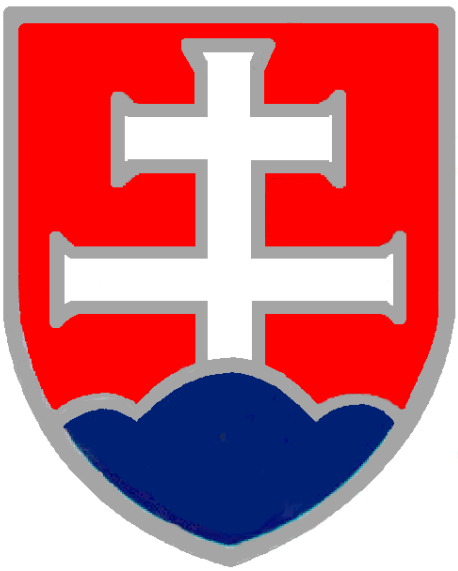
ANSWERS TO QUESTIONS

ON

NATIONAL REPORT OF

THE SLOVAK REPUBLIC



COMPILED ACCORDING TO THE TERMS OF THE CONVENTION ON NUCLEAR SAFETY

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1.		Article **General**	Ref. in National Report **I.3.6, p. 20 and 21**
Question		**Many measures were implemented by regulator as well as by the licensee to minimize the covid-19 impact. Did you evaluate the impact of the Covid-19 measures? Did you establish a plan for the systematic implementation of "lessons learned" from Covid-19 impact by the regulator and licensee?**	
Answer		The Government has adopted a number of measures, including the introduction/reintroduction of the State emergency. The Central Crisis Staff headed by the Minister of Interior coordinates the practical implementation of measures with other ministries and governmental authorities, including the Nuclear Regulatory Authority (ÚJD SR) and the Public Health Authority (ÚVZ SR). ÚJD SR carries out its official duties and regulatory work in compliance with the restrictive measures imposed by the Government; and is, according to the Section 3 of Act no. 387/2002 Coll., one of the crisis management bodies. As such, it is obliged to establish a crisis staff. The ÚJD SR Crisis Staff is established in accordance with the internal procedure no. PP 500 010/22 from March 2022. It is chaired by the ÚJD SR Chairperson and has 14 members from within various divisions of the ÚJD SR. "The Crises Staff" main task has been to continuously monitor the Government's decisions related to the Covid-19 pandemic as well as to organize the operation of the ÚJD SR. Furher, several new internal procedures were adopted and modified At the level of ÚJD SR over the course of Covid-19 pandemic. These focused on the measures taken by the ÚJD SR during the pandemic, notably the conduct of work of the ÚJD SR staff at the nuclear installations and the performance of work from home during the epidemiological situation. The ÚJD SR is evaluating the impact of the Covid-19 measures and the plan for the systematic implementation of „lessons learned" from Covid-19 impact is being carried out under the auspices of the ÚJD SR Crisis Staff. As for the licensee, SE a,s. has developed and introduced, based on the lessons learnt, the following measures: - a generic Pandemic Plan with instructions applicable to the different types of pandemics, including Covid-19, - Establishment of a minimal stocks of essential supplies – i.e. the minimum quantities to be maintained in storage, - preparation and training of the key personnel.	
2.		Article **6**	Ref. in National Report **2.3.2.3, p. 33 - 36**
Question		**The final authorization for commissioning of Mochovce Unit 3 was issued and the fuel is already loaded in the reactor core. Can you provide updates about the commissioning of Unit 3 including the results of the commissioning tests?**	

Answer		Unit 3 of the Mochovce NPP commissioning process is currently at the second substage of commissioning (the power start-up tests). The reactor's first criticality was achieved on 22 October 2022 at 21:38hrs CET. All Physical tests (PhC) were performed according to the approved Stage program, which consists of 18 different tests at power levels of 0 ÷ 2 % Nnom. PhC were concluded on 7 January 2023. All tests conducted have achieved the required safety criteria. The thermal capacity of the primary system did not meet the design criteria. The result, however, does not impact any of the reactor's safety features, while these test results are currently under the expert's assessment. According to the Nuclear Regulatory Authority of Slovakia (ÚJD SR), the SE,a.s. have fulfilled the conditions by carrying out the tests of the Physical start-up phase and elaborating summary results report. ÚJD SR has subsequently issued the approval for the Energy start up phase.	
3.		Article **8**	Ref. in National Report **3.1.3.3, p. 55**
Question		**Can you provide specific summary information about number of inspections and short description of main findings?**	
Answer		ÚJD SR as part of its inspection activities carried out a total of 186 inspections in 2022, of which 162 were planned and 24 unplanned. The completed inspections resulted in 20 findings. The main findings mainly related to the deficiencies in the fulfillment of the requirements of the quality management system and the documentation of the quality management system.	
4.		Article **8**	Ref. in National Report **3.1.3.5, p. 59**
Question		**Fig. 11 on page 59 shows significant increase of the R&D budget from 2008 when alternative financing was introduced. This budget then continually decreased until 2013 (with extra low level in 2012), then increased significantly again in 2014 and then continued to decrease again with new lows in 2020 and 2021. R&D budget fluctuation is much more noticeable comparing to fluctuations of other part of the overall ÚJD SR budget. Can you explain the significant changes in ÚJD SR R&D budget? Does this imbalance have an impact on the ÚJD SR R&D needs?**	
Answer		The R&D budget data shown in Fig. 11 consist of 2 components. The first one represents the planned budget for a larger national R&D projects in the field of nuclear safety and supervisory activities performance support, if such project exists in the relevant year. The second component represents a planned budget for various expert reviews and analyses essential to support the regulatory decision-making, licensing and/or inspection activities. The real expenses for expert reviews, studies, analyses etc. in a particular year varies, depending on the specific regulatory activities and needs within the relevant year (e.g., between 217 000 and 1188 000 euros in 2013 and 2018, respectively). Thus, the fluctuations in R&D budget data are reflective of the changes in both components as well asa of the existence or non-existence of a larger national R&D projects, and thee amount of money planned/needed to fund the expert reviews and/or analyses, in line with the expected supervision activities.	

