NUCLEAR
REGULATORY AUTHORITY
OF THE SLOVAK REPUBLIC

ANNUAL REPORT 2020

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DEAR READERS,

One of the tasks of the Nuclear Regulatory Authority of the Slovak Republic, based on its position and competence, is to transparently inform the public about its activities and the state of nuclear safety of nuclear installations in the territory of the Slovak Republic. As in previous years, you can now obtain comprehensive information through this Annual Report, on the creation of the legislative environment in our area of operation, on the results of inspections and nuclear safety assessments of nuclear installations under construction, in operation and in decommissioning stages. You will also learn how we fulfilled the international obligations in 2020, arising from the membership of the Slovak Republic in the European Union, in the International Atomic Energy Agency and in other organizations. In addition, in the report you can read about activities related to the registration and control of nuclear materials, emergency planning and other activities that create a precondition for the Nuclear Regulatory Authority of the Slovak Republic to be able to perform complex and demanding activities related to supervision.

In terms of legislation, in 2020 we continued to work on a new atomic law according to the approved schedule, issued three safety guides, continuously focused on the legislative process and the preparation of decrees. Last but not least, we have been active in inter-ministerial and international working groups in our area of responsibility.

As part of control and inspection activities, we issued a total of 350 decisions. 181 inspections were originally planned for 2020, but 41 were cancelled for objective reasons. In addition, 20 unscheduled inspections were carried out. Due to the epidemiological situation in 2020, all supervisory activities were performed in strict compliance with the measures of the Public Health Office of the Slovak Republic, as well as individual measures of license holders.

The number and nature of events in 2020 were within the usual operational failures without special significance in terms of nuclear safety. 5 operational events were reported, subject to notification to the regulatory authority, at the Bohunice V-2 nuclear power plant and 10 events at the Mochovce 1&2 nuclear power plant, one of which was classified INES 1 and another event was additionally reclassified by INES National Coordinator to INES 1, whereas the Nuclear Regulatory Authority of the Slovak Republic also imposed a fine on the license holder. We provide more detailed information on both events in the text below.

In connection with the completion of Units 3&4 of the Mochovce Nuclear Power Plant, we performed a number of post-installation compliance inspections during the past year, inspected the course of selected

functional tests and preparation of Unit 3 equipment for commissioning. We also assessed the documentation of the quality management system and the quality requirements of selected equipment in accordance with the decrees.

In 2020, the Nuclear Regulatory Authority of the Slovak Republic did not limit the scope or validity of the permit or suspend the operation of any nuclear installation. Based on the data and assessment activities, we can state that the nuclear installations in the Slovak Republic were operated safely and reliably in 2020.

Dear readers, the year 2020 was marked by COVID-19. We too had to respond adequately to the new situations brought about by the pandemic, while ensuring that nuclear safety was not jeopardized. In conclusion, allow me to express my gratitude to all employees of the Nuclear Regulatory Authority of the Slovak Republic who, throughout the year 2020, even in the demanding conditions of a pandemic, effectively and at a high professional level performed the set tasks of state supervision over nuclear safety.

Marta Žiaková
Chairperson

1 LEGISLATIVE ACTIVITY

An important activity of the Nuclear Regulatory Authority of the Slovak Republic (ÚJD SR, the Authority) in the legislative area was the continuation of preparatory work on the new Atomic Act. At the end of 2020, an internal commenting procedure was held on the 7th working version. The draft of the new Atomic Act was included in the plan of legislative tasks of the Government of the Slovak Republic (SR) for the fourth quarter of 2022 under the 8th election period with the expected entry into force on 1 January 2024. The outlined time horizon reflects, among other things, the involvement and cooperation of several entities and the consideration of a number of safety aspects of nuclear safety.

In 2020, ÚJD SR issued three Safety Guides in order to ensure compliance with the requirements for the safe use of nuclear energy or the performance of activities related to the use of nuclear energy:

1. BN 1/2020: Comprehensive Periodic Nuclear Safety Assessment
2. BN 2/2020: Requirements for ensuring fire protection and fire safety of nuclear installations in terms of nuclear safety
3. BN 3/2020: Requirements for the development, implementation and evaluation of the results of the physical tests of the restart program.

Within the legislative activity and preparation of decrees within the competence of the Authority, the legislative process to the ÚJD SR Decree No. 410/2019, which amends the ÚJD SR Decree No. 52/2006 on professional competence as amended by the Decree of ÚJD SR No. 34/2012, was completed. ÚJD SR Decree No. 410/2019 entered into force on 1 January 2020. In 2020, the legislative process to ÚJD SR Decree No. 112/2020, which stipulates special materials and equipment falling under the supervision of ÚJD SR, was also finalized. The draft Decree was discussed at the Permanent Working Commission of the Legislative Council of the Government of the SR for Technical Legislation on 20 January 2020, and subsequently the Intra-Community commenting procedure under Art. 30 – 33 of the Treaty establishing the European Atomic Energy Community was initiated, in parallel with the Intra-Community commenting procedure under the Directive (EU) 2015/1535 of the European Parliament and of the Council. ÚJD SR Decree No. 112/2020 entered into force on 15 May 2020, and repealed the ÚJD SR Decree No. 76/2018.

The Authority continuously provided cooperation to the Ministry of Environment of the Slovak Republic (MŽP SR) in connection with ACCC/2013/89 case. The Aarhus Compliance Committee (Compliance Committee) issued the "Second Progress Review" on 3 March 2020, in which it assessed the actions of the Slovak Republic outlined in the "Second Progress Report". Representatives of ÚJD SR and the MŽP SR subsequently participated in an audio conference with the Compliance Committee in discussing the findings of the „Second Progress Review" and, following the audio conference ÚJD SR in cooperation with MŽP SR prepared a written position document of the Slovak Republic. Subsequently, the Authority proceeded to amend the Directive on the identification and removal of sensitive information in dossiers for public disclosure in line with the recommendations of the Compliance Committee contained in the „Second Progress Review". The Compliance Committee was informed about the above facts and further progress in the matter through the „Third Progress Report", which was prepared in cooperation with the MŽP SR. The report, together with the relevant documentation, was forwarded to the Secretariat of the Compliance Committee in Geneva on 1 October 2020.

The Authority also actively participated in the inter-ministerial coordination group for representing the Slovak Republic before the European Union (EU) courts at the Ministry of Justice of the SR and in the inter-ministerial coordination group in proceedings before the European Commission (EC) in the pre-trial phase at the Ministry of Foreign and European Affairs of the SR (MZVEZ SR). In the process preceding the pre-trial procedure before the EC (EU Pilot), an EC investigation was carried out into the correct transposition of the provisions of Council Directive 2014/87/Euratom, amending Directive 2009/71/Euratom and establishing a Community framework for nuclear safety of nuclear installations No. EUP (2020) 9596 from 4 February 2020.

The EC's request for information covered four areas, namely the procedures of the relevant regulatory body in matters of conflict of interest, public participation in the decision-making process on licensing a nuclear installation (NI), regulatory management systems of the regulatory authority and procedural issues for the notification of national transposition measures through the MNE-WEB platform. ÚJD SR prepared an opinion in which it dealt with the requests of the EC and subsequently sent it to the Office of the Government of the SR for further proceedings. In November 2020, within the pre-trial phase in the proceedings before the EC, the process was initiated for formal notification of the transposition of Council Directive 2013/59/Euratom laying down basic safety standards for protection against the dangers arising from ionizing radiation and repealing Directives 89/618/Euratom, 90/641/Euratom, 96/29/Euratom, 97/43/Euratom and 2003/122/Euratom. The Authority received a request from the MZVEZ SR for an opinion and clarification of transposition measures on selected provisions of Directive 2013/59/Euratom falling within its scope as a co-sponsor for this transposition. ÚJD SR prepared the requested document, in which it focused on clarifying the transposition provisions and measures concerning in

particular Act No. 541/2004 Coll. on the peaceful use of nuclear energy (Atomic Act) and on the amendment of certain acts as amended, as well as the ÚJD SR Decree No. 55/2006 on details in emergency planning in the event of an incident or accident, as amended. The Authority sent an opinion to the MZVEZ SR on 11 December 2020.

In the course of 2020, ÚJD SR continued to coordinate the cooperation of the entities concerned within the inter-ministerial Working Group on Civil Liability for Nuclear Damage. The spring meeting of this working group, scheduled for April 2020, did not take place due to the unfavourable development of the epidemiological situation of COVID-19. The autumn meeting took place on-line on 5 October 2020. The core activity of the Working Group in 2020 was the identification of areas of preparatory work for the document that will be submitted to the Government of the SR by 31 March 2022. The ÚJD SR task in question follows from Government Resolution No. 139 of 22 March 2017. Part of the preparatory work is, among other things, monitoring developments in the membership base of the international treaty system of civil liability for nuclear damage. Developments at international level have been registered in the Paris system, in particular in relation to the procedural development of the future entry into force of the 2004 Protocol amending the Paris Convention on Third Party Liability in the Field of Nuclear Energy (Paris Protocol 2004) and the 2004 Protocol, amending the Additional Protocol to the Paris Convention on Third Party Liability in the Field of Nuclear Energy (Brussels Protocol 2004). Progress in this area has concerned in particular the finalization of the ratification process in Italy and Turkey. The Authority informed the members of the Working Group on Civil Liability about the developments at the international level. Another area under preparation that serves as a basis for a document to be presented to the meeting of the Government of the SR, is the analysis of the application of Act No. 54/2015 Coll. on Civil Liability for Nuclear Damage and its Financial Coverage and on Amendments to Certain Acts (Act No. 54/2015 Coll.) after five years of its application. As part of its agenda, ÚJD SR also thoroughly verified the existence of insurance coverage for NI operators in accordance with the requirements of Act No. 54/2015 Coll.

In connection with inter-ministerial commenting procedure, legislative and non-legislative documents were assessed (approximately 600 in total), in which ÚJD SR submitted ordinary or substantial comments, many of which were subsequently discussed in conflict proceedings with the relevant ministries. One of such materials was the draft Act amending Act No. 69/2018 Coll. on Cyber Security and on amendments to certain acts, where the Authority has made substantial comments. ÚJD SR also made substantial comments on the draft Basic Principles of Management of IT projects financed from public and EU sources, the draft Decree of the Office of the Deputy Prime Minister for Investment and Informatization on project management, the draft Decree of the Office of the Deputy Prime Minister for Investments and Informatization on the method of categorization and the content of security measures of information technologies of public administration, the draft Constitutional Act amending Constitutional Act No. 493/2011 Coll. on budgetary responsibility, the proposal for inclusion of the register of addresses in the list of reference data, designation of reference data and designation of source registers, the proposal of amendments to the Legislative Rules of the Government of the SR, the draft Act amending Act No. 311/2001 Coll., the Labour Code as amended and amending certain laws, draft Coordinated Mechanism of Resilience of the Slovak Republic to Information Operations, draft Decree of the Ministry of Investment, Regional Development and Informatization of the SR on guaranteed conversion, draft National Cyber Security Strategy for 2021-2025. Within the framework of the above-mentioned legislative processes, the ordinary and substantial comments of ÚJD SR were largely complied with.

An important legislative change directly affecting the activities of ÚJD SR was the amendment to Act No. 575/2001 Coll. on the organization of government activities and the organization of the central state administration, as amended, published in the Collection of Laws of the SR under No. 134/2020 Coll. With the effect of 1 July 2020, the amendment in question transferred the legislative activity of ÚJD SR to the Office of the Government of the SR under the responsibility of the Deputy Prime Minister of the SR. In this case, it is rather a procedural aspect of legislative activity, while the preparation of individual legislative proposals in the material scope of ÚJD SR remained within the competence of the Authority.

In connection with the ongoing application of Act No. 305/2013 Coll. on the electronic form of performing the powers of public authorities and on the amendment of certain laws, the project team headed by ÚJD SR Vice-chairman, continued to work within ÚJD SR. The project team task is to identify tasks, propose their solution in the Authority and ensure practical application of Act No. 305/2013 Coll. into the daily processes of ÚJD SR, to which this Act applies.

An important part of the administrative agenda of ÚJD SR in 2020 was the administrative procedure in the matter of an application for a change in the use of the Integral Radioactive Waste Storage Facility (IS RAO), within which the first-instance decision of ÚJD SR No. 139/2020 was issued, against which an appeal was filed on 5 August 2020. In the appeal, the petitioner requested that the appeal body annulled the ÚJD SR Decision No. 139/2020, and remitted the case to the first-instance authority for a new procedure, requesting that the individual conditions formulated by the appellant be contained. The Chairperson of ÚJD SR, as a second-instance body according to Section 61 par. 2 of Act No. 71/1967 Coll. on Administrative Procedure (Administrative Procedure Code) as amended, assessed the contested Decision and partially upheld the appeal, while returning the case to the first-instance authority for new proceedings by issuing the second-instance Decision No. 279/2020 P.

Following the continuation of the proceedings concerning the application for the authorization of commissioning of MO3&4, several procedural acts took place in 2020, during which the representatives of the Legislative and Legal Department provided co-operation. These were mainly consultations and providing advice to other departments of ÚJD SR in the preparation of documents for the licensing process related to MO3&4 from a procedural and legal point of view.

2 REGULATORY ACTIVITIES

In addition to legislation, regulation over nuclear safety is carried out in the area of licensing, assessment and evaluation of safety documentation, in control/inspection activities in NIs and in the area of law enforcement.

The nuclear safety of NIs is proven in several steps. The first step is the assessment of technical documentation, which demonstrates that systems, components and technological equipment, including the ability of the staff to operate them, are able to operate safely and reliably, during normal, abnormal and emergency operation, and that the impact of NIs on employees, population, environment and the property is at an acceptable level in accordance with Slovak legislation and recognized international standards. The next step in this process is the performance of inspections, which, among other things, check the compliance of the real state of NIs with the documentation that was the subject of the assessment.

The main entities under regulation are the license holders for construction, commissioning, operation and decommissioning stage of NIs. The holders of such permits in the SR are Slovenské elektrárne, a.s. (SE, a. s.), and Jadrová a vyraďovacia spoločnosť, a. s., – Nuclear and Decommissioning Company (JAVYS, a. s.).

2.1 LICENSING

To obtain license for activities in the field of peaceful uses of nuclear energy, whether it is a new activity or a change of an existing one, the applicant must demonstrate its ability to comply with all requirements set by laws and decrees in force in the SR, especially the requirements of the Atomic Act and ÚJD SR Decrees implementing this law. The applicant must further prove that the NIs will be operated or are operated safely.

In addition to the license holders, which are SE, a. s., and JAVYS, a. s., the Authority also supervises and issues licenses for other legal entities and organizations that do not operate energy NIs, but perform activities related to the peaceful use of nuclear energy in accordance with the Atomic Act. One of the representatives of these license holders is VUJE, a. s., which deals with professional training of NI personnel.

2.2 REVIEW AND ASSESSMENT ACTIVITIES

In 2020, ÚJD SR reviewed and assessed technical documentation related in particular to:

- implementation of works on the completion of MO3&4, including modifications to the basic design,
- implementation of significant design modifications on classified equipment of operating nuclear power plants (NPPs),
- quality of planned and performed pre-operational and operational controls,
- administrative proceedings according to the Building Act,
- design modifications and changes in the documentation assessed or approved by ÚJD SR,
- quality assurance for classified equipment and NIs,
- quality management systems of license holders under the Atomic Act and their suppliers,
- organizational changes of license holders.

In connection with the completion of MO3&4, the Authority performed a number of post-installation compliance inspections, the aim of which was to verify the compliance of the installed technological equipment with the design and the approved requirements for their quality. The Authority also checked the course of selected testing of functional tests, preparation and implementation of a hot hydro test and reheating of Unit 3. The assessment of the documentation of the Quality Management System and the requirements for the quality of classified equipment in accordance with the relevant ÚJD SR Decrees continued. Approved requirements for the quality of classified equipment were inspected by ÚJD SR also during the final acceptance tests directly at the manufacturers of these equipment.

