPEAN AFFAIRS

In the context of Slovakia's membership in the EU, during the whole of 2016 UJD SR managed the European agenda falling under peaceful uses of nuclear energy, including provision of tasks and commitments arising from its membership. Another dimension of the European nuclear agenda included activities related to the Slovak Presidency of the EU Council. UJD SR representatives regularly attended meetings of the EU Council working groups, and also meetings of the working committees and groups of EC, where as experts in the areas related to competences of UJD SR, particularly in relation to commitments and actions resulting from the Treaty establishing the European Atomic Energy Community (the Euratom Treaty), defended the interests of the Slovak Republic.

One of the most important working groups of the EU Council in terms of competences of UJD SR is the Working Party on Atomic Questions (ATO). Activities within the scope of this working group in the course of 2016 concentrated primarily on activities related to the preparation and the actual Slovak Presidency of the EU Council (SK PRES). In the context of performance SK PRES, during the second half of 2016 the meetings of ATO were carried out under the leadership of Slovakia, specifically on 7 July, 7 September, 11 October, 9 November, 30 November and 14 December 2016, with the representatives of UJD SR taking the position of chairman and 2 national experts. UJD SR actively cooperated with the Permanent Representation of SR to the EU in Brussels, the Ministry of Economy of SR, the Council Secretariat and the EC, where it was responsible for a smooth running of the negotiations, factual and expert roofing of respective agenda, discharge of Presidency duties of Slovakia and mediation in promoting interests of individual Member States and seeking compromise solutions. During SK

PRES, the draft Council conclusions on Special Report by the European Court of Auditors No. 22/16 entitled "EU Nuclear Decommissioning Assistance Programs in Lithuania, Bulgaria and Slovakia: some progress made since 2011, but critical challenges ahead" was successfully approved and adopted. In addition, during 2016 this working group discussed, for example, the draft Nuclear Illustrative Programme - PINC, the draft report of the Euratom Community on the Convention on Nuclear Safety and related issues of Euratom, the national reports of third parties, and on other documents. Due to the SK PRES also to other international organizations (the IAEA Vienna, OECD/NEA Paris), during SK PRES UJD SR was responsible for expert covering of the relevant agenda also at these Forums.

In relation to the fulfilment of Slovakia's commitments arising from the EU Directives, activities continued throughout the year 2016 related to the transposition of the Council Directives 2014/87/Euratom and 2013/59/Euratom. In connection with the approaching deadline for meeting the obligations under Article 14, 3 of the Council Directive 2011/70/Euratom, UJD SR representatives during 2016 actively participated in international working meetings in preparation of the ARTEMIS mission, the IAEA services providing expert peer reviews in the field of RAW and SNF management, decommissioning of nuclear installations, remediation programs, and also legislative and regulatory framework in line with the requirements of the Council Directive 2011/70/Euratom. The subject of these meetings was primarily preparation of methodical guideline on how to perform ARTEMIS peer reviews and preparation of self-assessment questionnaire. Work on this documentation will continue also during the next year. Activities within the European High Level Group on Nuclear Safety (ENSREG) and its subgroups in 2016 focused on continuation in monitoring of measures taken and the implementation of recommendations of peer

reviews carried out as part of the Stress Tests (Action Plan). At the same time preparations for the first thematic peer review were made, which will be in 2017 according to the Council Directive 2014/87/Euratom on the topic of aging of NPPs. Next year there will be another ENSREG conference on current issues in nuclear safety.

The UJD SR, as the coordinator for Article 37 of the Euratom Treaty, coordinated activities in this field and communicated with the EC. In September 2016, notification of general data was sent to EC on the "Facilities for melting metal radioactive waste at the Jaslovské Bohunice site". EC sent its positive statement on the matter by letter in November 2016.

Given the implications associated with the preparation and the performance of the Slovak Presidency of the EU Council in the second half of 2016, UJD SR was actively involved in activities related to the preparation, as well as discharge of the Slovakia's Presidency of the EU Council. UJD SR representatives regularly attended meetings of the Interdepartmental Coordination Group for the preparation of SK PRES 2016 and its sub-groups. In this context the Slovak Government adopted several framework documents to anchor the basic program framework and the main starting points for the Slovak Presidency. It defined also the priority areas and specificity of measures in the administrative and organization, budget and HR areas. UJD SR representatives discharged their chair duties in the WP ATO and also provided cooperation to the Ministry of Foreign and European Affairs of SR, as needed, which was the main coordinator in this area.

### 7.2. COOPERATION WITH THE IAEA

The UJD SR, as the coordinator for cooperation with the IAEA, also in 2016 continued the extensive activities

with this Agency, which is especially important due to its political and professional and international importance, and a wide range of opportunities for technical cooperation and assistance.

In 2016, the meetings of the IAEA Board of Governors were held in March, June, September, October and November, attended by the UJD SR representatives, or by the Permanent Mission in Vienna. In April and in November, meeting of the Commission for Safety Standards was organized, and in June and in November meetings of committees for safety standards with the participation of the UJD SR representatives and other Slovak experts. Experts are continuously involved in the work of expert groups of the IAEA. In May, meeting of the Program and Budget Committee was held with the participation of UJD SR representative, and in November meeting of the Committee for Technical Assistance and Cooperation of the IAEA Board of Governors.

The Slovak delegation attended the 60th meeting of the IAEA General Conference, which was held from 26 to 30 September 2016. The head of delegation, Ms. Marta Žiaková, presented a joint EU statement at the plenary session of the General Conference, since the conference was held under the Slovakia's Presidency of the EU Council. In terms of Slovakia's interests, interests of the EU and its partners, the course and the outcomes of the 60th meeting of the IAEA General Conference can be assessed positively. Conclusions and resolutions from the conference will be reflected into activities of the relevant ministries during the implementation of cooperation with the IAEA in the following period. Information about this meeting was presented to the Slovak Government in October 2016. During the conference, the regular quadrilateral meeting took place between the delegations of national regulators for nuclear safety of the Czech Republic, Hungary, Slovenia and Slovakia and several



bilateral meetings were held between the UJD SR representatives and their foreign partners.