	For example, a large 3-year R&D project in the field of fuel and energy started in 2008, related to the need of the Slovak Republic to ensure anf further enhance some challenging tasks in the State's execution of the regulatory oversight of Nis, including emergency preparedness and response. The regular annual costs of this project amounted of aboutto 996 000€ (included in the data for the years 2008 to 2011). Another large national R&D project, with a duration of 36 months, was launched in August 2013; hence the drop in R&D funds in 2012. Starting from 2017, most of the R&D activities were carried out within the second component classified as expert reviews and analyses (without any large national project being launched), and the total amount of their expenses depended on the specific needs of the regulatory supervision (i.e., the type of inspections, reviews to be performed and/or licences to be issued), as well as on the results of the public procurement. Furthermore, it should be emphasized that the majority of the budget item labelled in Fig. 11 as an international commitment consists also of R&D contributions to the technical cooperation projects within the IAEA, OECD/NEA (e.g. Databank, Halden Reactor project, joint projects such as the PKL3, THAI-3, THEMIS), etc., and bilateral R&D cooperation (e.g. with US NRC – CSARP). For the purposes of future reporting, we will consider updating/modifying the structure of the presented data on financial resources, in order to represent more clearly the individual items.
5.	Article **8** / Ref. in National Report **3.1.3.5 and 3.1.4.3, p. 60 and 64**
Question	**Sufficient staffing and its stabilization are a constant issue for many regulatory bodies. Are there any issues to keep all attributed posts at ÚJD SR and PHA SR filled? Is there a long-term strategy for the staff stabilization? If yes, can you provide a short summary of successful/unsuccessful methods?**
Answer	Pursuant to Sec. 4 (4) of the Atomic Act, uses in the exercise of its powers human resources and financial resources necessary for the fulfilment of obligations stemming form the Atomic Act, within the resource possibilities of the state budget. In discharging the above obligations it may also use external scientific and technical resources and expertise to support its regulatory functions. ÚJD SR has to negotiate the human resources limit, as set by the Government resolution that precedes the State budget Act, every year. The alternative ÚJD SR financing introduced in 2008 plays a significant role in this regard, as it provides for the collection of fees by ÚJD SR for each licence issued. This alternative system of financing supports the regulatory body staffing and stabilization as it provides for an additional source of ÚJD SR stable income. Further, ÚJD SR as a Civil Service Office (according to Section 15 par. 1 (a) of Act No. 55/2017 Coll. on Civil Service) plans, organizes, secures and creates conditions for training of the civil servants. The Government Decree No. 126/2017 lays down the details of education and training o civil servants. In a more detail, the ÚJD SR staff training process is regulated by an internal directive on the employees education specifying the details training of civil servants and employees performing work in public interest. Every year, the Personnel office