Table 1 ÚJD SR Decisions issued

Organization/NI	Decisions according Atom. Act	Building Authority	Interruption of Admin. proceedings	Suspension of Admin. Proceedings	Total
SE, a. s.	12	0	1	1	14
JE Bohunice V-2	27	1	13	1	42
JE Mochovce 1, 2	54	9	21	1	85
JE Mochovce 3, 4	65	28	12	1	106
JAVYS, a. s.	46	9	12	2	69
VUJE, a. s.	13	0	0	0	13
Other organizations	19	0	2	0	21
Total	**236**	**47**	**61**	**6**	**350**

Table 2 Overview of inspections

NI/Other	Team	Special	Routine	Unplanned	Total
JE Bohunice V-2	13	12	4	1	30
JE Mochovce 1, 2	14	9	6	2	31
JE Mochovce 3, 4	1	4	4	1	10
JAVYS, a. s.	4	18	9	3	34
VUJE, a. s.	0	2	0	1	3
NM and RAW shipments	0	10	0	2	12
Control and registration of NM	0	27	0	10	37
Other inspections	0	3	0	0	3
Total	**32**	**85**	**23**	**20**	**160**

2.3 INSPECTIONS

Inspection activity means a process, by which compliance with the requirements and fulfilment of obligations stipulated in the Atomic Act and its implementing legal regulations, in the Building Act and its implementing legal regulations, fulfilment of obligations arising from ÚJD SR decisions, as well as fulfilment of measures to eliminate deficiencies from protocols, are checked. Inspections are performed by nuclear safety inspectors of ÚJD SR. The schedule of planned inspections is set out in the Inspection Plan, which is compiled so that it is possible to carry out ongoing and systematic assessments of compliance with legislative requirements. ÚJD SR prepares the Preliminary Inspection Plan for three years and the Inspection Plan for the relevant year.

In addition to the planned inspections, the inspectors also perform unscheduled inspections, which are initiated by the situation in the NIs (e.g. erection and installation, start-up stages) or operational events. Unscheduled inspections also include inspections by the International Atomic Energy Agency (IAEA) in the field of registration and control of nuclear materials (NM), the date of which is announced to ÚJD SR and the relevant license holder only immediately before the inspection itself.

181 inspections were planned for 2020, of which 41 were cancelled for objective reasons, and there were 20 unscheduled inspections. A total of 160 inspections were carried out, while 27 inspections were still unconcluded as of 31 December 2020. Out of 133 completed inspections, 8 were closed with a protocol and the others are closed with a record (Table 2).

The higher rate of cancelled inspections compared to previous years was due to restrictions in connection with the implementation of public health measures during the COVID-19 pandemic. ÚJD SR responded to the restrictions by increasing the share of inspections, which were performed administratively - by evaluating the documentation on the implemented tests of equipment, which was submitted on request by the site inspector of the Authority in individual NIs. Part of the on-site inspections were carried out by site inspectors in the given NI. Photo documentation and video recordings were increasingly used in the performance of inspections. The representatives of the inspected organizations were also informed about the results of inspections through a videoconference. Records on the Authority's inspections in 2020 show that the impact of COVID-19 pandemic was minimal. ÚJD SR carried out inspections at the NIs to a sufficient extent to prove their safe operation.

2.4 LAW ENFORCEMENT

In the event that the inspection proves deficiencies in any of the supervised areas, the inspection protocol shall order the license holder to eliminate the deficiencies with binding deadlines for their implementation. The license holder is then obliged to notify ÚJD SR of the manner and date of elimination of the deficiency. If the supervised entity does not comply with the measures, as well as in the event of a serious violation of the provisions of the Atomic Act or the requirements of its implementing Decrees, ÚJD SR may initiate administrative proceedings, which may result in:

- imposition of a fine,
- limitation of the scope or validity of the permit,
- ordering implementation of the necessary measures,
- shutdown the operation of an NI,
- permanent withdrawal of a certificate of special professional competence or a certificate of professional competence.

In 2020, ÚJD SR did not revoke any certificate of special professional competence of selected employees or the certificate of professional competence of lecturers of license holders. ÚJD SR imposed one fine for violation of the Atomic Act and the Limits and Conditions (L&C) regulation during tests of the vacuum-bubbler system at Unit 2 of the EMO, which was subsequently reclassified to a level 1 event on the INES scale.

3 NUCLEAR SAFETY OF NUCLEAR INSTALLATIONS

3.1 NUCLEAR POWER PLANTS IN OPERATION

EVALUATION OF SAFETY INDICATORS OF NPPS IN OPERATION

The evaluation of NPPs operation by safety indicators is performed by ÚJD SR continuously and evaluated annually. Operating NPP units in the SR are evaluated by indicators in four specific areas of operation: significant events, human factor, operation of safety systems and tightness of barriers.

Significant events and human factor:

The following main indicators are monitored in these areas:

- the number of reactor scrams (AO1),
- the number of violations of limits and conditions of safe operation (L&C is a document, in which the requirements for permitted values of NI parameters, readiness of safety systems and verification of their readiness are set, each deviation from the set values and requirements is recorded as L&Cs violation),
- the number of failures of equipment and systems that the NI operator is obliged to report to ÚJD SR according to the set criteria,
- the contribution of the human factor in operational events reported to ÚJD SR,
- the number of events at NIs classified according to INES scale as level 1.

Table 3 Number of AO1s and violations of L&C on Units of NI in operation

2020	EBO3	EBO4	EMO1	EMO2
Number of AO1	0	0	0	0
L&C violations	0	0	0	1

In 2020, no reactor scram was recorded and there was one violation of L&Cs. The above facts indicate the high operational reliability of the Bohunice V-2 and Mochovce 1&2 nuclear units.

Table 4 Number of reported operational events (OE), number of OE with human factor (HF) contribution and number of OEs classified as INES 1

2020	EBO3	EBO4	EMO1	EMO2
OE reported to ÚJD SR	3	2	6	4
OE classified as INES 1	0	0	1	1
OE with HF contribution	1	0	3	2
Share of OE with HF contribution [%]	50	0	50	50

The number of reported operational events is low and testifies stable operation of NIs in the SR. One of the OEs was classified INES level 1 and one was subsequently reclassified by the INES National Coordinator to INES level 1. INES level 1 events are characterized as minor issues with security features, while leaving a sufficient margin of defence-in-depth. The number of OEs with the contribution of the HF and their share in the total number of reported failures is reasonable in comparison with foreign NIs.

Operation of safety systems:

The operation of safety systems is assessed through unavailability factors. Unavailability Factor is defined as the ratio of the sum of unavailability time of a given system to the total time, when its operability is required. Unavailability is usually caused by repairs of failures detected during regular system testing.

There was no failure of safety systems in EBO V-2 during 2020. In EMO1&2, there were 3 failures of safety systems during automatic and false activations.

Table 5 shows calculated unavailability factors of the following safety systems:

- unavailability of diesel generators (DG) providing power to other safety systems in case of loss of other own and external power supply sources,
- unavailability of emergency make-up high pressure pumps for the primary circuit (HP) – these pumps are designed to cool the reactor core in the event of coolant leaks from the primary circuit,
- unavailability of supply system of steam generators (SHNČ a HNČ) – SHNČ a HNČ pumps provide make-up water on the secondary side of steam generators and thus also heat removal from the primary circuit during abnormal operation and under emergency conditions.

Table 5 Unavailability factors for selected safety systems for units of NI in SR

2020	EBO3	EBO4	EMO1	EMO2
Unavailability of DG	1,10E-04	0	6,91E-04	0
Unavailability of HP	6,20E-04	0	1,06E-03	0
Unavailability of SHNČ+HNČ	0	0	9,56E-07	1,34E-04

The unavailability factors are low, which proves a very high readiness of the safety systems for commissioning, if necessary (i.e. in the event of a failure or emergency condition).

Tightness of barriers:

This indicator monitors the tightness of the fuel cell cladding in the reactor and the tightness of the hermetic compartments, which form a barrier against the leakage of radioactive substances in the event of possible accidents. The values of these indicators are good and stable, meet the L&C criteria and show an improvement compared to previous years.

The evaluation of nuclear safety indicators for 2020 together with the results of inspections make it possible to state that the nuclear safety of NPPs operated in Slovakia is at a high level. The events, which were evaluated as level 1 in the international scale of nuclear and radiation events, INES, did not affect the functioning of the systems themselves and did not endanger the nuclear safety of NIs. However, as these events indicated problems with safety culture, ÚJD SR pays increased attention to the adoption of corrective measures.

a) BOHUNICE V-2 NUCLEAR POWER PLANT

In both EBO V-2 units in operation, standard, planned and unplanned inspections and evaluation activities were performed in 2020, connected with daily operation. As part of its activities, ÚJD SR checked the fulfilment of tasks arising from the aging management program and several design modifications were approved with the intention of increasing the level of safety of NIs in areas where ÚJD SR identified findings during inspections.

There were two scheduled outages at this NPP for refuelling. At Unit 3, from 20 June until 12 July 2020, and at Unit 4, from 16 May until 11 June 2020. Compared to the schedule, the outage of Unit 3 was shortened by almost 12 hours. During outage of Unit 3, the fall of a foreign object into open technology (metal vacuum cleaner tube) was recorded. The foreign object was subsequently removed from the technology. At Unit 4, the outage was extended by almost 66 hours due to the blinding of a larger number of heat exchanger tubes of steam generator No. 42, and repairs of a leaky heterogeneous weld on the super-emergency supply pipeline of steam generator No. 45 (weld leak was identified during the pressure test).

In 2020, ÚJD SR approved several changes to the quality documentation and design modifications intended to increase the level of safety of NIs:

- IPR B18009 Renewal of design reliability of spraying coolers EBO V-2,
- IPR 10392 dP measurement innovation on the main circulation pump HCČ EBO V-2,
- IPR EBO B19030 Replacing DG start air valves,
- IPR B19140 Modification of the wiring diagram in the circuits of safety systems (replacement of relays in switchboards of the 1st and 2nd category of secured power supply),
- change in the list of classified equipment of EBO V-2,
- spare parts delivery quality plan for HCČ,
- change in quality plan for pump delivery AX 20-53 for waste water,
- change in quality plan (IPZK) Repairs of nozzle casings HRK EBO V-2,
- change in quality plan (PLK VZ) for control valves of DG station, BTII, EBO V-2,
- change in the interval of non-destructive (NDT) tests of reactor pressure vessel EBO V-2.

Operational controls

Operational controls were carried out in accordance with the annual plans of operational controls of classified equipment, submitted by the operator for the approval of ÚJD SR. The results of operational controls showed a satisfactory condition on both units. As part of the Units outage, samples were taken for the analysis of the chemical composition and mechanical properties of metallic materials of classified equipment.

The operator also provides an assessment of the fatigue life of the main components and piping systems, as well as an assessment of the resistance of the reactor pressure vessel materials against brittle fracture. The performed evaluation of the monitored fatigue life of the main components and important piping systems, as well as the evaluation of the resistance of reactor pressure vessel materials against brittle fracture, which is provided by the operator, shows that neither fatigue life, nor the results of analyses of embrittlement of reactor pressure vessels limit the life of classified equipment and create assumption for long-term operation of both Units. The results of tightness tests of hermetic zone (PERIS) have shown that the tightness of hermetic compartments is in accordance with the requirements of L&C, as well as in accordance with the applicable operating procedures.

Operational events

The number and nature of events in 2020 were within the usual operational failures without special significance in terms of nuclear safety. ÚJD SR registered 5 operational events subject to reporting to the supervisory body. All reported events were without a significant impact on nuclear safety.

After summarizing the results of inspections and on the basis of a summary evaluation of safety indicators, ÚJD SR states that the operation of both EBO V-2 units in 2020 was without serious deficiencies in the field of nuclear safety. Deficiencies identified during inspections have been remedied and corrective action has been taken to minimize the likelihood of their recurrence.

b) MOCHOVCE 1&2 NUCLEAR POWER PLANT

In both EMO1&2 Units in operation, standard, planned and unplanned inspections and evaluation activities were performed in 2020, connected with daily operation. During the year, inspectors of the relevant departments of ÚJD SR approved and subsequently checked the implementation of measures from the Action Plan for increasing the safety of units, which were adopted on the basis of stress test results as lessons learned from the NPP Fukushima – Daiichi accident.

There were scheduled outages for refuelling, at Unit 1 from March 28 to 16 April 2020, and at Unit 2 from 12 September to 9 October 2020. The implementation of works during the outage of Unit 1 was significantly affected by the measures against the spread of COVID-19. Mainly due to the absence of foreign suppliers, there was a significant reduction in the scope of outage (approximately 51.5 % of the planned 4,200 jobs were rescheduled for other outages or for implementation during the operation of the unit). Unit 2 outage was not affected.

The license holder implemented the stage of the seismic reinforcement project of the ESW and DGS buildings. As part of the I&C innovation, a new control system for the control assemblies of the Unit 2 reactor power was installed and the necessary repairs were carried out at Unit 1. The license holder also implemented the next stage of the project of seismic reinforcement of important large components of the primary circuit, seismic reinforcement of the supports of the main circulation pumps and part of the project of seismic reinforcement of pressurizers of both Units. Several design modifications were approved and implemented with the aim of increasing the safety level of NIs. As part of the I&C innovation, a new control computer and software for the refuelling machine were also installed. An algorithm for the protection and blocking of the fuel loading machine for the technology of checking the tightness of the fuel assemblies cladding was created. At the I&C workplace for severe accidents, the display units of the post-accident monitoring system of the main parameters of the unit were supplemented. As part of the investment project (increasing the efficiency of units), unit transformers were replaced, modification of HP and LP turbine parts, modification of turbine oil regulations, including electronic regulators, were implemented during the Unit 2 outage. The installation of the electric boiler at EMO was also carried out.

In 2020, ÚJD SR approved several changes to the quality documentation and design modifications with the intention of increasing the level of safety of NIs:

- IPR 20400 Seismic reinforcement of support structures for pressurizer,
- IPR 20400 Seismic reinforcement of pressurizer,
- IPR 20400 Seismic reinforcement of electric switchboard EMO1,
- IPR 20400 Relocation of pressurizer process line EMO1,
- IPR 20400 Seismic reinforcement of 7KPK, 7JNR tanks in the building of auxiliary operations (BPP),
- IPR 41300 Modernization of reactor protections and control systems (SORR) EMO1,
- IPR 41300 Design modifications of RRCS for Unit 2 of EMO,
- IPR 30100/4 Severe accident management – replacement of flowmeters EMO1&2,
- IPR M19051 EMO electric boiler, quality plan for classified equipment,
- IPR M18028 Modification of feed water flow measurement behind high pressure heaters VTO1, 2,
- IPR M18029 Cancellation of switching off system transformers from door contacts,
- IPR 51802 Modification of Unit transformers EMO1&2,
- PZ 501312986 Modernization of turbogenerators 2x250 MWe EMO1&2,
- PZ IPR 99600 Generator replacement at TG11,
- change in quality plans for steam generators – criteria for blinding of heat exchanger tubes,
- change 21 PLKVZ A1 Reactor pressure vessel DPS 01.01 for EMO1&2,
- change in the list of classified equipment ZVZ EMO1&2,
- change in the interval of non-destructive testing NDT of reactor pressure vessel EMO1&2.

Operational controls

Operational controls were performed on both Units, carried out in accordance with the annual plans of operational controls of classified equipment, submitted by the operator to ÚJD SR. The results of operational controls confirmed a satisfactory condition on both Units. Within the Units outage, samples were taken for the analysis of the chemical composition and mechanical properties of metallic materials of classified equipment.

The operator submits annually to ÚJD SR evaluation reports on the fatigue life of the main components and selected important pipeline routes. The submitted reports show that the monitored parameters of all evaluated classified equipment, as well as the condition of the reactor pressure vessel materials are well below the set limits. Local and integral tightness tests of the hermetic zone on both Units have shown that the tightness of the hermetic compartments is in accordance with the requirements of L&C and operating regulations.