Successful cooperation between the UJD SR and the IAEA continued in technical projects. In 2016, there were 3 national and more than 30 regional and interregional projects implemented through participation in workshops, training courses and technical meetings, providing expert assistance of experts, as well as through coordinated research projects. In 2016, UJD SR provided for training and internships for the staff of regulators, nuclear power plants and science and research centres mainly from developing countries in SR. At the same time proposals were prepared for the projects of technical cooperation for the next biennium (2018-2019). Three new designs of national projects were developed.

In 2016, all due contributions to the IAEA were paid: Euro 469,560 + USD 69,531, to the Technical Cooperation Fund, Euro 139,352, as well as the national membership contribution of Euro 16,729.

### **7.3. COOPERATION WITH THE COMPREHENSIVE NUCLEAR TEST BAN TREATY ORGANIZATION (CTBTO)**

In 2016, UJD SR provided for the tasks arising from the conclusions of the meetings of the CTBTO Preparatory Committee and from the meetings of its working groups. UJD SR experts or the representatives from the Permanent Mission in Vienna attended the 46th and 47th meeting of the Preparatory Committee, as well as the 46th and 47th Meeting of the Working Group B in Vienna.

On 12 August 2016 the Agreement between the Slovak Government and the CTBTO Preparatory Commission on mutual cooperation in training and implementation of

the Commission's activities regarding on-site inspections entered into force. The Agreement was published in the Collection of Laws of SR on August 5, 2016, under No. 227.

On the basis of bilateral international agreement between Slovakia and the CTBTO on cooperation in training of surrogate inspectors of CTBTO, ratified by the President of SR, the sponsor of which is the UJD SR, Slovakia was selected in the third training cycle to co-organize a training course for the beginners – surrogate inspectors of the CTBTO. UJD SR focused on the most effective preparation of this course in cooperation with the Ministry of Foreign and European Affairs SR and the Ministry of Defence SR. The training was held from 16 to 28 October 2016, in Zvolen (theoretical part) and in the Training Centre Lešť (practical part). The course was attended by 72 participants from 46 countries. At the end of the course CTBTO representatives highly evaluated both the course itself and its organizational preparation. More information about the course can be found at the CTBTO website: <http://www.ctbto.org/press-centre/highlights/2016/on-site-inspection-introductory-course-kicks-off-third-training-cycle/>

UJD SR will continue its efforts for the Treaty to enter into force as soon as possible, since it all depends on the ratification of the Treaty by a group of countries listed in Annex 2 to the Treaty.

For 2016, Slovakia paid its membership fee in CTBTO in the amount of USD 53,834, and Euro 125,832.

### **7.4. COOPERATION WITH THE NUCLEAR ENERGY AGENCY OF THE ORGANIZATION FOR ECONOMIC COOPERATION AND DEVELOPMENT (OECD/NEA)**

UJD SR as the sponsor for cooperation with the OECD/NEA coordinates cooperation between Slovakia and the OECD/NEA, and provides for fulfilment of obligations of Slovakia arising from this membership.

In 2016, representatives of SR took part in deliberations of the NEA Steering Committee for Nuclear Energy (SC), which were held in April and November. The meeting was chaired by the newly elected chairperson of the SC, Ms. Marta Žiaková, Chairperson of UJD SR. The main topic of negotiations, as well as the work of SC throughout the year, was the preparation of the Agency's Strategic Plan for the period 2017-2022, and also the preparation of the program and the budget of the NEA and the NEA Databank for the period 2017-2018. Both documents, essential for the work of the Agency for the following period, were approved at the November meeting. The agenda of SC meetings, within the political discussions, included also highly topical issues of funding NPP decommissioning, and training of staff and training of experts in the field of nuclear energy.

An important appreciation of the contribution of SR to the work of NEA was the two visits paid by the NEA Director General (NEA DG) William D. Magwood IV in Slovakia. The first visit on 30 and 31 May was focused on detailed familiarization with Slovakia's nuclear program. The NEA DG visited NPP Mochovce and the National Repository for RAW in Mochovce, met with the top representatives of the Ministry of Economy of SR and the Ministry of Foreign and European Affairs of SR, and for the wider public he gave a presentation on the topic: Future of nuclear energy – challenges and opportunities. The second visit to Slovakia in October NEA DG took the opportunity to speak during the meeting of the European Nuclear Energy Forum (ENEF 2016).

Slovak experts also in 2016 continued to be actively

engaged in activities of all Permanent Technical Committees, as well as number of working groups and expert groups. UJD SR representatives attended the meetings of the Committee of nuclear regulatory authorities (CNRA), the Committee on Safety of Nuclear Installations (CSNI) and its working groups, the Radioactive Waste Management Committee (RWMC), and the Legislative Council (NLC) and engaged in activities of other working groups, the focus of which is in line with the competence of UJD SR. Slovak experts elaborated a number of documents that are used as support materials for evaluations and professional publications of OECD/NEA. UJD SR in cooperation with VUJE continues also in the period 2015-2017 in participation in the activities of science and research project Halden Reactor, on the basis of renewed contract signed in March 2015. UJD SR is also involved in the project "PKL Phase 3 Project (PKL-3)". With the institutional support of UJD SR, activities of SE continue in the second phase of CODAP projects (Component Operational Experience, Degradation and Ageing Programme), CADAK (Cable Ageing Data and Knowledge) and ABmerit in project "CNSC CAPS on International benchmarking project on fast-running software tools used to model fission product releases during accidents at nuclear power plants". At the end of 2015 an agreement was signed to accede to the project "Thermal-hydraulics, Hydrogen, Aerosols and Iodine Project (THAI-3), which was launched in February 2016.