		draws up a plan for continuous education for a calendar year, which is then being regularly evaluated. The focus is based on the professional competencies of a civil servant according to his/hers positio description. ÚJD SR annually approves and evaluates the annual plan for continuous education and training of all employees; and considers the continuous training to be a systematic process of providing and acquiring knowledge, maintaining, improving and complementing skills, abilities, habits and experiences needed for an employee to perform its duties. This process distinguishes between the adaptation training and the competency training. Adaptation training is designed to ensure that a new employee is quickly adapted to his/her current job position. Competency training includes vocational training, language training, management training, personal development training, as well as an IT training. In addition, a particular attention is paid to the competence training of ÚJD SR inspectors, as set by the Inspectors Examination Directive (internal directive), in the form of modules focused on areas related to the operation of nuclear installations and activities in the field of peaceful uses of nuclear energy. The activities for the development and maintenance of the necessary competence and skills of the ÚVZ SR staff are set forth in the ÚVZ SR framework program on training and consists mainly of training and individual competency and evaluation plans. Based on the Ministry of Health's (MZ SR) Catalogue of Training Requirements, for each position hired a qualification criteria, duties and responsibility are established. This document is tailored according to the specific needs of the radiation protection inspectors. Within the ÚVZ SR and its respective regional offices - RÚVZs, training of staff is mandatory as per the MZ SR Rules and Procedures, nonetheless, some is not specifically tailored to performance of regulatory functions (e.g., licensing, inspection, and enforcement) in the field of radiation protection. ÚVZ SR and the respective RÚVZs have been making targeted long-term efforts to strengthen human capacities in the field of radiation protection, evidenced by a 50% staff increase, compared to 2017, in the total number of personnel working in the radiation protection divisions. In the area of training and education, ÚVZ SR has issued and maintains the following reference documentation: RP-03-1 Human Resources Management. Education. RP-03-2 Human Resources Management. Recruitment of new employees. F-RP-03-2 / 2 Training plan for a probationary employee in the performance of work in the public interest. Lastly, ÚVZ SR is developing and implementing, in cooperation with its Human Resources Office, the Human resources plan in order to obtain an adequate number of appropriately qualified and competent staff to support the radiation protection inspections and independent safety assessments verification.
6.		Article **18**	Ref. in National Report **5.2, p. 136 - 137**
Question		**Chapter 5.2 of the National Report 2022 on Design and Construction provides only general information. Can you**	

	elaborate (or reference to other chapters with relevant information) how defense in depth is reflected in design of existing and planned nuclear installations, whether proven technologies are used and if modifications (e.g. on the basis of post-Fukushima measures) are implemented to existing installations to enhance the nuclear safety.
Answer	The requirements on the defence in depth and the requirements to apply only proven practices and SSCs designs are set forth in the UJD Decree No. 430/2011 Coll., Annex 3, part B, I., C, and D and E, respectively. The nuclear power plants (NPPs) are constructed in compliance with the legislative requirements. This compliance is regularly verified in all phases of the NPP life cycle. Additionally, Periodic Safety Review of nuclear installations is carried out at least every 10 years (see the Atomic Act, Sect. 23 (2) f), and Decree No. 33/2012 Coll.). This includes also verification that the accident prevention and mitigation measures have been put in place, including the verification of the application of a defence in-depth principles. If needed, the corective measures are adopted and a plan for their implementation is developed and agreed. The defence in depth (DiD) as such was already an essential part of the basic design. It is included in the design through the application of a conservative approach, inherent safety characteristics, multiple physical barriers against the release of radioactive substances, multiple facilities to perform safety functions, preventive measures, automatic operation of safety systems etc. Generally, DiD is implemented via technical and administrative means. Technical means include, inter alia, equipment of the primary circuit, safety and control systems, emergency equipment (e.g. emergency core cooling system – high pressure and low pressure, emergency systems for containment`s pressure reduction – spray system and a bubble condenser), severe accident measures (a set of measures for a reactor cavity flooding needed for an in-vessel melt retention strategy by external RPV cooling, SAM external tanks – source of coolant, mobile external source of power, PARs), etc. Administrative means include, inter alia, procedures for abnormal conditions, emergency conditions, severe accident management guidelines, emergency plans etc. as a result of the stress tests aftter Fukushima accident, modifications including the technical and/or organizational measures were also implemented. More details on the programmes of safety improvements can be found in chapters 2.2 and 2.3.
7.	Article **18.2** / Ref. in National Report **General**
Question	**Please provide information on compliance to the principle of due priority to nuclear safety taking benefit from incorporation of proven technologies in regard to your nuclear fuel supply strategy. What are the safety criteria applied for nuclear fuel qualification? How are experiences and performance in normal operation and under event conditions considered, taking into account safety relevant challenges by using different fuel types already in the past at VVER type reactors**?
Answer	**Approach to nuclear fuel licensing in Slovakia**