Operational events

The number and nature of operational events at EMO1&2 in 2020 did not exceed the usual rate of operational failures. The Authority registered 10 events subject to notification to the supervisory authority, but which did not have a significant impact on nuclear safety. The event with the loading of an assembly with a non-compliant protocol from the technical inbound inspection into the reactor is worth to mention. During the inspection of the supply of fresh fuel from the Russian Federation, an assembly was identified containing small impurities that had formed during production. The manufacturer has stated that the impurity will decompose after reaching the operating temperature and the coolant flow and will not affect the thermal reliability and safe operation. The assembly was loaded into the reactor, despite the operator's original intention to return the assembly as part of a complaint. Multiple failure of the human factor and inadequate safety culture were identified as the root cause of the event, and therefore the event was classified as level 1 on the INES scale. Another of the events, which concerned problems in the evaluation of gas tank tightness tests in the vacuum-bubbling tower of Unit 2 EMO1&2, was evaluated by the Authority with a protocol and imposition of a fine, as well as by reclassification of the event evaluation in the INES scale to level 1.

The vacuum-bubbler system is a safety system that is activated in case of unlikely events associated with a large leak of coolant into the hermetic zone of the NPP. Its task is to eliminate the increase in pressure, thereby reducing the tension on building structures and preventing possible leakage of coolant into the NPP surroundings. After a thorough analysis, the license holder documented that the identified internal leak did not affect the proper functioning of the system. However, ÚJD SR and subsequently also the national INES coordinator assessed the circumstances of the evaluation of tests as indicating problems with the safety culture and therefore the evaluation of the event was subsequently reclassified to INES level 1, which are minor issues with safety components, while maintaining a sufficient defence-in-depth margin.

Based on the results of inspections and evaluation activities of ÚJD SR, the operation of EMO1&2 in 2020 was evaluated as safe. The identified operational failures were without special significance in terms of nuclear safety and such corrective measures were taken that minimize the probability of their recurrence, especially aimed at increasing the safety culture at the NIs.

3.2 NUCLEAR POWER PLANTS UNDER CONSTRUCTION

MOCHOVCE 3&4 NUCLEAR POWER PLANT

From 14 December 2019 to 13 January 2020, a reheating test was performed at Unit 3. The test was not originally part of an inactive tests program. The reason for reheating was the failure to meet the criteria for passing some tests during the hot hydro test, which was completed in April 2019. The problem was in particular that the air conditioning of the hermetic zone was not set in the expected configuration during the hot hydro test. Therefore, it was not possible to obtain reliable data on the temperatures in the hermetic zone and to sufficiently demonstrate what these temperatures will be during normal operation of the unit. *(Note: The hermetic zone consists of rooms in which the basic technological equipment of the unit is located (reactor, steam generators, main circulation pumps, pressurizer and others). During normal operation of the Unit, the ventilation systems create a negative pressure in the hermetic zone compared to the outside atmosphere. In addition, ventilation systems cool the air in the hermetic zone. However, the most important function of the hermetic zone is to create a barrier to prevent leakage of activity into the environment in the event of leaks from the reactor cooling circuit in emergency operation conditions. The vast majority of measures from stress tests after the accident at the Fukushima power plant in Japan (2011) were aimed at increasing the reliability and robustness of this barrier. The hermetic zone is the last and the most important barrier that separates the reactor and its systems from the environment. Its proper functioning, including ventilation systems, has an irreplaceable role for the safe operation of the unit.)*

The Authority requested the SE, a. s., that during reheating and cooling, some tests were performed once again, the documentation of which the Authority did not consider as sufficient. Specifically, it was a matter of repeating the test of diesel generators and their automatic loading so that the maximum load of diesel generators was achieved and a reserve of their power convincingly proven. *(Note: Diesel generators provide power to important equipment of the unit in case of loss of other own external power sources. Their correct and reliable operation is extremely important for the safe cooling of the unit in such a mode.)*

During reheating, a large number of Unit equipment tests were performed. These include:

- strength pressure test of the primary circuit with an overpressure of 16.8 MPa,
- tightness pressure test of the primary circuit with an overpressure of 13.7 MPa,
- pressure tests of all steam generators with an overpressure of 5.0 MPa,
- tests of automatics of gradual loading of diesel generators on all three safety systems - program of loading of diesel generators at primary circuit temperature less than 140 °C and higher than 140 °C (during these tests a large range of electrical parameters of diesel generators was recorded, proving their correct operation),
- setting of the normal operating mode of ventilation system of the hermetic zone and airtight zone (during 6 days, temperature and negative pressure in the hermetic zone were measured, the parameters of operation of ventilation systems and the influence of their configuration on temperature and negative pressure in the hermetic zone were recorded).

The basis for validation was also obtained:

- operating procedures for personnel (it has been shown that the operating procedures are developed at a very good level and are fully applicable to the heating and cooling stages of the Unit),
- a system of automatic reactor protections and a safety system (during reheating, these systems worked fully in accordance with the design).

During the reheating, Unit 3 was heated from approximately 20 °C to 260 °C and cooled again to 20 °C. All scheduled tests were performed successfully with satisfactory results. In connection with the completion of MO3&4, ÚJD SR performed a number of post-installation compliance controls, the aim of which was to verify the compliance of the installed technological equipment with the design and the approved requirements for their quality. Furthermore, the Authority checked the course of selected testing of functional tests and preparation of Unit 3 equipment for commissioning. The assessment of the documentation of the Quality Management System and the requirements for the quality of classified systems in accordance with the relevant ÚJD SR Decrees continued. The most important changes in the documentation subject to approval in 2020 were the following:

- amendment to BD 0094 Modification of the fire detection and fire protection system for Unit 4,
- amendment to BD 0140 for SO 442/1-02 DGS new cooling systems and fire dampers,
- amendment to BD 0141 changes to PS 3(4).24 Communication and data networks,
- amendment to BD 0132 PS 4.23 Modification of the technical solution of CCTV,
- amendment to BD 0127 Connection of the transmission system and common documentation of the electrical part,
- amendment to BD 0149 Change management for RTS, DRTS, ESFAS and RLS,
- approval of the program of operational inspections of classified equipment for Unit 3 Mochovce.

ÚJD SR also regularly inspected and evaluated the condition of NIs under construction, the quality of installation of classified equipment, the post-installation controls of assembled technological units and their parts, as well as the course and results of individual tests. In 2020, the Authority evaluated and reviewed:

- testing of electro-magnetic compatibility EMC of Unit 3, including independent evaluation of access and testing,
- replacement of pressurizer electric heaters, for which an unsatisfactory insulation condition was found during hot hydro tests,
- system verification of the Unit 3 Teleperm XS control system,
- certification of Unit 3 secondary circuit equipment a turbine hall equipment,
- documentation of materials and material certificates of installed components and equipment included in safety classes BTI to BTI-II in cooperation with Žilina University - Faculty of Mechanical Engineering, Department of Materials Engineering,
- document for commissioning of Unit 3 – lists and modifications of BD safety systems,
- document for commissioning of Unit 3 – evaluation of Teleperm XS testing.

Work is ongoing to complete Unit 3 after evaluating the reheating test results. At the end of 2020, an extensive verification of the quality of selected deliveries of piping components by the SE, a. s., was still underway, as well as an inspection by ÚJD SR verifying the documentation of the quality and required properties of metallurgical products used for the production of classified equipment. The license holder continues to rectify deficiencies and punch list items identified during functional tests of systems and equipment. ÚJD SR inspectors perform checks and inspections on a daily basis. At the end of 2019, the PRE-OSART Mission team also checked the readiness of Unit 3 for commissioning. A report on the results of the review was published on the SE, a. s., website in 2020. Unit 4 of MO3&4 is still in the installation stage. Functional tests of systems, which is a necessary prerequisite for running integral tests at Unit 4, have not yet begun.

3.3 NUCLEAR POWER PLANTS IN DECOMMISSIONING

a) BOHUNICE A-1 NUCLEAR POWER PLANT

In 2020, the implementation of activities of the 3rd and 4th decommissioning stages continued in accordance with the ÚJD SR Decision No. 369/2016, by which permit was issued for both stages under one licensing procedure. The activities associated with these decommissioning stages are scheduled until the end of 2024 and focus on continued treatment of liquid radioactive waste, sludge from the long-term storage facility and casings for long-term storage of spent nuclear fuel (SNF). The license holder continued to carry out activities related to the decommissioning of original, non-functional and disused technological systems of external facilities and technological facilities of the main production units of the reactor hall and intermediate engine room. After their completion, the final 5th phase of decommissioning will immediately follow, the completion of which is planned for 2033.

During the year, ÚJD SR assessed the documentation related to the modification of L&Cs for the safe decommissioning of A-1 NPP, and the documentation for the implementation of changes during decommissioning related to the building of a workplace for decommissioning of steam generators, modification of special sewerage piping, modification of a workplace for contaminated soil sorting, and a mobile workplace for decontamination and release monitoring of large metal components from decommissioning.

The planned inspections were focused on the control of compliance with the conditions of nuclear safety and regulatory requirements during the decommissioning of the power plant and during the management of radioactive waste (RAW) from decommissioning. Part of the inspection focused on the handling of the vitrification product and the operation of the VICHR line. Decommissioning of NPP A-1 in 2020 was carried out according to the 3rd and 4th stages of decommissioning. After summarizing the results of inspections and based on a summary assessment of safety indicators, ÚJD SR states that the activities at NPP A-1 were performed without material deficiencies in the field of nuclear safety.

b) BOHUNICE V-1 NUCLEAR POWER PLANT

By its Decision No. 900/2014, ÚJD SR granted JAVYS, a. s., a permit for the 2nd stage of decommissioning of the power plant and at the same time a permit for RAW management and for the management of nuclear materials (NM) during the 2nd stage of decommissioning. The permit entered into force on 1 January 2015. The second stage mainly includes the decommissioning of the main production unit, the auxiliary operations building and the remaining auxiliary facilities. The most important activities are the dismantling of reactors, dismantling of primary circuit equipment and dismantling of other equipment in the controlled zone and outside the controlled zone, their decontamination and radiation control.

In 2020, ÚJD SR assessed the documentation for the implementation of modifications during decommissioning and issued a decision for the use of newly built wet fragmentation workplaces in the main production unit in the reactor building. The Authority also assessed the documentation related mainly to the activities of fragmentation of large-size components of the primary circuit and subsequent handling of the resulting fragments. Decommissioning activities aimed at dismantling non-functional controlled zone systems and at power plant modifications and installation of new decommissioning support equipment, were assessed.

Finalization of the 2nd stage of decommissioning of V-1 NPP according to the submitted documentation is expected by 2025, while the final state of the premises at the end of the 2nd stage will be the release of the site for limited use. After the final inspection, the site will be released from the operation of the Atomic Act.

The planned inspections were aimed at checking the compliance of the decommissioning status with the status described in the 2nd decommissioning phase plan and at monitoring compliance with the nuclear safety conditions and the regulator´s requirements for decommissioning. Decommissioning of V-1 NPP in 2020 was carried out according to the 2nd decommissioning phase plan. ÚJD SR did not record any operational events with a significant impact on nuclear safety.


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3.4 OTHER NUCLEAR INSTALLATIONS

a) INTERIM SPENT FUEL STORAGE FACILITY BOHUNICE (MSVP)

SNF from NPP V-1 (discontinued production of SNF), NPP V-2 and EMO1&2 are temporarily stored in MSVP. The fuel is stored in pools filled with demineralized water. As of 31 December 2020, the MSVP was filled to approximately 92 % of its total capacity. In the course of 2020, the regulatory activity was focused on the evaluation of the state of operational controls of construction and technological parts and systems of the MSVP and stored SNF.

As part of the inspection activity, one inspection of SNF storage was carried out at the MSVP. The aim of the inspection was to check compliance with L&Cs and operating procedures for the operation of individual equipment, as well as the readiness of operating personnel in the event of an abnormal operation. No violation of nuclear safety conditions and operating procedures was found in any of the cases. The operating personnel demonstrated a high level of readiness and level of knowledge and procedures for abnormal operation.

Based on the results of inspection activity, the operation of MSVP in 2020 was assessed as safe.

b) TECHNOLOGY FOR RAW TREATMENT AND CONDITIONING (TSÚ RAO)

TSÚ RAO includes two bituminisation lines, the Bohunice Radioactive Waste Treatment Centre (BSC RAO), a fragmentation line, a large-capacity decontamination line, a workplace for the treatment of used air filters, a wastewater treatment plant and RAW storage facilities. Bituminisation lines are designed for the treatment of radioactive concentrates from NPP operation into 200-liter drums, which are placed in fibre-concrete containers (FCC) before their final disposal. Part of the treatment technology of bituminous lines is a discontinuous bituminisation line (DBL), which is used to fix sorbents to the bitumen matrix. BSC RAO serves as the main facility for the final treatment of RAW before their disposal in the National Repository for Radioactive Waste in Mochovce (RÚ RAO). In addition to cementation, also incineration, fragmentation, high-pressure compacting and increasing the concentration by evaporation are used for the treatment and conditioning of RAW. The resulting products of RAW treatment and conditioning are placed into FCCs, which meet the conditions of disposal in the RÚ RAO in Mochovce.

In 2020, the implementation of the investment project "Optimization of RAW incineration capacities" in the Jaslovské Bohunice site continued. An inactive complex testing was performed on the equipment. At the end of 2020, the facility was ready for active comprehensive testing. Incineration capacities will be optimized by completing a plant designed for volume and mass reduction of RAW by incineration, which will work on the principle of modern incinerators, and emissions will comply with the permitted emission values in the EU and the SR.

The construction of a facility for remelting metal RAW originating from the decommissioning of NPP A-1 and NPP V-1 also continued. The purpose of the remelting facility is to achieve maximum release of metallic materials into the environment and minimize RAW intended for final disposal in the RÚ RAO in Mochovce.

The inspectors continuously checked and approved changes that led to the optimization of the RAW management system for the needs of all types of produced RAW. The inspections were focused primarily on the control of safe operation of individual treatment lines and on the RAW storage.

Based on the results of inspections, in 2020 the operation of TSÚ RAO was assessed as safe. In January 2020, a report on the periodic nuclear safety review (PSR) of the TSÚ RAO was submitted to the Authority after 10 years of operation from the previous PSR. Based on the review performed by the inspection team of the Authority, it was stated that the TSÚ RAO meets the safety requirements and has all the prerequisites for maintaining a high level of safety in the period until the next PSR.

c) NATIONAL RAW REPOSITORY MOCHOVCE (RÚ RAO)

RÚ RAO is intended for the storage of low-level (LRAW) and very low-level (VLRAW) radioactive waste from the operation and decommissioning of NIs. As of 14 September 2019, the second PSR of RÚ RAO was started after 10 years from the date of the previous periodic review. On 24 July 2020, the PSR final report of the given facility was submitted to the Authority.

The inspections in RÚ RAO in 2020 focused mainly on checking the compliance of the submitted results of the periodic review for selected areas of assessment with the actual situation and safety requirements defined in the methodology for PSR of RÚ RAO, as well as physical inspection of parts for storage of very-low level RAW and low-level RAW. The Authority's team inspection confirmed compliance with the safety requirements in question and states that all preconditions are met for maintaining a high level of safety even in the period until the next PSR.

Disposal of low-level RAW in FCCs into the second double row was standard. By the end of 2020, there were 6,206 FCCs, of which 394 of FCCs were disposed during 2020. In 2020, 3,545.79 m^3 of handling containers with very-low level RAW (MEVA barrels and large-volume bags) were stored in the very low-level RAW disposal section. A total of 14,262.70 m^3 of very low-level RAW is stored.

In 2020, Decisions Nos. 210/2020 and 331/2020 were issued, which approved changes in operating procedures 8-INŠ-601 and 12-TPP-801 important in terms of nuclear safety.

Based on inspections performed by ÚJD SR in 2020, the current operation of the RÚ RAO can be assessed as safe, with negligible impact on the environment.

d) FINAL TREATMENT OF LIQUID RAW MOCHOVCE (FS KRAO)

The purpose of the FS KRAO facility is the final treatment and conditioning of liquid RAW (radioactive concentrates, saturated sorbents and sludges) produced in EMO1&2, some types of solid RAW from the operation of this power plant units, and conditioning of treated solid RAW from other NIs. The capacity of technological lines far exceeds the production of RAW from the Mochovce nuclear units. FS KRAO operates technologies for the treatment of radioactive concentrates by bituminization in a film rotor evaporator and concentration on a concentration evaporator. The discontinuous bituminisation line is used to fix radioactive sorbents. On the cementation line, the RAW thus treated is then conditioned into FCCs, which are subsequently stored in the RÚ RAO.