In 2016, membership contributions to the OECD/NEA and to the NEA Databank (in total Euro 38,989), for Halden Reactor Project (Euro 13,490), PKL-3 Project (Euro 17,250) and the THAI-3 project (Euro 14,250) were paid on time and in full.





## 7.5. FULFILLMENT OF OBLIGATIONS ARISING FROM INTERNATIONAL AGREEMENTS

### Convention on Nuclear Safety

In accordance with Article 5 of the Convention on Nuclear Safety (the “Convention”) already the seventh National Report for Slovakia was developed, which was submitted to the IAEA on 15 August 2016. The said Report will be discussed at the 7th Review Meeting of the parties to the Convention from 27 March to 7 April 2017 at the IAEA offices in Vienna.

The said National Report from 2016 is available at the UJD SR website: [www.ujd.gov.sk](http://www.ujd.gov.sk).

### Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management (the Joint Convention)

At the 5th Review Meeting of the Joint Convention, which was held at the IAEA in Vienna from 11 to 22 May 2015, the Fifth National Report was discussed, prepared under the Joint Convention (the said National Report is available at the UJD SR website at: [www.ujd.gov.sk](http://www.ujd.gov.sk)).

Representatives of the member states of the Joint Convention appreciated the high quality of the National Report, the amount of technical information provided, its compactness and transparency.

### Convention on the Physical Protection of Nuclear Materials

On 8 May 2016, the Amendment to the Convention on the Physical Protection of Nuclear Materials entered into force for Slovakia. It was published in the Collection of Laws of SR on 5 May 2016, under No. 170.

### Treaty on the Non-proliferation of Nuclear Weapons

Based on the Agreement between the Kingdom of Belgium, Denmark, Federal Republic of Germany, Ireland, Italy, the Grand Duchy of Luxembourg, Kingdom of the Netherlands, the European Atomic Energy Community on the implementation of Article III, par. 1 and 4 of the

Non-Proliferation Treaty and its Additional Protocol, the Euratom and the IAEA inspectors conducted international inspections of NIs in Slovakia. They did not find any violations of Slovakia’s commitments in the field of non-proliferation and the safeguards system.

## 7.6. BILATERAL COOPERATION

Bilateral cooperation is implemented at government level, in particular with the neighbouring countries, and on the level of regulatory authorities for nuclear and radiation safety. UJD SR regularly organizes meetings with the representatives of governmental and other partner organizations in the neighbouring countries. In 2016, regular annual bilateral meetings were held between the leading representatives of UJD SR and the delegations of neighbouring countries - Hungary, Czech Republic, Poland, Austria and Slovenia. They discussed the coordination of activities within the scope of WENRA, ENSREG activities, activities within the OECD/NEA and cooperation with the IAEA.

In March 2016, bilateral meeting was held between UJD SR and the top representatives of the US Nuclear Regulatory Commission (US NRC). Both parties expressed their interest to continue exchanging information on matters of regulation and standards required or recommended by their organizations for supervision over the safety of NI and their impact on the environment. Cooperation continues in the field of computer programs designed for safety analyses.

On 17 June 2016, based on the Agreement between the Government of the Slovak Republic and the Government of Poland on Early Notification of Nuclear Accident, on exchange of information and cooperation in the field of nuclear safety and radiation protection, another bilateral meeting was held in Poland (Krakow), the main topic of which was to discuss the priorities of the upcoming Polish Presidency of the V4 and the Slovak Presidency of the EU Council. Emphasis was placed mainly on coordination in the field of peaceful uses of nuclear energy, as well as

organization of trainings and technical visits for the Polish experts to Slovakia.

At the bilateral meeting with the representatives of the Austrian governmental organizations held on 20 and 21 June 2016, UJD SR representatives and BMLFUW, besides other, informed about the completion of the process of Security Dialogue on NPP Mochovce 3&4, which took place since 2008 as fulfilment of condition 3.2 from the conclusions of the Final Opinion of the Ministry of Environment of SR in the process of impacts assessment of the project of NPP Mochovce 3&4 on the environment. With the seventh of a series of seminars on predetermined topics the above condition was fulfilled, which was acknowledged also by the Austrian side. The last one from the expert meetings with Austria in a process of so called “Security Dialogue on NPP Mochovce 3&4”, and also the second one on the topic “Severe accidents” was held at the offices of UJD SR on 27 and 28 April 2016. Slovak experts consistently answered all questions sent in advance and also those posed during the meeting by the Austrian party. After the meeting, all topics were concluded as satisfactorily answered. At the same time fulfilment of the condition 3.2 of the Final Opinion by the Ministry of Environment of SR in the process of assessing impacts of the project of construction of NPP Mochovce 3&4 on the environment was confirmed. To conclude the whole process, visit to NPP Mochovce 3&4 was organized for the Austrian experts, which took place on 28 June 2016.