	Basis Life cycle of the new/modified nuclear fuel consists of several main phases: determination of requirements, designing and constructing the fuel assembly, testing of the fuel assembly behaviour, test operation in the reactor core, final construction of the full reload with respect to the operational and testing results, implementation of the fuel in the reactor core, and finally fuel reloading from the core and storage (re-processing) of spent fuel. Only licensed nuclear fuel can be use in the reactors in Slovakia. The licensing process is governed by international treaties binding for Slovakia (EURATOM treaty) and national generally binding legal documents, such as general acts (laws), specific acts (laws), and subsidiary national decrees. In some cases regulatory decisions are applied as well. The acts include Act on administrative proceedings, Atomic act, Environmental protection act, Public protection against the ionizing radiation, etc. Legislative requirements for licensing process and nuclear fuel are further developed in national decrees; details are provided in regulatory procedures and guidelines (national/international). The fuel vendor prepares all needed documents with quality assurance documentation, safety analyses and safety justifications (neutronic, thermo-hydraulic, mechanic, thermo-mechanic, radiological, summary of experience from the use of fuel, etc.) of the fuel assemblies for the licensee. Consequently, the licensee in co-operation with its technical support organizations prepare all the necessary set of documents for the official application to implement this new/modified fuel in the reactor. The licensee also asks for other independent analyses to confirm the vendor fuel safety evaluation. **Scope of licensing** One of the basic requirements for the fuel assemblies is that there must be verifiably transferable results and experience with fuel assemblies of the same design and the same properties. These results and operational experience must be obtained at such a nuclear or experimental facility where they are operated and examined under the same conditions as they are/will be at the license holder's nuclear installation; these are mainly parameters and the way of operation. If demonstrably transferable experimental and operational experience with the operation of a mixed core (i.e., new and an already operated resident type of nuclear fuel in the core) cannot be documented, a mixed core load program must be prepared, designed and evaluated. In the mixed core load program, the requirements for the measurement of predetermined parameters are established and the period during which this program is implemented is determined. In the mixed core load program, the number of fuel assemblies loaded into the reactor as part of this program is determined. This number is properly justified, supported by analysis and in accordance with the specific objective of the program.

		Analyses must demonstrate that radiological and technical acceptance criteria are not violated for all plant states. The criteria include criteria for safe and reliable operation of the fuel/fuel assemblies, radiological criteria, and criteria for source term, etc. **Time frame** Licensing process starts after official submission of requested documentation to the UJD SR. UJD SR has 2 months (in complicated licensing cases 4 months) to decide whether the new/modified fuel is safe for operation and meets all the legal requirements for issuing the permit. If the set of submitted documents is not complete or not enough conclusive, the 2 (4) months period can be suspended and the process of issuing the permit can be prolonged to several more months, i.e., to the time when identified deficiencies are not resolved. The licensing process is held in Slovak language. When notification of European Commission (EC) is needed, the licensing process is prolonged by additional several months to get acceptance from EC. When it comes to a completely new fuel, the complexity of development to operation in batches can be as long as 10 years. This time period includes 5-7 years of extensive testing of fuel in the reactor core and evaluation of operational experience from other NPPs.
8.		Article **18.2**	Ref. in National Report **General**
Question		**How is the supply chain of safety criticial equipment and services assured for your VVER reactors? How is the exchange of documentation and certificates arranged with the main vendor companies and TSO?**	
Answer		The supply chain of materials for the General Shutdown (GS) and preventive maintenance (PM), including certified spare parts, is carried out in a standard way and in an advanced mannere, since the contracts are standardly generated, scheduled and prepared a ahead of their realisation. A maximum priority is given for the SSCs equipment. It means that the safety equipment was not excluded from the GS, unlike the non-safety equipment and the PM. The ordered spare parts and the related required certificates are standardly delivered together. Following the EU sanctions against the Russian Federation, the spare parts contractors were diversificated. Quality assurance & control of materials and spare parts: - additional verification of the chemical composition and mechnic attributes of materials performance in case a non-conformity is detected, - STN EN 10204 IC type 3.2 compliance, - material analysis (components) in the evaluation of failures or material damage, - Definition of the group of suppliers to perform/repeat the audit in the procurement process, in cooperation with the technical service,,	

	- Subsequently, a selection of a supplier for the required spare parts or goods, based on the defined requirements (qualification, technical, quantity); - followed by a formal receipt at the warehouse (quantity, intact packaging and/or visual damage checks) and storage, in line with the requirements laid down by the manufacturer/supplier; ending with the final release to the applicant or claimant. *Services - critical /important to nuclear safety (NS)* - Procurement based on the established safety requirements (qualification, technical, volume, time) after which a supplier is selected for the required service. Other elements of management of Spare parts critical/important to nuclear safety: - Requirements for the preparation of the technical specifications, - Obsolescence and Obsolescence monitoring, - Quality control on the receiving end or during the production, - Originality and authenticity check.
9.	Article **General** / Ref. in National Report **Preface, p. 17**
Question	**To what extent has the NPP been upgraded compared to the original project? How is the cumulative effect taken into account considering a significant number of upgrades?**
Answer	Both, Bohunice and Mochovce NPPs, were significantly modernized and upgraded compared to the original basic design. Over the time of their operation, more than 90 significant improvements have been introduced and implemented thanks to what the core damage frequency (CDF) decreased by more than two orders of magnitude in comparison to the original CDF value from the basic design. The main contributors to the nuclear safety level improvements were (e.g.): For the 3rd level of DiD: - Possibility of establishing the primary and secondary F&B, - Establishing a super emergency feed water supply to the SGs, - Enabling the connection of a mobile water source to the SGs, - Ensure the decay heat removal to the atmosphere (BRU-A) by steam dump, - Supplementing the new PAMS and SPDS I&C, - RCS cool down via BRU-A and new RHR of the primary circuit, - Elimination of the human factor in modes 4, 5, 6 by an automatic start of low-pressure pumps, - Ensuring strategies for SBO and UHS, - Connection of the mobile 0.4 kV DG to the batteries and important equipments, - Ensuring a mobile measuring unit and the use of passive coolant sources in cases without the power supply, - Implementation of symptom-based oriented procedures. For the 4th level of DiD: - HW for the implementation of new strategies dealing with severe accidents:

	- Depressurization of the primary circuit through new lines on PRZ, - Flooding of the reactor pressure vessel by a coolant from outside of the vessel to maintain the vessel integrity and retaint the corium in-vessel, - Hydrogen recombination, - Ensuring the integrity of SG, - Maintaining pressure in the HZ and ensuring its long-term integrity, - Long-term heat removal. For these strategies, a completely new HW was installed at the units: SAM DG, SAM high-pressure make-up system to the reactor pressure vessel, SAM spray system and an inherent coolant capacity (1000 m3), an independent electrical power system and an I&C (SAMS) to control the SAM systems from MCR or ECC, along with independent personnel developing strategies to deal with a severe accident based on the new SAMGs.
10.	Article **General** / Ref. in National Report **Introduction**
Question	**Has the COVID-19 pandemic in 2020-2022 resulted in any restrictions in the activities of the regulatory authority of the Slovak Republic?**
Answer	ÚJD SR carried out its official duties and regulatory tasks in compliance with the restrictive measures imposed by the Governmen as a result of the Covid-19 pandemic. The ÚJD SR Crises Staff– continuously monitored the decisions of the Slovak Government related to the pandemic and organized its work accordingly. During this period several restrictive measures had been adopted by the ÚJD SR and reflected in the internal procedures. For example, the employees who travelled abroad or had been in contact with a COVID-19 positive person, had a compulsory 14-days long quarantine. Moreover, the entrance to the ÚJD SR premises was permitted only to visitors with a negative test certificate (PCR, antigene). The universal obligation to wear protective face masks or respirators for the ÚJD SR staff was also in place. Covid-19 vaccination was not compulsory for; those employees that were not vaccinated, continued to be tested. Regarding the performance of inspection activities, these were performed in a reduced scope, where possible. ÚJD SR had reorganized its on-duty work and for the first time, “home office” regime was used to a large extent,. At the premises of the ÚJD SR, polymery disinfection service and germicide exciters were installed. The use of electronic means of communications was further promoted. Internal management meetings and external trainings of the employees were moved into online space using virtuals means and videoconferences (MS Teams, Vidyo, Webex, Zoom, etc.). The same approach was applied regarding the ÚJD SR international cooperation activities. The number of business trips was reduced to a neceessary minimum. Similar measures were also taken by the licensees. Site Crisis Management Commissions at all NPPs were set up, coordinated and managed by a centralized working group. The licensees developed pandemic plans to ensure their business and operation continuity.

	Internal procedures were continuously updated and at their premises, polymery disinfection service and germicide exciters were installed, and antigene and/or PCR testing was performed. Due to the limited number of employees present at the site, teleworking was used for other employees. Entrance to premises was permitted only with a negative test certificate(PCR, antigene). Contractors were requested to apply the rules as those adopted by licensees. The Covid-19 health restrictive measures caused some delays in the fulfilment of technical conditions during the process of construction of the new units 3 and 4 of the Mochovce NPP. Nevertheless, the above measures had no impact on the safe operation of the Slovak nuclear installations nor on the stability and consistency of the conduct of a regulatory oversight. Generally, the pandemic had no impact on the safe operation of nuclear installations or on the stability and consistency of the regulatory control. In year 2021, ÚJD SR had 170 inspections planned, out of which 160 were completed and the remaining 10 were either postponed (rescheduled) or cancelled. In addition, 19 unplanned inspections were completed in 2021. The National Labour Inspectorate (NIP) had completed all 20 planned inspections in 2021. All training and exercises of the ÚJD SR Emergency response staff (required to be carried out annually) were organizeed according to the schedule. While during the 2020 some of the exercises had to be rescheduled, ÚJD SR was able to fully provide for the annual training and exercises by conducting additional exercises in 2021.
11.	Article **General** / Ref. in National Report **Introduction**
Question	**Have safety culture assessments and self-assessments been implemented in the organizations operating the Republican nuclear installations, and is a plan being developed to maintain or improve the level of safety culture based on these assessments?**
Answer	The basic principles and responsibilities for safety culture assessment and self-assessment are described in the corporate guideline no. SE/MNA-134.01 (Safety culture assessment and monitoring) of the SE a.s (Slovak NPPs licencee holder). According to this document, self-assessment should be carried out every two years, this being the case lastly in November/December 2022. Similarly to the past practice, an electronic questionnaire was chosen and the statements formulated therein were linked to the specific WANO safety culture attributes. To ensure confidentiality, the distribution of questionnaires and data collection was outsourced and carried out by an external company. In line with our methodology, the initial analysis of the survey results is followed by interviews with a selected sample of site employees (30 in total). The aim of these interviews is to gather information (positive and negative) on the worst rated attributes of safety culture. Following the analysis of the results of the questionnaire survey and the interviews with employees, SE a.s. management develops a corrective action plan (Safety Culture Action Plan) for the implementation within the next period (for example 2023-2024).