The inspections at FS KRAO in 2020 focused on the control of compliance with the conditions of nuclear safety in the management of RAW and also on the control of the method of operational safety assessment by the license holder on the basis of safety indicators. Based on the results of the inspections of ÚJD SR, in 2020 the operation of FS KRAO was assessed as safe.

e) INTEGRAL RAW STORAGE FACILITY (IS RAO)

ÚJD SR, by its Decision No. 423/2017, issued a permit for operation of IS RAO. Gradually, its capacity began to be used for the storage of low-level waste generated during the decommissioning of NPP A-1 and NPP V-1 in approved packaging sets, such as ISO containers and barrels. In December 2019, a request was sent to the Authority to increase the maximum storage activity and the amount of stored RAW.

In May 2020, ÚJD SR issued a Decision No. 162/2020 consenting to the implementation of a modification affecting nuclear safety during the operation of the IS RAO. This project addressed the adjustment of the total storage activity to $1x10^{18}$ Bq from the originally approved value of $8.41x10^{14}$ Bq, increasing the total storage capacity for new packaging sets - shielded FCCs, increasing the maximum storage capacity for 200 dm^3 barrels and adding metal box pallets covered with plastic washable foil as packaging sets for solid RAW. In June 2020, ÚJD SR issued Decision No. 139/2020, which allowed a change in the use of the IS RAO. The change in the use of the building consisted in the change of the originally approved activity inventory of $8.41x10^{14}$ Bq to the projected inventory of $1x10^{18}$ Bq. An appeal was filed against this Decision in August. In October 2020, Decision No. 279/2020 P was issued, which repealed Decision No. 139/2020 and partially granted the appeal. In December 2020, the Authority issued Decision No. 330/2020, which allowed a change in the use of the IS RAO. The change in the use of the building consisted in the change of the originally approved activity inventory of $8.41x10^{14}$ Bq to the projected inventory of $1x10^{18}$ Bq. An appeal was again lodged against that Decision, requesting that the appellate body annul the Decision and refer the case back to the first-instance authority for a new proceeding.

Based on the results of inspections, in 2020 the operation of IS RAO was assessed as safe.

f) RADIOACTIVE WASTE SHIPMENTS

During 2020, the Authority created conditions for maintaining a functioning and safe system to ensure necessary shipments between individual technologies and NIs, by continuous type approval of transport equipment, issuing transport permits and approval of international shipments in accordance with Council Directive 2006/117/Euratom on supervision and control during shipments of RAW and SNF, as well as RAW imports for their treatment on treatment lines of TSÚ RAO and return shipments of products of treatment to the countries of RAW origin.

Inspections in the area of RAW shipments were focused on checking the validity of permits, the accuracy of accompanying documentation and records of transported RAW. Based on the results of the Authority's control activities, in 2020 the area of RAW shipments was assessed as safe. RAW shipments were carried out in accordance with transport plans and in accordance with the ÚJD SR Decree No. 57/2006. All RAW shipments were announced in advance and subsequently evaluated.

4 NUCLEAR MATERIALS

4.1 NUCLEAR MATERIALS

The Slovak Republic is bound by the Treaty on Non-Proliferation of Nuclear Weapons and the resulting Agreement on the implementation of Article III, par. 1 and 4 of the Non-Proliferation Treaty and its Additional Protocol to accept safeguards for NM. At the same time, the adoption of safeguards for NM is the first basic step towards the peaceful use of nuclear energy. In the area of NM safeguards, an important tool is the state system of registration and control of NM, which is maintained by ÚJD SR in accordance with the Atomic Act.

ÚJD SR is the central state administration body responsible for the discharge of supervision in the area of NM management, their registration and control. In the Slovak Republic, NMs can be used only for peaceful purposes and in accordance with the permit issued by ÚJD SR only to those applicants who demonstrate the ability to manage NMs in accordance with applicable legislation and international obligations.

In addition to the requirements of the Agreement on the Implementation of Safeguards for NM and its Additional Protocol, the Slovak Republic is also bound by the requirements of EU legislation arising from the Euratom Treaty and related legislation such as Commission Regulation (Euratom) 302/2005 on the application of the Euratom Safeguards Scheme. The UN Security Council Resolution 1540/2004 also obliges UN Member States to take transparent measures to increase nuclear non-proliferation control in the use of nuclear energy. The aim of these measures is to prevent illicit trafficking in NM and other nuclear items.

Registration a control of nuclear materials

The purpose of the state system of registration and control of NM in SR is to keep records of all NM declared in the territory of the SR to confirm compliance between declared data and the actual state, to detect NM losses, to provide information that could lead to recovery of missing NM, to prevent unauthorized use of NM, to cooperate when detecting unauthorized use of NM and provide current information on the number and location of NM in the SR. The accuracy of the data kept in the state system of NM records is verified by inspections. The basis for independent verification of NM on the territory of the Slovak Republic by the ÚJD SR, IAEA and Euratom inspectors is an effective system of registration and control of NM. This verification confirms that NMs are used as declared and at the same time they have not diversified for non-peaceful purposes.

The performance of inspections in the area of registration and control of NM has been taking place since 1 September 2009 in the regime of Integrated Safeguards, which are an optimal and effective combination of all safeguards in accordance with the legal framework.

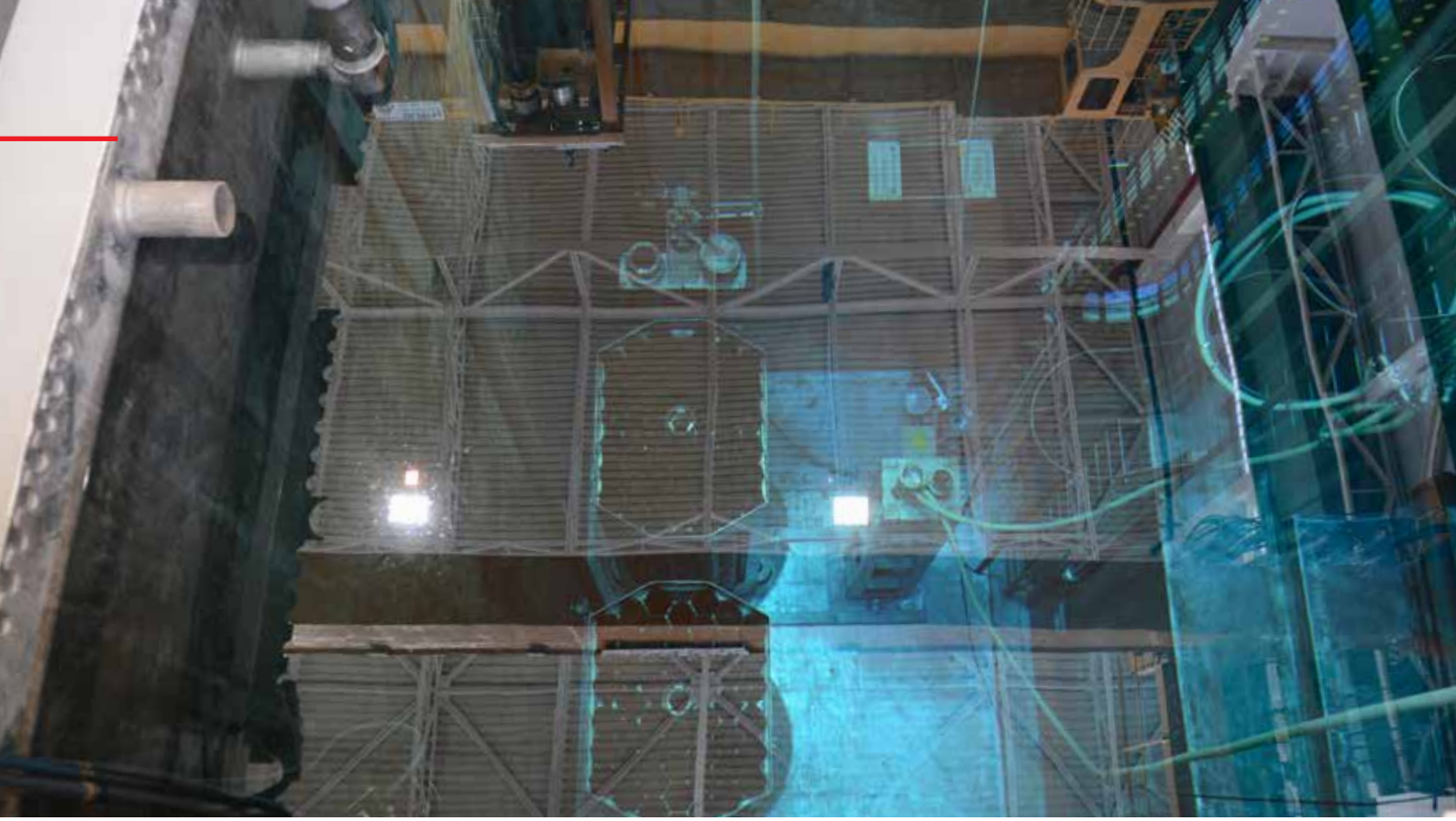
In 2020, the "State Level Approach" concept was approved for the Slovak Republic. The concept is another level of the IAEA's approach, in which the Agency considers and evaluates a wide range of information on a country's nuclear capabilities and adapts the safeguards procedures applied in that country as a result of that evaluation. Implementing the approach will allow the IAEA to better allocate resources and focus its efforts on states with any suspicion of NM safeguards.

As part of the performance of inspections in the area of NM registration and control, the Authority proceeded in accordance with the approved inspection plan and requirements of international organizations. The activities of ÚJD SR also include the control and processing of registration reports sent to ÚJD SR by the license holders. These are entered into the state system of NM records, while the accuracy of the data is also checked. The Authority is responsible for keeping records of NM in the area of WSXZ material balance. ÚJD SR sends registration reports to Euratom every month for the given area of material balance. Within its competences, ÚJD SR is also responsible for the timely sending of reports prepared on the basis of the requirements of Article 2 of the Additional Protocol to the Trilateral Safeguards Agreement to Euratom and the IAEA.

In 2020, the Authority sent 12 such reports. These reports are another confirmation of the fact that only activities related to the peaceful use of nuclear energy are carried out throughout the territory of the Slovak Republic and the obligations in the field of nuclear non-proliferation are observed.

According to Section 5 par. 2 (n) of the Atomic Act, ÚJD SR issues permits for the management of NM outside the NIs. In 2020, 4 such permits were issued and 6 permits were revoked.

Based on the results of inspections and controls of registration and operational records of license holders, it can be clearly stated that in 2020, NMs were used only for peaceful purposes. The Slovak Republic fully fulfils its international obligations in the area of safeguards for NM and the data in the state system of registration and control of NM are in full compliance with the data of Euratom and the IAEA.



Shipments of NM

The supervision activities ensuring nuclear safety during the transports of NM were performed in accordance with the Atomic Act, Decree No. 57/2006, which was amended by Decree No. 105/2016, and in accordance with international standards and recommendations. During the period under review, fresh nuclear fuel (FNF) was transported from the Russian Federation to the Bohunice NPP and the Mochovce NPP. FNF transports were carried out by a combined air and road transport through the transhipment airport. In 2020, SNF transports from EBO V-2 units as well as SNF transports from EMO1&2 to MSVP also took place. During the year, two unplanned inspections were carried out for the transport of FNF to MO3&4. In addition to license holders, ÚJD SR, the Police, the Civil Protection Office of the Ministry of the Interior of the SR, the Fire and Rescue Corps, the Railways company and others were also involved in the preparation of the transport. Nuclear safety and physical protection were ensured during transport in accordance with applicable legislation.

In 2020, ÚJD SR inspectors performed a total of 11 inspections of all FNF and SNF shipments. The inspectors did not find any serious deficiencies during the NM transport inspections. The conditions required by law and decisions of ÚJD SR were complied with.

Illicit handling of nuclear and radioactive materials

The fight against the illicit use of NM is of an international nature and various state bodies coordinate their activities aimed at the prevention and detection of illicit trafficking in NM not only among themselves, but also engage in cooperation with international organizations. Illicit trafficking in NM is an international crime, and international cooperation allows for its early and successful detection. Cooperation in this area is developed with the IAEA, the Joint Research Centre in Karlsruhe and with Interpol and Europol.

Cooperation with the US continues within the framework of the Joint Action Plan of the Government of the SR and the US Government to Combat the Illegal Handling of NM and Radioactive Materials and Related Technologies. Within this cooperation, ÚJD SR experts participate in conferences, working meetings, courses and joint exercises are organized. An important part of cooperation is the exchange of information. At the international level, it ensures the exchange of information in the Incident and Trafficking Database, which is operated by the IAEA. Currently, 140 countries from all over the world, including the Slovak Republic, contribute to this database. Timely exchange of information contributes to increasing the effectiveness of the fight against illicit trafficking in NM.

Inspections of fresh nuclear fuel and spent nuclear fuel storage

In 2020, 3 planned inspections were carried out aimed at controlling the storage of FNF and SNF in EBO V-2, EMO1&2 and MO3&4. No serious deficiencies were found in EBO V-2 and EMO1&2 and the operation of FNF storage facilities and SNF pools were assessed as safe in accordance with the requirements of the Atomic Act, L&Cs and relevant regulations. During 2020, FNF was brought to MO3&4 and stored in a fresh fuel storage facility. Compliance with nuclear safety during the storage and handling of fresh fuel in this storage facility was checked. There is no SNF in MO3&4. At the same time, the inspectors checked in MO3&4 the state of preparation of the documentation necessary for the granting of a permit for the handling of RAW and SNF. Inspectors physically checked the readiness of the equipment of support systems for spent fuel management. They thoroughly focused on the system of residual heat removal from the spent fuel pool of Unit 3.

4.2 PHYSICAL SECURITY OF NUCLEAR INSTALLATIONS AND NUCLEAR MATERIALS (PHYSICAL PROTECTION AND CYBER SECURITY)

Physical protection consists of a set of technical, regime or organizational measures necessary to prevent and safeguard unauthorized activities with NI, NM, special materials and equipment, RAW and SNF handling, transport of radioactive materials, as well as unauthorized intrusion into NIs and sabotage. The obligations of the Slovak Republic in the field of physical protection of the NM result from the accession to the Convention on the Physical Protection of Nuclear Material - INFCIRC 274 / rev.1, which was signed by the Government of the Czechoslovak Socialist Republic on 8 February 1987.

In 2005, the Amendment to the Convention on the Physical Protection of Nuclear Material was adopted in Vienna. The Addendum to the Convention entered into force on 8 May 2016. According to the Addendum to the Convention on the Physical Protection of Nuclear Material, one of the basic principles is Principle G: "Threat". This principle states that "Physical protection by the State should be based on the State's current threat assessment". By the Resolution of the Government of the SR No. 229/2009, the "Proposal for the determination of the threat by nuclear installations and for nuclear installations and nuclear materials within the design-basis threat to the State" was approved. The given document is the basis for determining the design-basis threat for NIs. Based on the Resolution, the Chairperson of ÚJD SR established a permanent inter-ministerial working group to update the determination of the threat by nuclear installations and for nuclear installations and nuclear materials within the design-basis threat to the State. By the Resolution of the Security Council of the SR No. 702 of 7 September 2020, the Security Council took note of the updated document "Determination of the threat by nuclear installations and for nuclear installations and nuclear materials within the design-basis threat to the State". In 2020, in addition to updating the material in question, the Group also dealt with updating the project threat for NIs, periodical reassessment of the threat, and operational resolution of situations arising from events in the Slovak Republic and abroad that affected the physical protection of NIs and NMs.

Requirements for physical protection of NIs and NM for the SR are defined in the Atomic Act, in the Decree of ÚJD SR No. 51/2006, which lays down the details of the requirements for ensuring physical protection and the requirements imposed on physical protection during the transport of radioactive materials, in the Decree of ÚJD SR No. 57/2006, which lays down details on the requirements for the transport of radioactive materials, and in the ÚJD SR Decree No. 105/2016, which amends the ÚJD SR Decree No. 57/2006.