During the bilateral meeting held between UJD SR and the representatives of the Indian Atomic Energy Regulatory Board (AERB) on 27 September 2016, the Indian party indicated interest to cooperate in the field of VVER reactors, e.g. exchange of experiences in conducting inspections at NIs and also SNF management. As the appropriate forum to gather information in this area, the Committee for Regulatory Activities in nuclear field of OECD/NEA was highlighted, where India acts as an observer. They also expressed interest in exchange of information from other nuclear applications, for example, in medicine. In connection with governing the contractual relations between the countries it was stated that updating the Agreement between the Government of the Czechoslovak Socialist Republic and the Government of India on cooperation in the field of uses of nuclear energy for peaceful uses, signed in New Delhi in 1966, is currently not relevant with regard to the process of preparing the Agreement on Cooperation in Research and Development in the field of peaceful uses of nuclear energy between the European Atomic Energy Community and the Government of India, the signing of which has already been approved by the EU Council. The delegations, however, considered the possibility of signing a Memorandum on Cooperation between the regulators. The Chairperson of UJD SR invited the Indian counterparty to visit Slovakia, who accepted the invitation. Representatives of the Nuclear Regulatory Authority Argentina (ARN) during a bilateral meeting with the representatives of UJD SR held on 30 September 2016

informed about changes in the structure of the regulatory body after the appointment of the new government, as well as about the current state of the nuclear program in Argentina. In preparation for the IRRS Mission they work on the self-assessment of the Authority, where they have already identified the need for a complete revision of standards. The delegations informed each other about the prospects of nuclear energy development and about licensing of new NPPs. The Chairperson of UJD SR invited the ARN delegation to visit Slovakia for a more detailed familiarization with the Slovak nuclear program and for identification of areas of possible bilateral cooperation, with the potential conclusion of a Memorandum of Cooperation between UJD SR and ARN. The ARN delegation, led by its Chairman, Nestor Masrier, visited Slovakia on 8 December 2016, when in addition to providing detailed information about the Slovak approach to long-term operation of reactors, also the activities of SE were presented as an operator of NPPs in Slovakia. The guests also took this opportunity to visit the operations of NPP Mochovce 1&2 and NPP Mochovce 3&4 under construction.

At the request of the Angolan side, the delegation of UJD SR supported by the Permanent Representation of SR at the MO SR on 29 September 2016 met with the representatives of the Ministry of Energy and Water and of the Regulatory Authority for Nuclear Energy (AREA – falls under the Ministry of Energy and Water). Both parties informed each other about their nuclear program and the use of nuclear applications in the energy sector, as well as in other areas. Angolan party expressed interest in direct cooperation in the field of nuclear applications in medicine (radio diagnostics, radiotherapy, computer tomography, including training of professional staff and engineers for the maintenance of X-ray units, accelerators, etc.), and in agriculture, as well as in the field of technical education. Specific fields of cooperation will be specified on the basis of information provided and transferred to the draft Memorandum of Cooperation, which will be prepared on the basis of communication between the contact persons.

Cooperation with the German Gesellschaft für Anlagen und Reaktorsicherheit (GRS), on the basis of which the Slovak experts participate in seminars and workshops focusing on scientific and technical cooperation in the field of safety assessment of NI, continued also in 2016. From 24 to 28 October 2016, an UJD SR representative attended a working meeting on the topic “Sharing the experience of national regulators in the implementation of current international requirements in nuclear safety and radiation protection”. Cooperation with GRS continues also in the field of analysis of thermo-hydraulic processes occurring in the containment of NPP with VVER-440/V213 and the use of German computational tools (COCOSYS and SUSA).



## 8. PUBLIC RELATIONS

For UJD SR, communication and public information is one of its priority tasks arising from the mission of the regulator. The aim of communication with the public is to inform the domestic and the foreign public about events falling under the competence of UJD SR, and through current, objective and understandable information and two-way open communication, to build public confidence in the activities of UJD SR. To increase credibility and public awareness, UJD SR has a Public Communication Strategy.

As an objective and independent regulator, it continuously creates conditions for ensuring public information and media, whether through issuance of press releases, news published on the website of UJD SR, but also through social media - FACEBOOK. The website of UJD SR is available also in English version, to be a source of information also for the international community. It publishes the laws and regulations in the field of nuclear safety and related legislation, as well as full versions of the Safety Guides. On the website it publishes the decisions issued by UJD SR, as well as all administrative procedures of UJD SR. In addition, UJD SR allows the public and the media to communicate through a special address on the website (info@UJD.gov.sk), as well as via "Contact us...". In 2016, the UJD SR website went through a redesign and it was adapted for a comfortable viewing of the site on mobile devices and tablets. Viewing the UJD SR website thus became more transparent, simplified and thus facilitated access for the public, which favours mobile devices and tablets as the main information tools.

In 2016 UJD SR installed a touch screen information kiosk. The kiosk provides for viewing and searching in the administrative procedures of UJD SR (closed, but

also pending ones), and also decisions issued by UJD SR. Also the UJD SR website is available there. The touch screen information kiosk is located at the seat of UJD SR in Bratislava in front of the building and is available to the public 24 hours a day.

UJD SR regularly answers questions from the public and from the media. It is pro-active in seeking to improve information to the public through direct communication with the media (holding meetings between the management of the Authority and the representatives of media). In 2016, the topic of completion of Units 3&4 of NPP Mochovce was among the most frequently asked by the media.

From 16 to 28 October 2016, in Zvolen and in the military training area Lešť, an international Introductory Training Course was held for surrogate inspectors for the Comprehensive Nuclear Test-Ban Treaty (CTBT). In this connection UJD SR organized a press conference directly at the training area Lešť, which was attended, among others, by: the Chairperson of UJD SR, the Minister of Defence SR, State Secretary of the Ministry of Foreign and European Affairs SR, the Ambassador – Permanent Representative of Slovakia to the international organizations in Vienna, as well as the top representative of the CTBTO – the Executive Secretary, Mr. Lassina Zerbo. The press conference was attended by journalists from RTVS, TV JOJ, TA3 and others.

UJD SR raises public awareness on its activities and on its mission with the aim of creating favourable opinion as a professional and reliable regulator, who is a credible source of information through the issuance of information materials (annual reports, leaflets), as well as

other activities, such as meetings and seminars with the public, but also with students and schools. In 2016, UJD SR representatives visited the Secondary vocational school for transport and the Grammar School Hollého in Trnava and the Grammar School Metodova in Bratislava. The lectures introduced to students not only the competences and activities of UJD SR, but also paid attention to nuclear safety and RAW management. In November, the Chairperson of UJD SR and other representatives of UJD SR participated in a workshop and discussions with the students of secondary schools on the topic: "Why are the Energy Union and energy security the priorities for the SK PRES?", organized by the Nitra Region and the municipality of Nitra. UJD SR plans to continue in these activities.