12.	Article **14.1**	Ref. in National Report **Section 4.5.2, p. 95 - 96**
Question	**In Chapter 4.5.2 you state that you have PSA Level 1 and Level 2 available for all Slovak NPPs. Some countries (e.g. The Netherlands, Great Britain, Korea and others) have already developed Level 3 PSA. Level 3 PSA can be used to determine the consequences of a radiological accident on the population and the environment outside the NPP site.** **Q1: Do you intend to develop PSA Level 3 and use its results to address emergency planning issues? The methodological approaches used in PSA can also be applied to problems related to the security of nuclear facilities, for example in the analysis of sabotage performed by brute force (explosion, etc.).** **Q2: Is a probabilistic approach used in Slovakia to address this issue? Q3: Are there any requirements in the legislation, of the regulatory authority or in the internal management system documentation of the Slovak NPP that would be applied in a probabilistic approach?**	
Answer	Currently there is no legislative requirement to develop a PSA Level 3 in Slovakia, in line with the prevailing opinion within the WENRA countries. Among the reasons for that are, inter alia, a very high uncertainty of PSA Level 3 results (due to several, difficult to predict, influences) and a relatively large efforts needed to elaborate the Level 3 PSA compared to the expected benefits. The analysis of radiological consequences on the population and the environment outside the NPP site are an essential part of the safety demonstration of NPPs in Slovakia; as well as of the requirements needed for emergency planning zone determination and approval as altoghether they form a base for an on-site/off-site emergency plans and organisation of emergency response. The probabilistic approach is partially applied also to security aspects of nuclear facilities. When the nuclear security/physical protection measures are being developed, nuclear safety is also taken into consideration. To this end, the team of experts (both on nuclear safety and nuclear security) develop and prepare criteria for nuclear security purposes such as categorization of buildings, safety system, emergency system, etc. One of the inputs to the physical protection plan (preliminary physical protection plan) is taken from the nuclear safety experts whose PSA analysis serves to define the important safety systems and equipment based on which physical protection measures have to be implemented. Systems and equipment are categorized similarly to the nuclear material categorization, and according to this categorization, graded approach is applied by the design physical protection system. To evaluate the physical protection system, a threat assessment and a vulnerability assessment are also applied. Requirements for the probabilistic approach are contained and can be found in several documents, starting from the Atomic Act, various Governmental decrees and regulatory guidelines. For example, the Atomic Act defines the obligation of the operator to use the probabilistic safety assessment for a continuous improvement of	

		nuclear safety (Section 23, item 4). The probabilistic approach is also an essential part of the siting process (Decree on Nuclear Safety No. 430/2011 Coll., Section 4, item 1) and of the safety classes classification process and its verification (430/2011 Coll., Section 3, items 3 and 6) as well as of the safety functions and/or characteristics justification (430/2011 Coll., Appendix 3. At the level of the operator, the probabilistic approach is incorporated in the internal documentation of the management system.	
13.		Article **12**	Ref. in National Report **Section 4.3.4, p. 86**
Question		**Does ÚJD SR take part in the assessment of human factor or safety culture of the licensee and if does, then how?**	
Answer		ÚJD SR is involved and takes part in the assessment of aspects of human factor and safety culture. For example, the inspection program includes monitoring of a selected safety culture characteristics and a related collection of data, according to the Culture of Safety inspection procedure. Further, ÚJD SR, within the group of event analysis (SAU), reevaluates the events reported by the licensee caused by a human factor, and, if necessary, the ÚJD inspectors will proceed with an inspection focusing on the human factor to determine whether this has been the case or not.	
14.		Article **8.1**	Ref. in National Report **p. 60, 73**
Question		**A part of the Chapter 3.1.3.5 (Financial and Human Resources of the Regulator – ÚJD SR) refers to the "project "Implementation of Knowledge Management", to ensure that the regulator´s staff pass-on knowledge between experienced and less-experienced staff, but also to maintain critical knowledge within the regulatory authority..".** **Q: Could you please provide more details on this project? Chapter 4.2.3 Human Resources.** **Q: How often does ÚJD SR examine the professional competence of the employees that have direct impact on nuclear safety?**	
Answer		ÚJD SR has developed aof ÚJD SR's staff` knowledge management and has implemented an internal process oriented knowledge management within the Implementation of Knowledge Management project carried out between 2013 - 2019. The tasks are being performed following a project management approach, with a project managed by the project manager in line with the project plan. Some of the main project deliverables are as follows: knowledge management assessment, competences revision and knowledge categorisation from the nuclear safety point of view, conceptual knowledge management map proposal, critical knowledge owners database concept proposal and a knowledge management software support analysis. ÚJD SR examines the professional competence of the employees that have impact on nuclear safety once every 5 years. These are the lectors for theoretical and simulator training of selected personnel.	