The Authority focused its supervisory activities in this area on checking the operation of technical systems of physical protection, the level of performance of regime protection in SE-EBO, SE-EMO, JAVYS, a. s., and MO3&4, and the physical protection during FNF and SNF transports. The physical protection of the premises of SE, a. s., and JAVYS, a. s., was provided by private security services and the Slovak Police throughout the period under review. Physical protection in the SE-EBO was provided in accordance with the approved physical protection plan of the SE-EBO and changes approved by the Authority. Physical protection at JAVYS, a. s., was also provided in accordance with approved physical protection plans. In 2020, the Authority approved the implementation of changes to the JAVYS, a. s., physical protection plans within the scope of the "Amendment No. 1 to the Plans of Physical Protection of the NI JAVYS - Bohunice Locality ", edition No. 8. At the same time, the "Physical Protection Plan of the MSVP JAVYS - Bohunice Locality", edition No. 9, which concerns the completion of SNF's storage capacities, was approved. Ensuring physical protection at the RÚ RAO site was also in 2020 in accordance with the approved "Physical Protection Plan for RÚ RAO Mochovce" and its amendments. In 2020, ÚJD SR approved several changes in the EMO1&2 Physical Protection Plan. The provision of physical protection was in accordance with the approved physical protection plan of SE-EMO and its previous changes approved by the Authority.

In 2020, ÚJD SR approved changes to the physical protection plans in connection with the commissioning of the MO3&4 nuclear installation within the scope of FNF handling and storage at the fresh fuel unit, as well as in connection with the commissioning of Unit 3 of the MO3&4 nuclear installation. The inspection activities were focused on the gradual provision of physical protection in connection with the commissioning of the facility in question, in particular with the physical protection of the fresh fuel unit. The physical protection of the MO3&4 fresh fuel unit was ensured in accordance with the valid "Physical Protection Plan MO3&4 UČP", which was approved by the decision of the Authority No. 154/2018 and its approved amendments.

The Authority also assessed and approved the physical protection plans for the transport of SNF from SE-EMO to MSVP, which took place in November 2020. At the same time, it also assessed and approved the physical protection plans for FNF transports.

Exercises of physical protection units were carried out in all localities with the participation of representatives of the Authority. The exercises tested the effectiveness of the physical protection system and focused on the response and coordination of the activities of all components of physical protection to the situation. The readiness of the staff of the license holder, the operators of the physical protection control centres and the physical protection units to respond to the simulated situation was verified, as well as the verification of the connections and communication system between the involved units.

In the course of 2020, ÚJD SR performed inspections aimed at ensuring physical protection of NIs and NMs, the physical protection during FNF and SNF transports. The inspection activity followed the Authority's inspection procedure. It focused on the performance of regime protection, the method of performing vehicle entry control, comparison of the state of technical means of the physical protection system with the valid legislation and with the state agreed in the documentation for individual NIs.

ÚJD SR performed 11 inspections focused on the physical protection of NIs and NMs. Inspections were also carried out to ensure physical protection during the transport of radioactive materials. As a result of anti-pandemic measures, in 2020 ÚJD SR performed one inspection of cyber security and protection of sensitive information in SE, a. s. The fulfilment of the requirements of cyber security and protection of sensitive information resulting from the Atomic Act, ÚJD SR Decree No. 430/2011, which lays down details on the requirements for nuclear safety of nuclear installations and relevant operational documentation, as amended by ÚJD SR Decree No. 103/2016, was checked. The IAEA NSS No 17. technical manuals were also used to check the given requirements - 'Computer security in nuclear installations' and NSS No. 33-T - "Computer security of instrumentation and control systems in nuclear installations".

5 COMPETENCE OF A BUILDING AUTHORITY

ÚJD SR has the competence of a building authority according to Act No. 50/1976 Coll. on Spatial Planning and Building Regulations (Building Act) for NI constructions and constructions related to NIs located in the area bounded by the NI boundaries. This means permitting buildings, alterations to buildings, maintenance work, issuing decisions on the use of buildings and removing buildings.

The following proceedings took place for EMO1&2 in 2020:

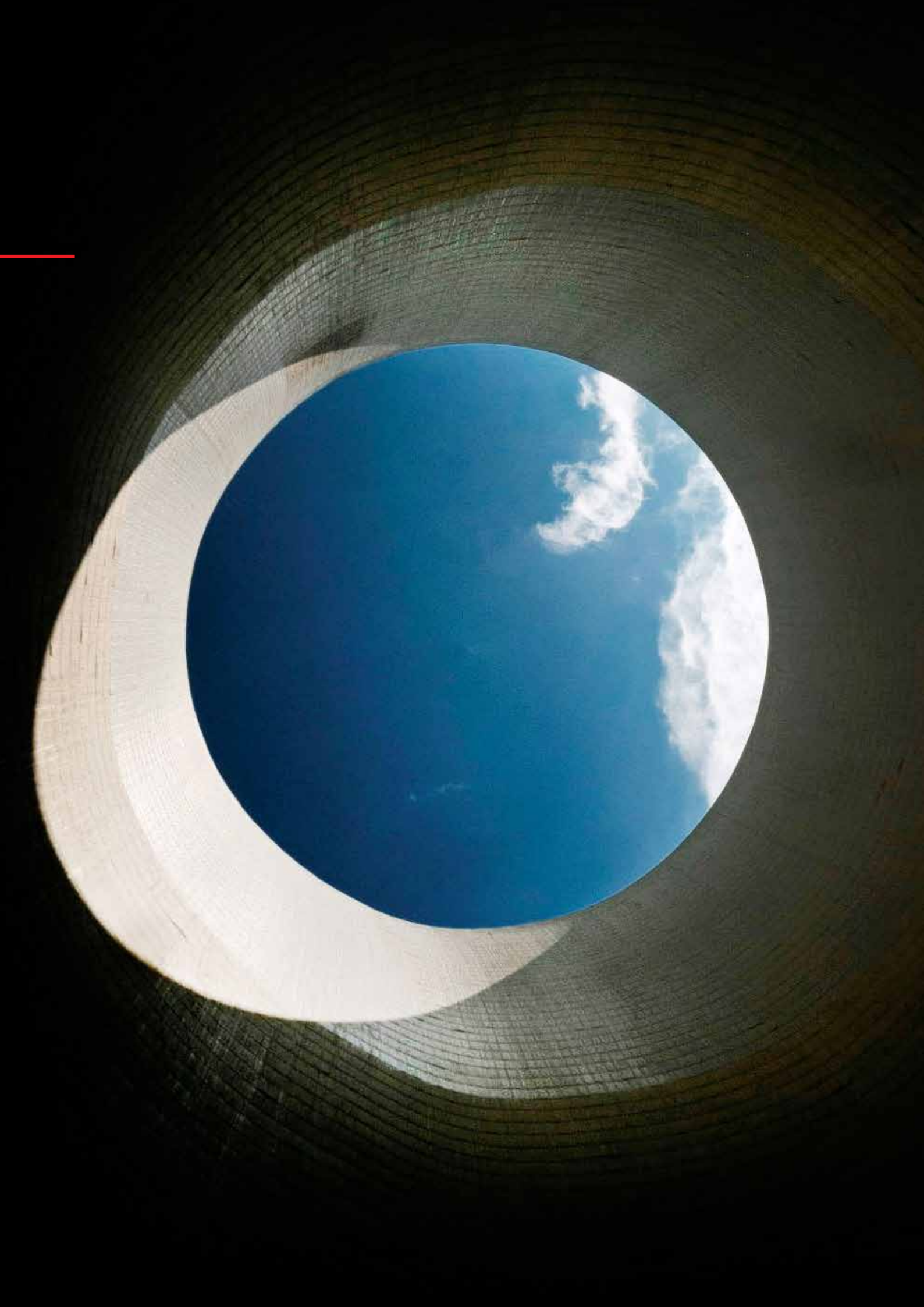
- building permit for IPR EMO 20400 seismic reinforcement of the transverse electrical building,
- building permit for IPR EMO 20400 seismic reinforcement of the auxiliaries building,
- building permit for IPR 20400 seismic reinforcement of the operations building,
- building permit for IPR M19051 electric boiler for EMO,
- Final building approval for IPR EMO 20400 seismic reinforcement of venting cooling towers,
- final building approval for IPR EMO20400 seismic reinforcement of pumping station of essential service water (ESW) building,
- final building approval for IPR EMO 20400 seismic reinforcement of DGS building, EMO1&2.

For EBO V-2, the final building approval was granted to IPR EBO 86800 Irradiation Plant. The Authority also dealt with the issue of the expected siting of underground gas storage facilities in the locality of Veľké Kostoľany with regard to the safe operation of EBO V-2.

The following proceedings took place with respect of JAVYS, a. s., specifically for V-1 NPP and other NIs in the Bohunice site:

- early use of the building followed by final building approval: BIDSF D4.2 Dismantling of large-size primary circuit components, establishment of a dry fragmentation workplace: V-1,
- early use of the building followed by final building approval BIDSF D4.2 Dismantling of large-size primary circuit components, construction of pools for wet cutting workplaces in the reactor building,
- change in the use of integral storage facility IS RAO for RAW disposal with total storage activity of $1x10^{18}$ Bq,
- building permit for IPR I00TMVD 20001 completion of storage capacity of SNF,
- building permit for change to completed construction – reconstruction of a building: V1.

In the course of 2020, the elimination of deficiencies identified during 89 local surveys of individual NPP buildings within the issuance of a permit for early use of the building pursuant to the Building Act continued in the premises of Units 3 & 4 of Mochovce NPP.



6 EMERGENCY PLANNING AND PREPAREDNESS

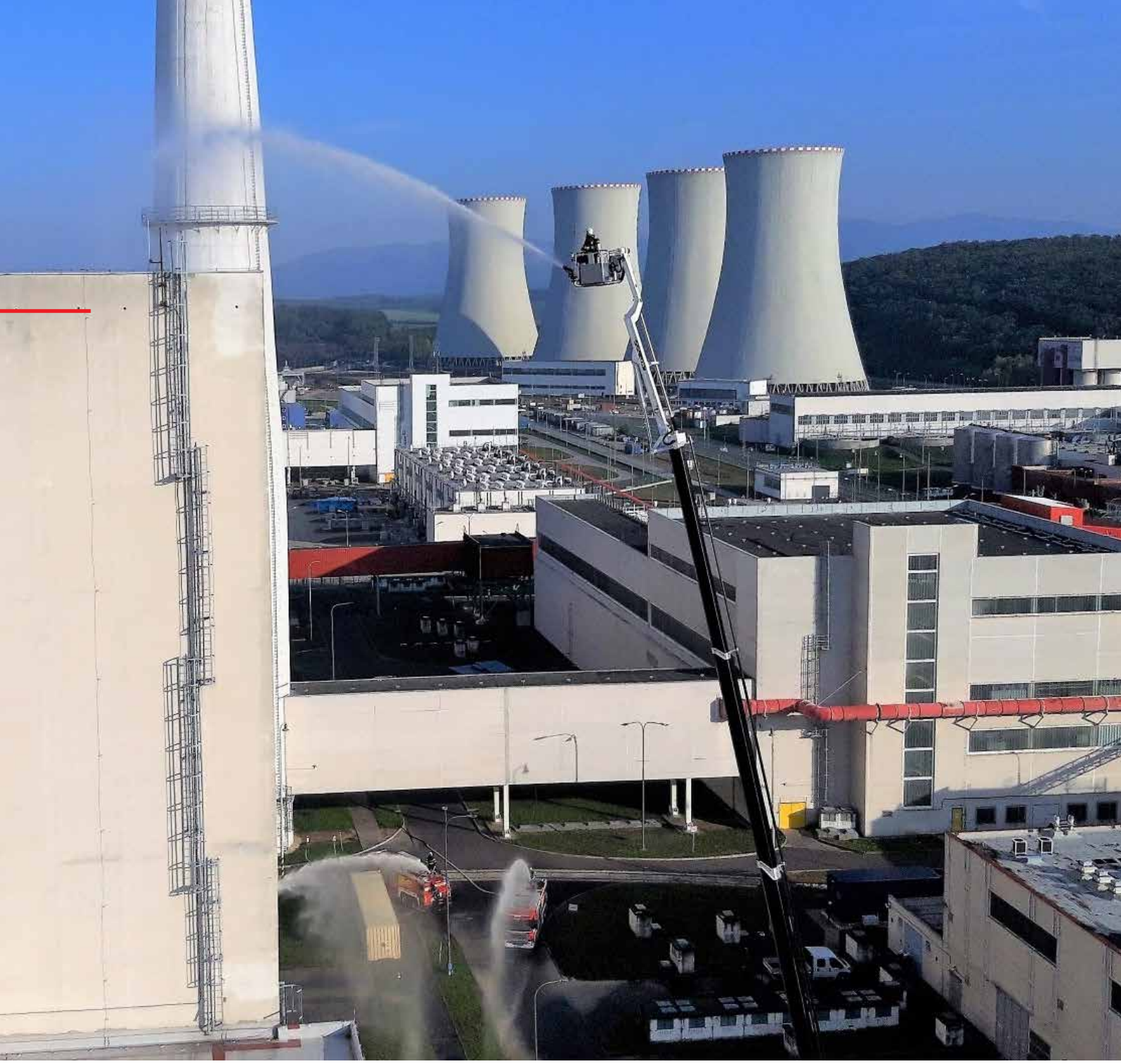
Emergency preparedness is the ability of the license holder and the public authorities to activate and implement activities and measures leading to the detection and effective management of incidents or accidents at NIs, or during the transport of radioactive materials and effectively suppress their ability to endanger life, health of workers or the population, their property, or environment. This requirement is defined by the Atomic Act and the license holder incorporates it into its emergency plans, which are approved or assessed by the Authority in cooperation with other state administration authorities.

For NIs in operation and also for facilities that are in the decommissioning phase, the main document in the area of emergency preparedness is the on-site emergency plan. Regarding the Units of the Mochovce nuclear installation under completion, the fulfilment of the emergency preparedness requirement is documented in the preliminary on-site emergency plan. The on-site emergency plan, as well as the preliminary on-site emergency plan, are subject to the approval by the Authority. The Authority also cooperates in its competence with the Ministry of the Interior of the SR in the assessment of population protection plans and with the Ministry of Transport and Construction of the SR in the assessment of emergency traffic regulations, and these documents are subsequently approved by these ministries. Population protection plans are drawn up by District Offices in the seat of regions whose territory is in the area of endangerment by NIs and the license holder for the construction, operation or decommissioning of these facilities. The given documentation addresses the issue of ensuring tasks and measures aimed at protecting the life, health and property of the population in the period of danger, or in the period of the consequences of an emergency as a result of an accident or accident at NI. The elaboration of the emergency traffic regulations is a condition for obtaining a permit for the transport of radioactive materials. In 2020, ÚJD SR approved updated versions of on-site emergency plans for MO3&4 and RÚ RAO. A joint on-site emergency plan for JAVYS, a. s., facilities in the Bohunice site was also approved.

The COVID-19 pandemic did not have a significant impact on the conduct of inspections in the field of emergency preparedness. The inspections were aimed at verifying the course of the exercises, controlling the transmission of technological, radiation and meteorological data, as well as the inspection of the system of trainings and rehearsal of emergency traffic regulations. The shift exercise at the RÚ RAO, a site exercise of the operated units of the Bohunice NPP, were selected for inspection. As part of the site exercise of the JAVYS, a. s., facilities in the Bohunice site, the emergency preparedness of the IS RAO was checked. During the inspection of training and rehearsal of emergency traffic regulations, inspectors evaluated the response to simulated events that may occur during road and rail transport of radioactive materials. One of the inspections to check the system of training and rehearsal of the Emergency Traffic Regulations was terminated by the protocol due to insufficient training of the external components of the emergency response organization. ÚJD SR also tested the ability of the emergency response organization to handle the event at all three units (two units in operation, one in the process of authorizing commissioning) of NI EMO1&2 and MO3&4.