UJD SR continues to reach in communication the population in the vicinity of NIs. Representatives of UJD actively participated in the meetings of Civic Information Commissions (OIK) at NI in Bohunice and at NI in Mochovce, as well as in the meetings of ZMO Bohunice and the Special Interest Regional Association of Municipalities Mochovce. Information on the current issues in the field of nuclear safety in Slovakia and abroad was presented, as well as on activities of UJD SR. In addition, the mayors of municipalities have contact to the Chairperson of UJD SR, to be able to communicate directly, if needed.



# 9. NUCLEAR REGULATORY AUTHORITY OF SR

## 9.1. ECONOMIC DATA

UJD SR as a budget heading with its revenues and expenditures is linked to the state budget. From 1 January 2008, the Atomic Act introduced annual contributions to state regulation of nuclear safety. Revenues for 2016 were budgeted for UJD SR in the amount of Euro 8,680,000,

the revenue side of the budget was not adjusted during the year. Limit of expenditures for 2016 was approved for UJD SR in the amount of Euro 8,779,722. After budgetary measures the limit on expenditures was adjusted to Euro 8,694,657. Breakdown of revenues and expenditures is shown in Table 3.

TAB.3 ECONOMIC RESULTS FOR 2016

Item	Amount (in Euros)
Limit of revenues of UJD SR for 2016	8 680 000
Actual revenues, total	9 151 190
Of which:	
Non-tax revenues	8 966 383
Foreign grants	184 807
Limit of expenditures for UJD SR for 2016	8 779 722
Actual expenditures, total	8 080 549
Of which:	
Current expenditures	7 602 944
Capital expenditures	477 605

## Current Expenditures

In drawing current expenditures there was a significant share of drawing for foreign transfers in the amount of Euro 811,745. These funds were used to pay for contributions for membership in international organizations.

TAB. 4 FOREIGN TRANSFERS TO INTERNATIONAL ORGANIZATIONS

Financial contributions to international organizations	Amount (in Euros)
IAEA – Membership contribution	710 603
IAEA – Participative contribution	2 071
OECD/NEA - PART II Program	28 851
OECD/NEA - PKL3 Project	14 250
OECD/NEA - Databank - program PART II	10 138
Halden Reactor Project	13 490
Implementation agreement US NRC and UJD SR (participation in CSARP program)	32 342
Total	811 745

In drawing current expenditures, significant share was taken by the funds to deal with the tasks in the field of fuels and energy in the amount of Euro 96,000. Implementation of the task entitled „Technical assistance in the field of nuclear safety“ related to the need of SR to ensure fulfilment of demanding tasks in the field of regulation of nuclear safety of NIs and in the field of emergency planning from the position of the state.

Expenditure on expert opinions and analyses, which are necessary support in the decision-making, licensing and inspection activities of UJD SR, appropriations in the amount of Euro 549,749 were used.

For payroll for 124 employees, Euro 3,164,928 was used and for contributions to health insurance and social security, the expenditures incurred reached Euro 1,191,487.

TABLE 5 CURRENT EXPENDITURES

Current Expenditures	amount (in Euros)
Foreign transfers	811 745
Expert opinions, analyses and special services	549 749
Payroll (for 124 staff members)	3 164 928
Mandatory insurance of employees	1 191 487
Domestic transfers	27 627
Goods and services	1 761 408
Technical assistance in the field of NS	96 000
Total	7 602 944



For purchases of goods and services necessary for the operation of UJD SR, Euro 1,761,408 was spent. The basic generic breakdown of these expenditures results from the economic budget classification of expenditures and their spending is shown in Table 6.

TABLE 6 EXPENDITURES FOR GOODS AND SERVICES IN 2016

Item	amount (in Euros)
Travel expenses	172 022
Telecommunications and energy	67 108
Material	169 075
Vehicles	50 340
Routine and standard maintenance of buildings and machinery	217 174
Rent for office space, garage, meeting rooms and equipment	53 727
Services (printing, reproduction, cleaning, translations, information, equipment revisions, trainings, advertising, catering, bank fees, allocation to Social Fund and other)	1 031 962
Total	1 761 408

Domestic transfers in the amount of Euro 27,627 were used to pay the membership fee to a non-profit organization, for compensation of employees (for the first 10 days of sick leave), for severance and retirement benefits.

Capital Expenditures

Under the category of capital expenditures in the amount of Euro 477,605 UJD SR used the appropriations for purchases of the following capital assets:

TABLE 7 CAPITAL EXPENDITURES IN 2016

Item	amount (in Euros)
Interior equipment purchase	9 663
Purchase of computer technology (HW)	27 878
Purchase of software	347 505
Telecom infrastructure (server, UPS, router)	20 300
Purchase of machinery (air conditioning, copy machine)	39 971
Reconstruction and modernization of offices	14 112
Reconstruction - telecom infrastructure	10 280
Software upgrade	7 896
Total	477 605

Extra-budgetary funds

Under expenditures there are also extra-budgetary funds from abroad in the amount of Euro 184,807. These funds of foreign grants consisted of funds from SARNET project, ENSTI, IAEA Workshop SNMT and IAEA interns.