	ÚJD SR also examines the special professional competence of the employees that have direct impact on nuclear safety once every 3 years. It onvolves the control room personnel (selected personnel).		
15.	Article **15**	Ref. in National Report **Section 4.6.2, p. 106**	
Question	**Liquid discharges: are there any regulatory criteria to be checked before discharging liquid radioactive effluents in order to limit the impact on the natural environment (e.g. minimum river flow) and if yes, what are these criteria? How are the storage capacities for liquid radioactive effluents before discharge into the environment sized?**		
Answer	The regulatory criteria to be checked before discharging liquid radioactive effluents are reported in Chapter 6.4, Table 13 (annex 1) in the following formats: Reference levels of annual discharges: Liquid effluents [Bq/y] Reference levels of daily discharges - investigation [Bq/m3] Reference levels for daily discharges - intervention [Bq/m3] The river flow influence is included in the assessment of the impact of radioactive discharges to the environment as part of the documentation for the authorisation to release radioactive substances originating in a NPP operation from the administrative control into the environment. Regarding the storage capacities the regulatory discharge criteria are the following: - 570m3 NPP Bohunice (V2) - 840m3 NPP Mochovce 1,2,3 Furthermore, acccording to Act on Radiation Protection (Act No. 87/2018 Coll.), applicants for a discharge authorization for nuclear facilities should demonstrate compliance with dose constraint values of 0.2 mSv/year for discharges to the air and 0.05 mSv/year for discharges to surface waters. For the authorization of facilities releasing radioactive materials to the environment, the Act requires an authorization to include the maximum values of material that can be released in terms of each radionuclide, expressed in Bq/year or Bq/day. Facilities discharging radioactive material to the environment are also required to implement a monitoring programme to demonstrate compliance with these values, and to report periodically to the Office of Radiation Protection (ÚVZ SR) on the results of these programmes. to verify compliance with authorized discharge limits. ***See support document Article 15***		
16.	Article **15**	Ref. in National Report **Section 4.6.3, p. 107**	
Question	**What is the maximum individual dose received by a worker over one year?**		
Answer	**For facilties for which JAVYS is a licensee the maximum indivudal dose is as follows:** Year 2019 max IED:		

	Employee of company JAVYS, a.s. 8.501 mSv Contractor 11.429 mSv Year 2020 max IED: Employee of company JAVYS, a.s. 6.188 mSv Contractor 10.907 mSv Year 2021 max IED: Employee of company JAVYS, a.s. 7.773 mSv Contractor 11.127 mSv **For nuclear facilities for which SE a.s. is a licensee the maximum individual dose reeceived by a workeer over 1 year is as follows:** Bohunice NPP (V2) 4,852mSv Mochovce NPP (1,2,3). 3,623mSv **The maximum individual doses established by the Office of Public Health of Slovakia (ÚVZ SR)** *Effective dose* 11,127 mSv/y *Equivalent dose to the lense of eye* 12,084 mSv/y *Equivalent dose to the extremities* 12,084 mSv/y *Equivalent dose to the skin* 13,144 mSv/y *Committed effective dose* 11,127 mSv/y
17.	Article **16** — Ref. in National Report **Section, 4.7.4, p. 121**
Question	**Do you proceed to a pre-distribution of stable iodine to the public living around power plants? If yes, how?**
Answer	Yes, a pre-distribution of KI pills to be used as one of the public protective actions in the event of a nuclear accident is a standard procedure in the Slovakia. They are distributed every five years to all households located within the emergency planning zones of nuclear installations (i.e. within the 20 km of Mochovce NPP an 21 km of Bohunice NPP). KI pills are also distributed to schools, universities, social service and elderly homes and correctional fcilities. Additional capacities are reserved and stored for emergency services. The most recent time when the pills were distributed was in 2022. The pills are procured by the licencee and distributed subsequently, in cooperation with the Ministry of Interior and municipal offices responsible also for providing information to their residents on when and where they could return the old unused packages and obtain the new ones.
18.	Article **16** — Ref. in National Report **Section, 4.7.4, p. 121**
Question	**Are there technical criteria (environment measurement, calculated dose…) that would lead the responsible authority to order/recommend the ingestion of iodine or to start a distribution? Is there an age limit to be concerned by the iodine intake?**
Answer	The criterion for the decision to use iodine prophylaxis is the occurrence of severe conditions at the nuclear installation (i.e. General

Emergency at the NPP) which could lead to the off-site releases. The emergency preparedness categories recommended by the IAEA safety standards are used for both the severity classification and the level of response measures. As iodine prophylaxis is one of the urgent protective actions, the pills will be used in the early phase of an emergency, when the emergency response organisation is prepared and the notification of persons according to the Protection Plan and the warning of the population is being carried out.