To ensure the receipt and sending of notifications, notices and other information in the event of a nuclear accident or radiation hazard (e.g. incidents or accidents at NIs, during transport of radioactive substances, seizures of radioactive materials, loss, recovery or theft of ionizing radiation sources) in the Slovak Republic or similar events abroad, ÚJD SR has established a contact point. As part of contact point´s activities, the Authority works closely with selected state administration authorities and uses common guidelines for state administration authorities to ensure a uniform approach, which regulates the procedure for mutual information in case of occurrence or detection of an event related to the use of ionizing radiation sources, the obligation to inform the public and the international community about significant events related to the use of ionizing radiation sources, as well as criteria for informing the contact point. In the case of an event at the NIs in the Slovak Republic, or an event abroad with a trans-boundary impact, the Authority is also the competent authority for requesting assistance through the IAEA and its RANET system.

An Emergency Response Centre (ERC) has been established at ÚJD SR for the independent assessment of events that may occur during the operation of NIs or during the transport of radioactive materials. The ERC is a technical support tool of the Authority for dealing with extraordinary events at the NIs and an advisory body to the ÚJD SR´s Chairperson, who is a member of the Security Council of the Slovak Republic and the Central Crisis Staff.



The ERC includes several groups of emergency staff, whose members are selected from the employees of ÚJD SR. Members evaluate the course and consequences of incidents and accidents at NIs that are serious in terms of their possible impact on the environment, prepare proposals and recommendations for measures to protect the population. The individual groups of the emergency staff are able to analyse the status of the NI on the basis of received information and to prepare a forecast of the development of the event using software tools installed in the ERC. These activities are described in emergency regulations issued by the Authority and regularly rehearsed during shift-, site-, or inter-operability exercises of the license holders, as well as during exercises with neighbouring states and international organizations. International exercises are aimed primarily at testing and evaluating the ability of individual Member States to respond promptly and adequately to radiation events with transboundary effects.

In 2020, the Authority participated in 2 international exercises (ConvEx 2) organized by the IAEA, as well as the ECUREX exercise organized by the EC. The IAEA exercises focused on the response to a simulated event, and the EC exercise tested the response to a simulated earthquake-initiated event and the exchange of information between EU countries.

7 INTERNATIONAL ACTIVITIES

7.1 EUROPEAN AFFAIRS

Cooperation within the European Atomic Energy Community (Euratom)

In the context of the Slovak Republic's membership in the EU and in the European Atomic Energy Community, ÚJD SR performed the tasks and fulfilled the obligations arising from its membership. Activities in 2020 were marked by the epidemiological situation caused by COVID-19. Representatives of ÚJD SR participated - mainly in virtual or written form - in negotiations in working groups of the EU Council and in meetings of working committees and EC groups where, as experts in areas related to the Authority's competencies, especially in relation to obligations and activities arising from the Treaty establishing the European Atomic Energy Community, they defended the interests of the Slovak Republic.

One of the most important working groups of the Council of the EU from the point of view of nuclear safety is the Working Party on Atomic Questions (WPAQ). In the first half of 2020, the EU Council was chaired by Croatia (HR PRES). Regular meetings of the WPAQ took place only in January and February. Subsequently, the meetings were cancelled. Virtual online meetings took place in May and June, followed mainly by written communication. In February 2020, Special Report No. 3 of the European Court of Auditors entitled "The Commission contributes to nuclear safety in the EU, but updates are needed", to which HR PRES distributed the draft Council Conclusions in March. Subsequently, comments were made and a compromise text was reached, which was approved by the silent procedure of the WPAQ, the written procedure of COR2 and the Council of the EU on 29 June 2020. In the second half of 2020, during the German Presidency (DE PRES), virtual meetings of the WPAQ were organized to a limited extent. The key issues were the completion of discussions on regulations under the Multiannual Financial Framework 2021-2027, the Regulation on the European Instrument for Nuclear Safety for third countries, the Regulation on the continuation of EBO V-1 decommissioning after 2020 and the Euratom Community report on the 7th Review Meeting of the Joint Convention on the Safe Management of RAW and the Safe Management of SNF.

Due to the pandemic situation already mentioned, only one virtual plenary meeting of the European High Level Group on Nuclear Safety (ENSREG) took place in 2020. At its 41st meeting, ENSREG, as an advisory body to the EC, discussed the procedure for preparing the second topical peer review under Council Directive 2014/87 / Euratom and approved NI's fire safety as a review topic. The Group also discussed the work of working groups, the state of Stress Tests in third countries (e.g. Belarus) and approved the ENSREG report for the EU Council and the European Parliament. Other activities within the ENSREG Group and its subgroups in 2020 focused mainly on the continued monitoring of measures taken and on the implementation of recommendations resulting from peer reviews carried out in the framework of Stress Tests (Action Plan) carried out after the Fukushima - Daiichi NPP accident. The account of the implementation of the Action Plan is published on the website of ÚJD SR, as well as on the ENSREG´s website.

In July 2020, the Slovak Republic submitted to the EC the second report on the implementation of the provisions of Council Directive 2014/87/Euratom amending Directive 2009/71/Euratom establishing a Community framework for the nuclear safety of nuclear installations. The report is based on the ENSREG manual from February 2019 and contains basic information on how the Slovak Republic is implementing the provisions of the Directive. The report from 2020 is available on the website of ÚJD SR.

In December 2020, the fourth National Report of the SR on the implementation of Council Directive 2006/117/Euratom on supervision and control of cross-border shipments of RAW and SNF for the period 2018-2020 was prepared and sent to the EC. We can state that the Slovak Republic fulfils all its obligations under this Directive.

In April 2020, the Authority forwarded the basic data to the EC through the Permanent Representation of the SR to the EU in Brussels to effect a notification pursuant to Article 37 of the Euratom Treaty in the case of "Completion of the storage capacity of the interim storage facility for spent nuclear fuel in the Bohunice site". The documentation was prepared by JAVYS, a. s., subsequently assessed and commented on by ÚJD SR in cooperation with ÚVZ SR, MH SR and MŽP SR. The EC communicated its favourable opinion by letter of 12 October 2020.

In the course of 2020, the inter-ministerial coordination group for the coordination of tasks arising from the articles of the Euratom Treaty, which was established at ÚJD SR on the basis of Government Resolution No. 442/2006, continued in its activities. As a result of the restrictions adopted, reflecting the epidemiological situation, two meetings were held in spring and autumn. The summary information covered topics such as the European Court of Auditors' report on nuclear safety in the EU, the EU taxonomy in relation to nuclear energy and the planning of the ARTEMIS mission.

7.2 COOPERATION WITH THE IAEA

The IAEA plays the most important role in the field of international cooperation, given its political, professional and international importance, as well as the wide range of possibilities for technical cooperation and assistance. In 2020, IAEA Board of Governors meetings were affected by the pandemic situation. The meetings took place as an online conference and the participation of the Slovak delegation was ensured through the representative of ÚJD SR at the Permanent Mission in Vienna. Meetings of the IAEA Board of Governors took place in virtual form in March, June, September and November 2020, as well as meetings of the Program and Budget Committee of the IAEA Board of Governors in May and November 2020. Slovak experts also participated virtually in the work of IAEA expert groups and committees. Also, the 64th IAEA General Conference, which took place from 21 to 25 September 2020, was influenced by the ongoing global pandemic and the measures subsequently taken. The format of the meeting was hybrid. The Slovak delegation was led by the Chairperson of ÚJD SR, and the physical participation of the members of the Slovak delegation was limited to representatives from the Permanent Mission of the SR to international organizations in Vienna. The rest of the delegation, namely representatives of the Ministry of Foreign Affairs of the SR, the Ministry of Economy of the SR, the Ministry of Health of the SR, the Ministry of the Environment of the SR and ÚJD SR, participated in a virtual form.

In 2020, tasks arising from 5 national, 42 regional and 2 interregional projects were continuously fulfilled. Participation in workshops, training courses and meetings of the IAEA 2020 - 2021 biennial technical cooperation projects, was ensured. Most of the activities of the national coordinators were carried out through videoconferences. Two national projects under the Agency's technical cooperation program have been submitted to the IAEA for approval for the following two-year period 2022-2023. In 2020, ÚJD SR also participated in the work of the Commission for Safety Standards (CSS), the main task of which is the process of preparing and assessing new or amended safety standards. The Commission has also prepared a work plan for the next period (2020-2024).

During 2020, the preparation of the international peer review missions ARTEMIS and IRRS continued. Due to the pandemic situation, the ARTEMIS mission was postponed to September 2021, the IRRS mission is to take place in the third quarter of 2022.

For 2020, the regular membership fee of the Slovak Republic to the IAEA in the amount of EUR 462,544 and USD 74,551, and the contribution to the IAEA Technical Cooperation Fund in the amount of EUR 129,450 were paid.

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

The Authority has the function of the National Contact Point for the Preparatory Commission of the Comprehensive Nuclear-Test-Ban Treaty Organization (CTBTO) based in Vienna. CTBT is a multilateral treaty banning any nuclear explosions in any environment on Earth, for both military and civilian purposes. To date, 168 countries have ratified the CTBT, but it has not yet entered into force. The Preparatory Commission of the CTBTO and the Signatory CTBT countries are making significant diplomatic and scientific and technical efforts with a view to its early entry into force. The CTBT is currently considered one of the basic pillars of global nuclear disarmament.

ÚJD SR actively participates in the process of preparation for the entry into force of the CTBT Treaty, primarily through the participation of its representatives in meetings of the CTBTO Preparatory Commission and its working groups, hosting CTBTO training courses in Slovakia for On-Site Inspections and supporting training of experts and surrogate CTBTO inspectors. Representatives of ÚJD SR participated in several meetings of the CTBTO during 2020 (especially meetings of the Preparatory Commission and meetings of Working Group B, which is in charge of technical matters). All meetings, which take place regularly at the CTBTO headquarters, took place in a virtual form.

Based on a bilateral agreement between the Government of the SR and the CTBTO Preparatory Commission on mutual cooperation in training and implementation of the Commission's activities related to on-site inspections, which entered into force on 12 June 2016, and following negotiations between the CTBTO Preparatory Commission and ÚJD SR in 2019, the Slovak Republic was selected from the competition of other CTBT signatory countries, to host two international CTBTO exercises. As a result of the pandemic, in 2020 the Authority postponed both exercises to 2021. Exercises, to be attended by surrogate CTBT inspectors from around the world and other members of the organizing team, will take place at the Lešť Training Centre near Zvolen. In the preparation of exercises, during 2020 ÚJD SR cooperated with the Lešť Training Centre, the Permanent Mission of the SR in Vienna and other involved state administration bodies. In connection with the preparation of the exercise, a bilateral agreement was concluded between ÚJD SR and the Lešť Training Centre on the preparatory work for the international "Build-Up CTBTO exercise" in the Lešť Training Centre, the subject of which are conditions for preparatory work for planned international exercises.

ÚJD SR paid the membership fee of the Slovak Republic for 2020 to the CTBTO in the amount of USD 103,921 and EUR 87,790.

7.4 COOPERATION WITH THE NUCLEAR ENERGY AGENCY AT THE ORGANIZATION FOR ECONOMIC COOPERATION AND DEVELOPMENT (OECD/NEA)

In 2020, two regular meetings of the NEA Steering Committee for Nuclear Energy (NEA SC) were held. Due to the pandemic, the April meeting was postponed to July 9, 2020, where the most important points of the planned April meeting of the NEA SC were discussed online and the other points were included in the meeting in October. From 28 to 30 October 2020, the NEA SC meeting took place in full, online. In the context of the work program and budget for 2021-2022 (PWB 2021-2022), the NEA SC requested the NEA Secretariat to prepare this agenda and take into account the zero budget increase (so-called ZNG) for both years, with that the budget for 2022 can be reconsidered at the next NEA SC meeting. In the discussion on the preparation of the NEA Strategic Plan for 2023-2028, the member countries agreed on the establishment and work of a task group to review the timeliness of the current strategic plan and to propose a procedure for the preparation of a new one. In this context, the task group prepared a questionnaire for member countries to find out their position on the scope of updating the strategic plan. At its meeting, the NEA SC approved the proposal to establish a Global Forum for Nuclear Education, Science, Technology and Policy.

Slovak experts continued to be actively involved in the activities of all OECD/NEA standing technical committees, as well as in the activities of several working and expert groups. As part of joint OECD/NEA projects from the second half of 2019 and throughout 2020, ÚJD SR was involved only in the Halden Reactor Project.

Membership contributions for 2020 to the OECD/NEA (EUR 38,009), NEA Databank (EUR 10,635.54) and the Halden Reactor Project (NOK 106,400) were paid on time and in full.

7.5 FULFILLMENT OF OBLIGATIONS UNDER INTERNATIONAL CONTRACTUAL DOCUMENTS

The Convention on Nuclear Safety

The Convention on Nuclear Safety was ratified by the Slovak Republic on 23 February 1995. In accordance with Article 5 of the Convention, the eighth National Report of the Slovak Republic was prepared and sent to the IAEA in August 2019. The National Report contains basic information on how the Slovak Republic complies with the provisions of this Convention. The National Report in question will be discussed at the 8th Review Meeting of the Parties to the Convention on Nuclear Safety at the IAEA headquarters. Due to the pandemic situation, the date of the 8th Review Meeting was postponed to 2023. The National Report from 2019 is available on the ÚJD SR website.

The Joint Convention on the Safety of SNF Management and on the Safety of RAW Management

The Joint Convention on the Safety of SNF Management and on the Safety of RAW Management (Joint Convention) entered into force on 18 June 2001. In accordance with Article 30 of the Joint Convention, the Slovak Republic prepared its seventh National Report of the SR, which was sent to the IAEA and other contracting states in October 2020. The National Report will be discussed at the 7th Review Meeting of the Parties to the Convention at the IAEA headquarters. Due to the pandemic, the date of the 7th Review Meeting of the Joint Convention was postponed to 2022. The National Report from 2020 is available on the ÚJD SR website.

The Non-Proliferation Treaty

In 2020, under the Agreement between the Kingdom of Belgium, the Kingdom of Denmark, the Federal Republic of Germany, the Republic of Ireland, the Italian Republic, the Grand Duchy of Luxembourg, the Kingdom of the Netherlands, the European Atomic Energy Community on the implementation of Article III (1). 1 and 4 of the Treaty on the Non-Proliferation of Nuclear Weapons and its Additional Protocol, inspections were carried out by Euratom and IAEA inspectors. In none of the cases was a violation of the obligations of the Slovak Republic in the field of non-proliferation of nuclear weapons and the safeguards system. The Review Conference on the Treaty on the Non-Proliferation of Nuclear Weapons was originally scheduled to take place in New York from 27 April to 22 May 2020. However, due to the pandemic and global constraints, the Review Conference was postponed to 2021.

The Espoo Convention

Pursuant to the Agreement with the Ministry of the Environment of the SR (as the competent coordinator), ÚJD SR was actively involved in the preparation of the text of guidelines for the implementation of the Espoo Convention (Convention on Environmental Impact Assessment in a Transboundary Context) in the field of life time extension (LTE) of NPPs within an hoc working group. The group completed its work on the guidelines in mid-October 2020. In terms of national interests and priorities of the Slovak Republic, it was crucial that the text does not establish new obligations for states operating nuclear power plants, and LTE is not automatically categorized as a proposed activity (i.e. only after meeting cumulative comments under the provisions of the Convention as in other projects). The guidelines are the result of more than 3 years of extensive negotiations in a highly polarized environment due to the political sensitivity of the nuclear energy topic. The added value of the guidelines is to clarify how LTE is assessed, to outline possible situations, to develop cumulative criteria and to formulate illustrative factors relevant to the assessment of LTE. The text of the guidelines was adopted by the parties to the Convention in December 2020.

7.6 BILATERAL COOPERATION

Bilateral cooperation takes place at the governmental level, especially with neighbouring states, and at the level of nuclear regulators and radiation safety supervisory authorities. ÚJD SR regularly organizes meetings with representatives of governmental and other partner organizations of neighbouring states. In 2020, due to restrictions in connection with the COVID-19 pandemic, regular annual bilateral meetings of ÚJD SR leaders and other relevant Slovak entities with delegations of neighbouring countries - Hungary, the Czech Republic, the Republic of Austria and Slovenia, were not held. The only exception was a bilateral meeting with the Republic of Poland.