TABLE 8 DRAWING FUNDS IN 2016 (IN EUROS)

	Rozpočtové	Mimorozpočtové	Spolu
Current expenditures	7 418 137	184 807	7 602 944
Capital expenditures	477 605	-	477 605
Expenditures total	7 895 742	184 807	8 080 549





TAB.9 PROFESSIONS STRUCTURE OF EMPLOYEES AS AT 31 DECEMBER 2016

Professions structure	Total	Women	Men
Inspectors	72	21	51
Experts	28	17	11
Others	19	17	2
<b>Total</b>	<b>119</b>	<b>55</b>	<b>64</b>

Structure of employee education also directly influenced the professional level of performance of activities of individual departments and shows that 90 % of employees are university graduates and 10 % have complete secondary education. At the end of 2016 the share of men with university education is 98.4 %, for women it is 80 %. This share of university educated employees is based on the demands of their work and far exceeds the education level of the Slovak population.

In terms of age structure of employees, the group in the age from 51 to 60 years represents 22.7 % of the total headcount. At the same time the age structure of employees documents that employees aged between 41 and 60 years make up 48.7 % of the total number of employees, employees aged 18 to 40 years make up 34.5 % and the remaining 16.8 % is accounted for by staff over 61 years of age. These facts confirm the long-term trend that the performance of state regulation was ensured also in 2016 largely by employees with many years of professional experience, i.e. employees from 41 to 60 years of age and over 61 years, having a combined 65.5 % share on the total number of employees. The average age of UJD SR staff, as at 31 December 2016, was 47 years.

The share of managers accounted for 13.4 % of the registered number of employees.

#### Employee Education and Training

Training and staff development is another precondition for coping with the new demanding tasks of the current legal, economic and highly complex technical environment, which also includes nuclear power. In 2016 UJD SR paid due attention to training of its staff to perform civil service and perform work in public interest that required high demands on the professionalism, expertise and effective activity of the regulator's staff.

The training program for all UJD SR staff was elaborated in the training plan, which is a normative governing act with all-year-round content focusing on the learning needs of all departments. In addition, the ad hoc offered general and vocational training activities were used as well, organized by various training institutions. The training was focused on all areas of expertise provided by UJD SR. Employees, in addition to standard training methods used also other forms of education - flexible learning,

e-learning, and ICT in education. Training and formation of professional competence and skills in UJD SR becomes a lifelong process, because it must constantly take into account all current needs induced by changes in reality. Expenditure on staff training was budgeted in the amount of Euro 280,000, of which more than 75 % was allocated to training in the field of discharging nuclear regulation. It is obvious that in training UJD SR places great emphasis on highly specialized professional training of staff in the areas of competence of UJD SR, through which mainly inspectors and trainee-inspectors acquire the necessary knowledge, skills and attitudes to perform licensing, review, assessment and inspection activities.

The employer created conditions also for postgraduate study with a focus on operation of NIs and their decommissioning organized by the Faculty of Electrical Engineering and IT of the Slovak Technical University.

In addition to specific training, the education was thematically divided into several areas – international relations, legislation and law, economy and public procurement, IT, HR management, audit, language courses and other training activities. Adaptation of new employees was ensured through adaptation training, which was aimed at acquiring basic skills necessary for carrying out activities in civil service. For comfortable and convenient use of software, such as MS WORD, MS EXCEL and POWERPOINT, regular periodic training of staff was organized to increase the levels of users.

Constant attention was paid to language training, which was intended to provide and complement competence of UJD SR staff in language skills. More than 50 % of employees attended English, French and Russian language courses.

The UJD SR, as a separate central government authority, achieved status with the quality of work of its staff, which is highly and positively evaluated both in the country and abroad, which evidences high professional level and expertise of the regulator's staff.

## 9.2. HUMAN RESOURCE MANAGEMENT AND TRAINING OF STAFF

In 2016 UJD SR generated sufficient material, financial and information resources, but primarily human resources to ensure the demanding process of review and assessment of documentation, especially in connection with the completion of NPP Mochovce 3&4. The quality of HR management is one of the preconditions for achieving strategic objectives and tasks of UJD SR and pursuing the policy adopted for nuclear safety.

HR management was oriented mainly in sourcing and selecting new employees to ensure both current and future activities, but also to ensure and deepen training of staff in order to develop human potential and create an atmosphere of motivating employees to fulfil the objectives of UJD SR.

For 2016, UJD SR had in its budget breakdown defined total number of employees as 123, of which 106 positions were defined as civil service positions and 17 for work in the public interest. In addition, UJD SR had temporarily assigned one civil service position for 2016 to ensure performance of activities related to Slovakia's Presidency of the EU Council.

The process of filling vacant civil service positions UJD SR was implemented using standardized form in accordance with the Civil Service Act and internal service regulation. In 2016 UJD SR announced and carried out 15 selection processes and one vacancy was published for a position in public interest. 187 candidates signed up to these

selection processes, but only 98 candidates showed up. Out of the 15 selection processes 3 failed due to high demands on the skills and knowledge required for these jobs. It was necessary to repeat them.

At UJD SR, 16 civil servants started civil service. Three civil servants ended civil service, of that two employees retired and one civil servant ended civil service in temporary civil service for a fixed period due to the end of the Slovak Presidency in the EU Council.

Regarding the performance of work in public interest, 2 employees ended employment, and 2 employees accepted employment.

As at 31 December 2016 UJD SR had 119 employees, of which 102 civil servants and 17 employees working in public interest. Towards the end of the year 5 civil service positions remained vacant (of which 2 were tied with service agreements with the start of employment from 1 January 2017) and all positions for work in public interest were occupied.

Representation of women at UJD SR is 55 and there are 64 men. The share of employed women represents 46.2 %, documenting that representation of women compared to previous year increased slightly.



### 9.3. DEVELOPMENT OF REGULATORY ACTIVITIES

To maintain high professional level of state regulation of nuclear safety of NIs in Slovakia, it is contributed by development and implementation of results of science and research at UJD SR, as well as promoting exchange of knowledge and experience through active participation of UJD SR in international expert teams.

In 2016, the scientific and research task "Technical assistance in the field of nuclear safety" was completed, which was funded by UJD SR. The task was spread over a period of 2013 - 2016. The objective was to verify, complement and acquire new knowledge in the field of emergency preparedness, distribution of power density in the core of a nuclear reactor, evaluation of feedback from incidents at NIs, nuclear safety assessment of fuel batches, radiation load on the material of reactor pressure vessel, the residual performance of SNF in the transport container, UJD SR staff knowledge management, seismic threat to the infrastructure in the vicinity of NPP, functionality of systems for emergency reactor core cooling and systems for reducing pressure in the hermetic zone under accident conditions with leakage of primary coolant, 3D distribution and burning of hydrogen under the reactor containment, and other. Results of the solution are used in the regulatory process, in emergency preparedness and improving the activities of UJD SR.

In 2016, framework agreements were signed with the winner of restricted procedure to provide services in the field of scientific and technical support to UJD SR during inactive tests, physical and power start up of Units 3&4 of NPP Mochovec.

The UJD SR is a party in the research project on severe accidents organized by the US NRC. Through project implementation UJD SR has at its disposal US computational software MELCOR (MELting CORE), which is used for verification calculations of severe accident analyses

submitted to UJD SR within the administrative proceedings. From November 2016, UJD SR also gained access to complementary tool MACCS (MELCOR Accident Consequence Code System), which is designed to estimate the radiological consequences severe accidents. The UJD SR plans to use MACCS for verification analyses of projections of radiological consequences of some hypothetical accidents. In working meetings of the research project its members exchange experience and knowledge in the field of modelling and evaluation of response of NI to severe accidents. For the assessment activity of UJD SR is important also information and data on modifications made on NIs worldwide, which are implemented for the purpose of prevention or mitigation of consequences of potential accidents with severe damage to nuclear fuel. In a consortium with RISKAUDIT, the UJD SR is involved in the EC project aimed at helping the State Nuclear Regulatory Inspectorate of Ukraine (SNRIU) in discharging regulation over safe management of RAW and harmonization of regulatory requirements for nuclear and radiation safety. The Project is planned for the period 2014-2017. The UJD SR experts help the Ukrainian colleagues in an ongoing process of implementation of the requirements of WENRA reference levels for the safety of existing nuclear reactors.

Other experiences and technical information UJD SR acquires through participation in international projects and working groups of OECD/NEA. UJD SR supported project on research and verification of specific thermo-hydraulic characteristics of the primary circuit of NPP with pressurized water reactor. Project was successfully completed in 2016. The UJD SR has been involved in a new project, which continues to examine the behaviour of fission products and mitigation of risk associated with hydrogen and its combustion. It is a specific issue of water cooled reactors under conditions of severe accidents. The Project officially started in February 2016. Under the working groups of OECD/NEA, there are various international workshops and conferences organized, focusing on solving current issues of safety of NIs, exchange of

experience and mutual assistance. The UJD SR experts prepared or reviewed a set of documents, expert reports, proposals and concepts. Activity in groups contributes to their professional growth, information, exchange of experiences, knowledge and expertise in the development of nuclear safety and the application of such knowledge in practice.

Within the cooperation of regulators of countries operating NPPs with VVER reactors (VVER Forum) the UJD SR participated in fulfilment of tasks of several working groups. One of the tasks is to compare and harmonize approach to nuclear safety reviews of NPPs. The main aim of the working groups in the period 2014 to 2017 is support for the national regulators in their regulatory activities. They focus on exchange of national experiences in the field of improvement of safety of NPPs, analyses and classification of operational events, integrated decision-making process and many others, which significantly contributes to increased level of nuclear safety and protection against harmful effects of ionizing radiation.

### 9.4. UJD SR MANAGEMENT SYSTEM

The UJD SR management system is built in accordance with the requirements of EN ISO 9001:2015 and supplemented by the specific requirements imposed by the IAEA for ensuring nuclear safety. An advisory body to the chairman is the Council for the management system, which considers the concept of development of the management system, issues of its development and application, the need to carry out inspections, their conditions and requirements, audit reports, evaluations and comparison studies, issues of cooperation, exchange of experience and good practice in implementation of a management system in the state administration of SR and abroad and proposes procedures for its improvement and increasing effectiveness and efficiency of activities of UJD SR.

In 2016, risk management was integrated into the management system and register of risks was elaborated. The

risk register defines and classifies possible or practically occurring risks associated with the activities of UJD SR and includes all other information needed for risk management.

In accordance with the plan of management system audits there were three specifically targeted partial internal audits. No material shortcomings were found and it was confirmed that activities carried out at UJD SR are governed by valid guidelines and procedures for the management system. In addition to internal audits, the guidelines for the management system are reviewed annually by the owners of each process, while the owners verify the process recency, compliance with the related documentation and at the same time assess the possibilities for improving processes, their effectiveness and efficiency.