Republic of Poland: On 17 and 18 February 2020, a bilateral meeting took place in Warsaw between the representatives of the nuclear regulators of the Slovak Republic and the Republic of Poland on the basis of an intergovernmental agreement on the exchange of information and cooperation in the peaceful uses of nuclear energy. The members of the delegations, led by the chairpersons of both nuclear regulators, informed each other about the current situation in the field of nuclear energy, resp. on plans for the development of the nuclear program in Poland, on the activities of regulatory authorities, on the course and results of periodic nuclear safety reviews at selected nuclear installations in the SR and Poland, on the personnel training system (especially for nuclear inspectors in Slovakia), and also on international activities of both regulatory authorities, as well as other relevant matters. At the end of the meeting, the chairpersons of both regulators expressed satisfaction with the cooperation so far and expressed interest in further deepening it.

Cooperation with the US NRC: In September 2020, the Agreement between ÚJD SR and the US NRC on the exchange of technical information and cooperation in the field of nuclear safety expired. ÚJD SR and US NRC expressed a common interest in continuing a well-functioning cooperation in the next 5 years, based on a Memorandum of Understanding. The Memorandum of Understanding was prepared in 2020 and is expected to enter into force in 2021.

Cooperation with the nuclear regulator of India, AERB: In 2020, preparatory work continued on the establishment of cooperation between ÚJD SR and AERB, in the form of a memorandum of understanding. A meeting took place between the Chairperson of ÚJD SR and a representative of the Indian Embassy in Slovakia, where they discussed some aspects of the prepared memorandum of understanding. Preparatory work on the memorandum in question in 2020 has not yet been completed.

8 PUBLIC RELATIONS

The main methodological document within the Authority's communication to the outside world is the Public Communication Strategy up to 2023, which was approved in 2019. The document defines the goal of ÚJD SR in communication with the public, determines the strategy and means to achieve the goal, target groups and principles of communication with the public. This is directly reflected in the Action Plan of ÚJD SR communication with the public and the media for the years 2020 - 2021, which contains tasks, deadlines and defines responsibilities to meet the set goal.

The aim of communication with the public is to inform both domestic and foreign public about what is happening within the scope of activities of ÚJD SR, and to build public confidence in ÚJD SR through current, objective and comprehensible information and two-way open communication. As an objective and independent regulatory body, ÚJD SR constantly creates conditions for providing information to the public and the media through the press releases, news published on the Authority's website, but also through a profile on the Facebook. For the foreign public, the website is available also in English version, providing identical information as the website operated in the state language. For the Authority, the main communication channel with the public is the website, therefore it publishes and continuously updates laws and regulations in the field of nuclear safety, related legislation, the full text of safety guides, ÚJD SR Decisions, as well as all administrative proceedings of the Authority. ÚJD SR, through the website, and also through the open data portal data.gov.sk, permanently makes available selected sets of open data, the so-called datasets, such as all orders, contracts, invoices and the list of license holders.

In 2020, ÚJD SR continued the process of procuring a new website, which will be in accordance with the requirements of the valid legislation concerning standards for public administration information systems and will enable visitors to quickly and easily orientate themselves in the published information. The launch of the new website into operation is planned for the second half of 2021.

As communication and provision of information is one of the priorities of ÚJD SR, the Authority allows the public and the media direct contact through a special email address (info@ujd.gov.sk). In 2020, as in previous years, the dominant theme was the completion of Units 3 and 4 of the Mochovce NPP. Out of the total number of 30 questions delivered to ÚJD SR in 2020 from representatives of Slovak and foreign media, 21 (i.e. 70 %) concerned the completion of Units 3&4 of Mochovce NPP. In the interest of providing the public with comprehensive and correct information, out of 8 press releases published in 2020, 6 related to this issue. 3 requests for an interview with the Chairperson of the Authority were also granted, where issues related to NPP Mochovce 3, 4 were discussed, as well as the manner of performing regulatory activities within the competence of ÚJD SR. The Authority also answered questions from media representatives from Austria, Germany, the Czech Republic, the United Kingdom and Switzerland.

In 2020, ÚJD SR, as the central body of state administration, also answered questions sent pursuant to Act No. 211/2000 Coll. on Free Access to Information and on amendments to certain laws (Freedom of Information Act) as amended. ÚJD SR received and processed 31 requests for information, of which 29 requests were fully processed, one request was not granted and one was partially not granted, while 1 decision on non-disclosure of information and 1 decision on non-disclosure of information in part, were issued.

The communication function towards the public is also provided by the touch information kiosk, which the Authority has been operating since 2016 and is located at the ÚJD SR headquarters in Bratislava - before entering the building, and is open to the public 24 hours a day. In addition to the fact that the kiosk serves as the Official Notice Board of ÚJD SR, where administrative proceedings and all decisions issued by the Authority are clearly displayed, the public also has full access to the website via the kiosk. For greater clarity and easier access to information on the decision-making activities of ÚJD SR, a new section „Official Notice Board of ÚJD SR" was created on the Authority's website, which clearly displays ongoing and completed administrative proceedings and also decisions issued by the ÚJD SR.

ÚJD SR deepens the public's awareness of its activities and mission with the aim of creating a favourable opinion as a professional and reliable regulator, which is a credible source of information in the form of publishing information materials, especially in the form of the Annual Report. Constant attention is paid to clear information to the public and the correctness of published information. At the same time, in 2020 ÚJD SR worked on building of public awareness about the peaceful and safe use of nuclear energy through the professional magazine Nuclear Energy, in whose editorial board it has direct representation, and which is distributed free of charge to selected schools, libraries and institutions.

Despite the pandemic situation in 2020, communication with deputies, representatives of the central state administration and especially with local government and self-government bodies continued, especially through ZRZ Mochovce and OIK Bohunice, while a large part of the scheduled meetings moved to the online space.


JADROVÁ ELEKTRÁREŇ
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9 NUCLEAR REGULATORY AUTHORITY OF SR

9.1 ECONOMIC DATA

ÚJD SR is a budget chapter and therefore it is connected to the state budget with its revenues and expenditures. As of 1 January 2008, the Atomic Act imposed on the license holders the obligation to pay annual contributions for the performance of state supervision over nuclear safety. Revenues for 2020 were budgeted for ÚJD SR in the amount of EUR 8,869,000, the revenue budget was adjusted during the year by a budgetary measure to the amount of EUR 10,089,000. The actual revenue amounted to EUR 10,104,745, of which administrative fees amounted to EUR 10,097,592, fines and penalties (for infringements) amounted to EUR 25 and other non-tax revenue to EUR 7,128. The expenditure limit for 2020 was approved for ÚJD SR in the amount of EUR 9,579,414. Following budgetary measures, the expenditure ceiling was adjusted to EUR 10,090,755. The total volume of expenditures on the activities of ÚJD SR as of 31 December 2020 reached the amount of EUR 8,500,809. Of this, expenditure in the amount of EUR 8,380,482 was spent on the financing of ordinary activities and expenditure in the amount of EUR 120,327 on the acquisition of capital assets.

Table 6 Economic Results

Item	Amount (in Euros)
Limit of revenues	**10,089,000**
Actual revenues total	**10,104,745**
of which:	
administrative fees	*10,097,592*
fines, penalties, other sanctions	*25*
other non-tax revenues	*7,128*
Limit of expenditures	**10,090,755**
ACTUAL EXPENDITURES TOTAL	**8,500,809**
of which:	
current expenditures	*8,380,482*
capital expenditures	*120,327*

Current Expenditures

In the area of current expenditures, foreign transfers take a significant share in the total amount of EUR 957,251. These funds were used to pay contributions for membership of international organizations. The regular contributions are the two current foreign transfers to the IAEA, namely a regular membership fee of EUR 540,863 and a contribution to the Technical Cooperation Fund of EUR 131,650. Another contribution to the IAEA was a participatory contribution of EUR 9,591. In 2020, ÚJD SR also paid the contribution of the SR to the CTBTO in the amount of EUR 182,782. In 2020, the Authority also paid the SR's contributions to the OECD/NEA - to the PART II program in the amount of EUR 41,575, the contribution to the OECD/NEA-DATABANK - to the PART II program in the amount of EUR 10,782. As part of contributions to scientific and technical cooperation programs, a contribution to the OECD Halden Reactor Project (OECD/HRP) program in the amount of EUR 10,442 and a contribution to the US NRC and ÚJD SR Implementation Agreement (participation in the CSARP program) in the amount of EUR 29,566 was paid, where members use the results of research and development programs to increase the security and reliability of NIs.

Table 7 Foreign transfers to international organizations

Item	Amount (in Euros)
IAEA – membership fee	540,863
IAEA – Technical Cooperation Fund	131,650
IAEA – participation fee	9,591
CTBTO - membership contribution	182,782
OECD/NEA - program PART II	41,575
OECD/NEA - Databank - program PART II	10,782
Halden Reactor Project	10,442
Implementation Agreement US NRC and ÚJD SR (participation in CSARP program)	29,566
Total	**957,251**

Domestic transfers in the amount of EUR 61,804 were used to pay the membership fee to the non-profit organization SNUS (Slovak Nuclear Society), to compensate the income of employees in case of temporary incapacity for work, severance pay and allowances (sickness allowance).

The necessary support in the decision-making, licensing and inspection activities of ÚJD SR are expert opinions, assessments and analyses, for which expenditures in the amount of EUR 1,127,087 were used.

Payroll for 121 employees amounted to EUR 3,794,444 and expenses for health insurance and social security amounted to EUR 1,510,438.

Table 8 Current expenditures

Item	Amount (in Euros)
foreign transfers	957,251
expert opinions, assessments, analyses	1,127,087
payroll (for 121 employees)	3,794,444
statutory employee insurance	1,510,438
domestic transfers	61,804
goods and services	929,458
Total	**8,380,482**

Funds in the amount of EUR 929,458 were spent on the procurement of goods and services necessary for the operation of ÚJD SR. The basic type breakdown of these expenditures results from the economic budget classification of expenditures and their drawing was as follows:

Table 9 Structure of expenditures for goods and services

Item	Amount (in Euros)
travel expenses	31,712
telecom and energy	67,914
materials	165,337
car transport	26,615
routine and standard maintenance of the building and operating equipment	76,981
rent for office space, garage, meeting rooms and equipment	61,564
services (printing, cleaning, translations, information, revisions of equipment, trainings, advertising, meal plan, bank fees, allocations to Social Fund, compensations – recreation, entertainment and other)	499,335
Total	**929,458**

Capital expenditures

Within the category of capital expenditures in the amount of EUR 120,327, ÚJD SR used budget funds for the acquisition of capital assets as follows:

Table 10 Structure of capital expenditures

Item	Amount (in Euros)
purchase of SW	5,760
purchase of projector	5,485
videoconferencing equip.	7,410
purchase of copiers	5,706
purchase of a multifunctional attendance terminal	1,925
communication infrastructure (switches, server, UPS)	49,329
software reconstruction	44,712
Total	**120,327**

Budget funds from the separate Donations and Grants account

The drawdown of expenditure from the separate Donations and Grants account in 2020 amounted to EUR 161. The funds drawn from foreign grants consisted of funds from the SARNET project.

Table 11 Drawing funds

Item	Expenditures account	Donations and grants account	Total (in Euros)
Current expenditures	8,380,482	161	8,380,643
Capital expenditures	120,327	-	120,327
Expenditures total	**8,500,809**	**161**	**8,500,970**

9.2 HUMAN RESOURCE MANAGEMENT AND STAFF TRAINING

Quality human resources (HR) management is one of the basic preconditions for achieving the strategic goals and tasks of ÚJD SR and fulfilling the approved national nuclear safety policy. HR management focuses mainly on transparent selection procedures, flexible remuneration of employees, as well as training of employees in order to support and develop human potential and create an atmosphere that motivates employees to meet the goals and demanding tasks of the regulatory body.

ÚJD SR had a total number of 128 jobs determined for 2020 for the breakdown of the budget, of which 111 were civil servants and 17 jobs were performed in the public interest. Out of the stated number of positions, one civil servant position was temporarily delimited to the MZVEZ SR for the purpose of posting abroad (Vienna). As of 1 July 2020, two civil servant positions from the Legislative and Legal Department were delimited to the Office of the Government of the SR, and as of 1 September 2020, one position was reclassified to a civil servant position from a position of work in the public interest. The process of filling civil servant positions, as well as positions in the performance of work in the public interest, took place at ÚJD SR in a standardized form in accordance with the Civil Service Act and the Decree laying down details on selection procedures. ÚJD SR announced the selection procedures for filling vacant civil servant positions by publishing them in the register of selection procedures on the portal www.slovensko.sk and on the Authority's website. In cases of filling civil servant positions in the temporary civil service, which are of the lowest interest, and in the case of filling positions in the performance of work in the public interest, ÚJD SR also publishes offers through the largest job portal.

In 2020, ÚJD SR announced 9 selection procedures for filling vacant or temporarily vacant civil servant positions. Out of nine selection procedures, 6 selection procedures were conducted, one was cancelled and two were not held due to the fact that no candidate applied. In 2020, 2 selection procedures were carried out, which were announced in 2019, and two selections to fill positions for work in the public interest. A total of 8 selection procedures for civil servant positions and two selections for vacancies for work in public interest were held in 2020. Through 8 selection procedures and two selections, 5 vacancies, resp. temporary vacancies and two posts in the public interest were filled. In 2020, a total of 10 employees were hired, of which 8 employees for civil servant positions and two employees for positions in the performance of work in the public interest, and ten employees had a change in the civil service relationship. Three employees returned from parental leave. In 2020, the civil service relationship of 8 civil servants ended at the Authority, one civil servant was delimited to the Office of the Government of the SR and two employees terminated their employment while performing work in the public interest. In five cases, the reason for the termination of civil service was the expiry of the civil service period after reaching the age of 65, one civil service relationship was

terminated due to the employee's return from parental leave, one civil servant terminated his employment relationship and one employee in the performance of work in the public interest terminated his employment due to the subsequent establishment of a civil service relationship and one employee in the performance of work in the public interest terminated during the probationary period.

In terms of the actual number of employees, the Authority registered a total of 121 employees as at 31 December 2020, of which 106 were civil servants and 15 were employees performing work in the public interest. As at 31 December 2020, ÚJD SR registered 4 vacant civil servant positions and 1 position in the performance of work in the public interest. Due to long-term incapacity for work, two civil servants (a civil servant on long-term incapacity for work and a civil servant on representation) are registered at the same time in one civil servant post. As at 31 December 2020, there were 61 women (47 women in the civil service and 14 women in the job in the public interest) and 60 jobs taken by men (59 men in civil service positions and 1 man - work in the public interest). The total share of women employed in ÚJD SR was 50.41 %.

In terms of the systematisation of civil servant positions, we register a total of 76 civil servant positions in the field of civil service at ÚJD SR 2.05 Nuclear Supervision, of which 74 were occupied as at 31 December 2020.

Table 12 Civil service positions in the civil service department 2.05 Nuclear supervision

	Total	Women	Men
2.05 Nuclear supervision	74	27	47

The educational structure of employees directly influences the professional level of performance of activities of individual departments of ÚJD SR. The educational structure of employees declares that 90.08 % of ÚJD SR employees have completed university education of second degree. This percentage of university-educated employees is derived from the work intensity of ÚJD SR employees and far exceeds the educational level of the Slovak population.

Table 13 Educational structure of staff as at 31 December 2020

Education	University, 2nd degree	University, 1st degree	Complete secondary	Total
Women	50	1	10	61
Men	59	0	1	60
Total	**109**	**1**	**11**	**121**

In terms of the age structure of employees, the group of employees aged 56 and over represents 26.45 % of the total number of employees, employees aged 36-55 make up 54.55 % of the total number of employees and employees aged 18-35 make up 19 % out of a total of 121 employees. The structure of ÚJD SR employees by age confirms the long-term trend and the fact that state supervision was also ensured in 2020 by employees with many years of professional experience (ie employees aged 36 and over, who together accounted for 81 % of the total number of ÚJD SR employees). As part of the systematisation, ÚJD SR leads 16 civil servant positions of senior employees, which represents 12.8 % of the total number of 125 positions as at 31 December 2020.