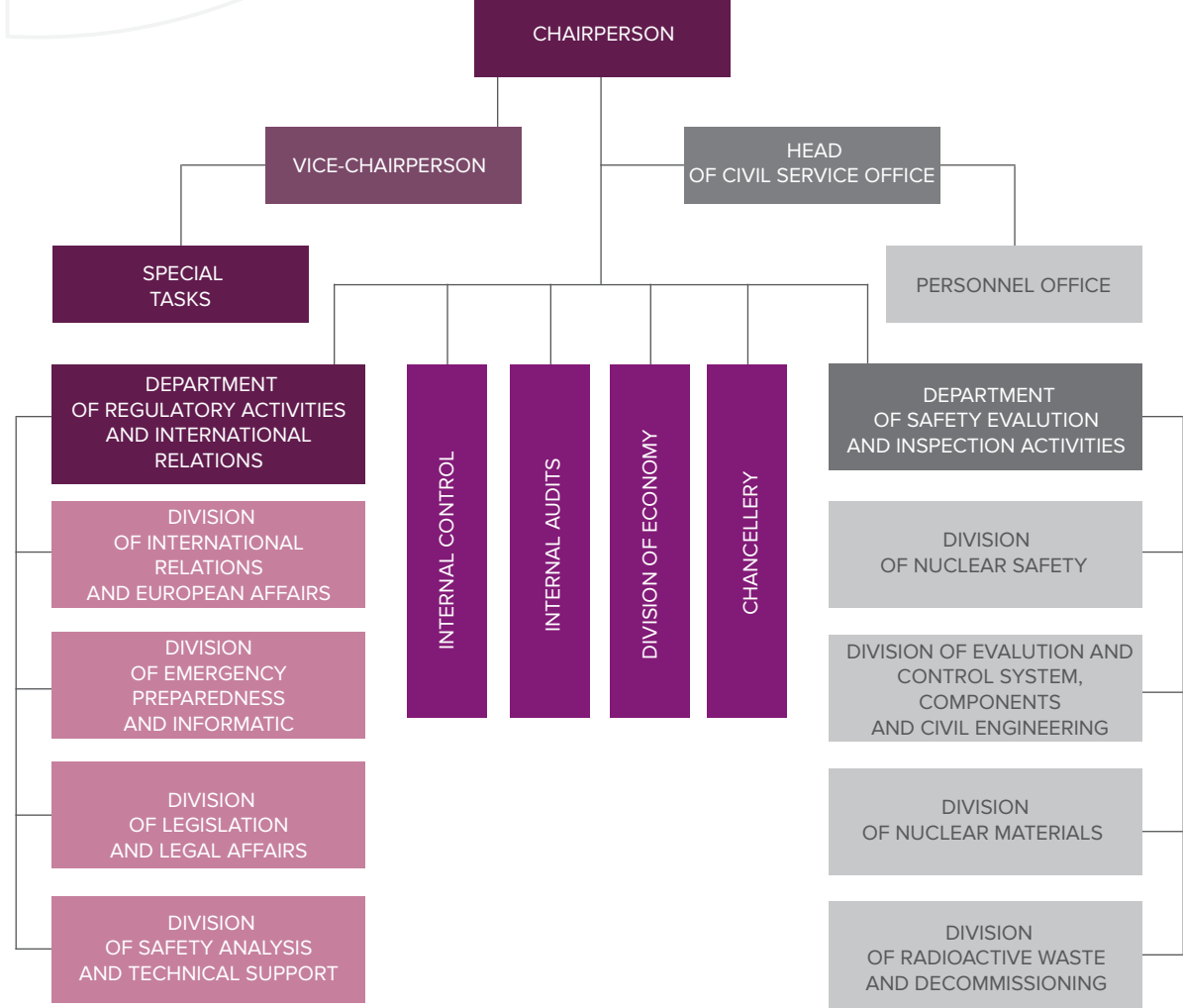
The external organization has carried out internal audit of the UJD SR management system with respect to the requirements of the new ISO 9001:2015. It resulted in measures for improvement, which are gradually implemented to the management system.

Reviewing the quality management system by the organization management, the evaluation of which involves all the process owners, is assessed by the Council for the management system of UJD SR. The resulting document is the integral assessment of the state of implementation of policy and quality objectives, results of internal audits, periodic reviews of quality regulations, compliance with the related requirements, describes the process performance, product conformity, description of the status of preventive and corrective actions and changes with potential impact on the management system, while stating also recommendations for process improvements, activities and product improvement related to legitimate requirements of stakeholders and the necessary resources



# 10. ANNEXES

## ORGANIZATION STRUCTURE OF THE NUCLEAR REGULATORY AUTHORITY OF THE SLOVAK REPUBLIC





# 11. ABBREVIATIONS

ACCC	Aarhus convention compliance committee
ATO	Atomic questions working group EC
BSC RAW	Bohunické RAW Treatment Center
ConvEx	Communication exercise under the IAEA Convention on early notification of nuclear accident
CODAP	Component Operational Experience, Degradation and Ageing Programme
CADAK	Cable Ageing Data and Knowledge
CTBTO	Comprehensive Nuclear Test Ban Treaty Organization
EC	European Commission
ENSREG	European Nuclear Safety Regulators Group
EU	European Union
Euratom	Treaty establishing European Atomic Energy Community
EH	Emergency headquarters
ERC	Emergency Response Center of UJD SR
FTL RAW	Final treatment of liquid RAW
INES	International Nuclear and Radiological Event Scale
IRRS	Integrated Regulatory Review Service
ISFS	Interim Spent Fuel Storage Jaslovské Bohunice
JAVYS, a. s.	Jadrová a vyrad'ovacia spoločnosť a. s.
IAEA	International Atomic Energy Agency
MELCOR	Calculation code for modeling severe accidents
MV SR	Ministry of Interior of the Slovak Republic
NIS	Nuclear Installations
NPP	Nuclear Power Plant
OECD/NEA	Organization for Economic Cooperation and Development/Nuclear Energy Agency
OIK	Civil information commission
RAW	Radioactive waste
NR RAW	National Repository for RAW
SARNET	Severe Accident Research NETwork
SR	Slovak republic
SE, a. s.	Slovenské elektrárne, a. s.
SK PRES	Slovak Presidency of the Council of the EU
TTC RAW	Technology for RAW treatment and conditioning
ÚCO MV SR	The Civil Protection Office of the Ministry of Interior of Slovak Republic
UJD SR	Nuclear Regulator Authority of SR
ÚVZ SR	Public Health Authority of the Slovak Republic
FCC	Fiber-concrete container
SNF	Spent nuclear fuel
ESW	essential service water
WENRA	Western European Nuclear Regulators Association







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