Acquiring, deepening and maintaining the professional competencies of employees is another prerequisite for managing the new tasks of the current legal, economic and highly demanding technical environment, which also includes nuclear energy. Today, education is one of the basic goals, but also one of the requirements of modern society. The requirements for the knowledge, skills, abilities and experience of an employee in a modern company are constantly changing. In order for an employee to function as a highly professional workforce, he must constantly deepen and expand them. A separate chapter of education consists of the informatization of public administration and the transparency of the performance of the activities of the supervisory body, which require the active involvement of employees in solving new problems that these areas bring. To this end, it is necessary to adopt new requirements and obligations of public administration bodies, which employees must fulfil. Employee training was developed in the plan of continuous education of ÚJD SR employees for the year 2020, with a year-round content focus on the educational needs of all organizational units.

As part of the training process, employees were also offered ad hoc training activities, organized by external providers. The training was focused on all professional areas provided by ÚJD SR. Employees used various forms of education such as: E-learning, self-study, online conferences, etc. Managers accepted the offer of the Centre for Education and Evaluation of the Office of the Government of the SR and participated in trainings aimed at supporting the development of managerial skills. The managers of ÚJD SR were also trained in the field of ethics, corruption and reporting of anti-social activities. The Authority's staff regularly participates in workshops and training events organized by international organizations such as the IAEA and the OECD. Training and formation of work abilities and skills in the conditions of ÚJD SR becomes a lifelong process, because it is necessary to permanently take into account the current needs caused by the reality of change.

Expenditures for the training of ÚJD SR employees were budgeted in the amount of EUR 192,000 in the plan of continuous education of employees for 2020. More than 58 % of the funds spent in 2020 on employee training were allocated to vocational training, mainly in the field of nuclear regulation. It is clear from the above that ÚJD SR in the field of education places great emphasis on highly specialized training of employees in the scope of the Authority, through which inspectors and future inspectors acquire the necessary knowledge and skills to perform inspection activities. Funds for IT and cyber security trainings were also allocated separately. Equal emphasis is placed on the training of civil servants in other branches of the civil service and on the training of employees in the performance of work in the public interest, so that their training is continuous and up-to-date due to ongoing changes in legislation and government.

The adaptation of newly-hired civil servants was ensured by adaptation training and by mentoring. Seven civil servants completed this process in 2020. As part of adaptation training, new employees have acquired basic skills and acquired the basic information needed to perform civil service in the relevant department of civil service at ÚJD SR. Due attention was paid by ÚJD SR to language training, especially to the teaching of foreign languages, namely the English and Russian. The Service Office has also introduced systematic training of ÚJD SR employees in the field of language culture and this has a highly positive impact on the language side of documents and materials produced by the Service Office.

ÚJD SR, as another central body of state administration, has achieved a quality of work of its employees that is highly positively assessed in the domestic environment, but also abroad, which proves the high professional level and professionalism of the employees of the regulatory body.

9.3 DEVELOPMENT OF REGULATORY ACTIVITIES

Maintaining a high professional level and professionalism of the regulator´s staff is also helped by the application of the results of science and research at ÚJD SR and the exchange of experience and knowledge within the active participation of ÚJD SR in various international expert teams.

ÚJD SR is involved in the research project of the US NRC in the field of severe accidents. Thanks to participation in this project, ÚJD SR has at its disposal the American computing program MELCOR ("MELting CORe") and its additional tool MACCS ("MELCOR Accident Consequence Code System"). It uses them for verification calculations of analyses of severe accidents, which license holders submit to ÚJD SR within administrative proceedings. During the working meetings, the project members exchange experiences and knowledge in the field of modelling severe accidents and evaluating the reactions of NIs to accidents. They inform each other about modifications to NIs, the aim of which is to prevent the occurrence of potential accidents or to mitigate their consequences.

ÚJD SR also gains experience and technical information by participating in international projects and working groups of the OECD/NEA. In 2020, the preparation of a new THEMIS project (THAI Experiments on Mitigation measures, and source term issues to support analysis and further Improvement of Severe accident management measures) culminated in the WGAMA OECD/NEA working group. ÚJD SR also plans to join the THEMIS project. The project is planned for the period November 2020 to April 2024. Its aim is to experimentally and analytically investigate the processes and phenomena of the late phase of severe accidents, focusing on the behaviour of typical flammable / explosive gases and fission products in reactor containment. At the end of November 2020, the first meeting of the project took place in the form of a videoconference. It approved an experimental program for the period 2020 - 2021, its financing plan and organizational aspects related to the signing of the project contract. OECD/NEA working groups also organize various international conferences, seminars and workshops aimed at addressing current issues of nuclear safety, exchange of experience and mutual assistance. ÚJD SR experts are actively involved in the preparation and assessment of many professional papers, proposals and concepts. This contributes to their further professional growth, information and exchange of knowledge and experience in the field of increasing nuclear safety.

Within the framework of international cooperation in the field of nuclear safety, ÚJD SR also assists in the development of nuclear regulatory bodies of other countries. Examples of assistance are three EC projects in support of the Iranian Nuclear Regulatory Authority, INRA and an EC project in support of the Regulatory Authority of Ghana. The aim of the projects is to increase the supervisory capacity of third countries in the field of nuclear and radiation safety through the exchange of experience and the promotion of the use of international best practice. ÚJD SR is involved in projects to support INRA within a consortium with ENCO and partner regulators of the Czech Republic, Hungary and Slovenia. The content of the first project (since 2017) is the coordinated and effective implementation of nuclear safety stress tests at the Iranian Busher NPP, which are made on the basis of experience after the accident at the Japanese NPP Fukushima - Daiichi. The contribution of ÚJD SR in the second project (since 2018) is focused on assisting INRA with the preparation of the IRRS mission in Iran, as well as on supporting INRA in further development of the legislative and supervisory framework for nuclear safety in Iran in accordance with international standards. The third project aims to increase Iranian oversight capabilities in the field of nuclear safety culture and to implement the highest standards of nuclear safety and radiation protection. The consortium agreement with ENCO and the partner regulators of Hungary and Slovenia was signed by ÚJD SR in June 2020. ÚJD SR joined the project to support the development of Ghana's nuclear supervision by signing a consortium agreement with ENCO and partner regulators of Hungary and Slovenia in November 2019.

ÚJD SR is a founding member of the Forum of State Nuclear Safety Regulators of Countries Operating Nuclear Power Plants of VVER type (VVER Forum), which was founded in 1993. The aim of the VVER Forum is to support increasing the level of nuclear safety and protection against adverse effects of ionizing radiation. It is a platform for the exchange of information and experience in this area, its members meet at regular annual intervals. Working groups are being set up within the VVER Forum to address specific issues. There are currently three working groups and ÚJD SR is a member in two of them - the group for probabilistic safety assessment (WG on PSA) and the group for aging management (WG on Aging Management). Due to the pandemic, the scheduled meetings in 2020 did not take place.

9.4 MANAGEMENT SYSTEM

The management system of ÚJD SR is built in accordance with the requirements of the EN ISO 9001:2015 standard and supplemented by specific requirements of the IAEA in the field of ensuring nuclear safety. The Chairperson's advisory body is the Management System Board, which assesses the concept of management system development, issues of its development and application, the need for reviews, their conditions and requirements, audit reports, evaluations and comparative studies, cooperation issues, exchange of experience and good practice within implementation of the management system in the state administration of the Slovak Republic and abroad, proposes procedures in its improvement and increase the efficiency and effectiveness of individual activities of ÚJD SR.

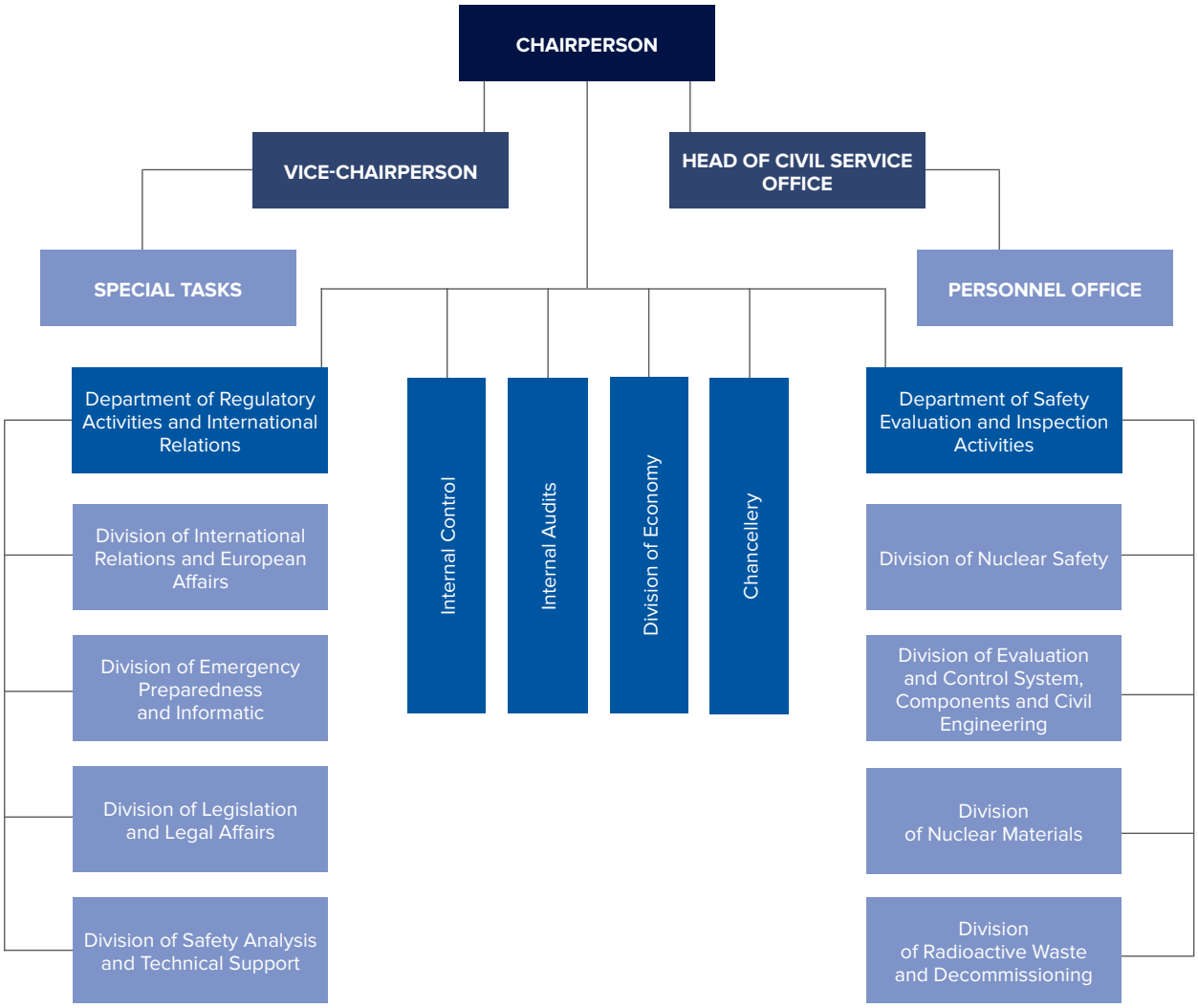
Risk management is a continuous activity of interconnected activities, the aim of which is to reduce the probability of occurrence of risks or reduce their impact, thereby increasing the probability that the organization will achieve its goals and can ensure customer satisfaction. Risk management was integrated into the management system in 2016 by developing the risk register. The Risk Register defines and classifies - in a classified manner, possible or occurring risks associated with the activities of ÚJD SR and includes all other information necessary for risk management. The Risk Register is updated on a regular basis, while monitoring the identified risks and measures to eliminate or mitigate the most significant risks identified.

In accordance with the annual plan of audits of the management system, 4 targeted partial internal audits were performed in 2020. Audits confirmed that the activities performed in ÚJD SR are governed by valid directives and procedures of the management system. The audits revealed several measures to eliminate non-compliance and suggestions for improvement, which will be implemented in 2021. The management system has been extended to fully reflect other changes that have taken place in the areas of information and cyber security management as well as anti-corruption activities.

The annual review of the Quality Management System by the management of the organization, in the evaluation of which all process owners participate, is assessed by the Management System Board of ÚJD SR. The output document is an integral assessment of the state of fulfilment of quality policy and objectives, audit results, regular review of quality guidelines, fulfilment of related requirements, describes process performance, product compliance, description of preventive and corrective actions and changes with potential impact on management system, including recommendations to improve processes, activities and the product related to the legitimate requirements of stakeholders and the necessary resources.

10 ANNEX

ORGANIZATIONAL CHART OF ÚJD SR AS OF 31 DECEMBER 2020



11 ABBREVIATIONS USED

ACCC	Aarhus Convention Compliance Committee
AERB	Nuclear Regulator of India
AO1	Reactor scram
BIDSF	International Fund to support V-1 Bohunice NPP decommissioning
BSC RAO	Bohunice RAW Treatment Centre
CSS	IAEA Safety Standards Commission
CTBTO	Comprehensive Test Ban Treaty Organization
DBL	Discontinuous bituminisation line
DE PRES	German Presidency of the Council of the European Union
DGS	Diesel generator station
EBO	Bohunice Nuclear Power Plant
EC	European Commission
EMO	Mochovce Nuclear Power Plant
ENSREG	European Nuclear Safety Regulators Group
ERC	Emergency Response Centre
ESW	Essential Service Water
EU	European Union
Euratom	European Atomic Energy Community
FCC	Fibre-Concrete Container
FNF	Fresh nuclear fuel
FS KRAO	Final Treatment of Liquid RAW
HF	Human factor
HNČ	Emergency feed water pumps for the steam generators
HR PRES	Croatian Presidency of the Council of the European Union
IAEA	International Atomic Energy Agency
I&C	Instrumentation and Control System
INES	International scale for nuclear and radiation incidents
INRA	Nuclear Regulator of Iran
IRRS	Integrated Regulatory Review Service
IS RAO	Integral RAW storage facility
JAVYS, a. s.	Jadrová a vyraďovacia spoločnosť/Nuclear Decommissioning Company
L&C	Limits and Conditions
LRAW	Low-level radioactive waste
MH SR	Ministry of Economy of SR
MSVP	Interim spent fuel storage facility
MZ SR	Ministry or Health of SR
MZVEZ SR	Ministry of Foreign and European Affairs of SR
MŽP SR	Ministry of Environment of SR
NDT	Non-destructive testing
NI	Nuclear installation
NM	Nuclear materials
NPP	Nuclear Power Plant
NR SR	National Council of the SR
OE	Operational event
OECD/NEA	Nuclear Energy Agency at the Organization for Economic Cooperation and Development
OIK	Civil Information Commission
OTK	Technical inspection department
PERIS	Integral tightness test of hermetic compartments of NPP
PSA	Probabilistic Safety Assessment
PSR	Periodic nuclear safety assessment
RAW	Radioactive waste
RÚ RAO	National RAW Repository
SE, a. s.	Slovenské elektrárne, a. s.
SHNČ	Pumps of super-emergency feeding system for steam generators
SNF	Spent Nuclear Fuel
SNUS	Slovak Nuclear Society
SR	Slovak Republic
TSÚ RAO	Technology for RAW Treatment and Conditioning
ÚJD SR, Authority	Úrad jadrového dozoru SR/Nuclear Regulatory Authority of SR
US NRC	US Nuclear Regulatory Commission
ÚVZ SR	Public Health Authority of SR
VLRAW	Very low level radioactive waste
VUJE, a. s.	VUJE, a. s., Trnava – Engineering, design and research organization
WP AQ	Working Party on Atomic Questions within the EC

www.ujd.gov.sk

PHOTO SOURCE:
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Slovenské elektrárne, a. s.
Jadrová a vyraďovacia spoločnosť, a. s.
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