Protective Action	Value of projected dose	Comments
Sheltering	100 mSv / 7 days (effective dose / equivalent dose to fetus)	10 mSv / 48 hours effective dose in practical arrangements
Iodine prophylaxis	50 mSv / 7 days (equivalent dose to thyroid)	
Evacuation of people	100 mSv / 7 days (effective dose / equivalent dose to fetus)	

19.	Article **19**	Ref. in National Report **Section. 5.3.5.3, p. 152**

Question

Have the licence holders and/or ÚJD SR taken into account the French feedback on stress corrosion discovered on safety injection circuits of pressurised water reactors (IRS number 9063)? If yes, how? Have specific inspections been carried out?

Answer

While the feedback from France has been taken into consideration, ÚJD SR have not conducted any special inspection on the stress corrosion discovered on safety injection circuits.

The licensee has its own plans for carrying out the internal inspection regarding the equipments and pipes, in compliance with the quality documents requirements. These inspections are conducted regularly and mainly during the period of outages. As for the French feedback, an assessment of this external event has been carried out and corrective actions adopted as part of the assessment. Their implementation started in 2022 with mapping of all emergency systems at EMO and EBO NPPs and their comparison with the operational control programmes. Subsequently, extended inspections were also carried out on the support systems during the 2022 outages. These extended inspections were without indications. The identified differences in the performance of the inspections will be added to the operational inspection programme in 2023. The result of these inspection will be the subject to further inspections by UJD SR.

20.		Article **6**	Ref. in National Report **2 ., p. 23 - 32**
Question		**What proportion of the modifications presented in sections 2.2.1 and 2.3.1 were subject to an examination by ÚJD SR prior to be authorized or implemented? What criteria lead to a modification being investigated by the Safety Authority? How is such an investigation carried out?**	
Answer		Modifications to nuclear installation, impacting nuclear safety during its construction, commissioning, operation, decommissioning, closure of repository or after repository closure, which can be implemented only upon prior consent or approval of the regulatory authority (and in special cases also after obtaining the position from the European Commission), shall mean modifications: 1. the classified equipment carrying safety function or modifications changing their properties in relationwith respect to the safety function, 2. to the documentation reviewed or approved by the authority, 3. resulting in changes to the Limits & Conditions. Prior to their implementation, ÚJD SR shall approve the modifications after assessing the documentation required for approval. Modifications not listed above which, if implemented, may impact the nuclear safety are subject to prior notification and review by the regulatory authority. Pursuant to the Atomic Act, modifications shall be performed in accordance with thee principles and requirements applicable for the original installation or documentation. The application must be justified and relevant analysis must be performed to document their acceptability according to the procedure.	
21.		Article **6**	Ref. in National Report **2.2.1, p. 21**
Question		**Have the corrective actions from the Second Periodic Safety Review of EBO V2 NPP (PSR - 2016) of time phase 1 (due by 2019) been satisfactorily implemented? What about those of time phase 2, due by 2022?**	
Answer		95.55% of the corrective actions (i.e., 43 out of 45) with a deadline in 2019 were implemented on time and in a satisfactorily manner. The deadline for the remaining 2 actions was moved to 2022 and 2025 respectively (following the review and approval of the ÚJD SR). According to the original plan, one corrective action was also due by 2020 and deadline was met. The original plan contains 32 corrective actions due by 2022 of which 5 were satisfactorily implemented ahead of the deadline. V2 Bohunice NPP had requested an extension of time to complete the implementation of 9 actions. The reporting on the evaluation of implementation of the remaining actions due by 2022 is scheduled for March 2023.	

22.	Article **6**	Ref. in National Report **2.3.1, p. 32**
Question	**"In the course of 2018, the ÚJD SR identified shortcomings in the implementation of seismic reinforcement measures. The deadline for this action was extended to end of 2022." What progress has been made on this implementation?**	
Answer	In 2018, delays in the completion of seismic reinforcement of units 1 and 2 of the Mochovce NPP were identified by UJD SR and confirmed by the licensee – SE a.s.. In parallel to the assessment of seismic capacity of SSCs, seismic reinforcement of the buildings/structures has been completed on, e.g.: • Fire station building • Emergency feed water system • Emergency Response Centre • Air duck to venting stack • Venting stack • Diesel Generator Station • Diesel oil system • Central pumping station of ESW and firefighting • Forced draft cooling towers of ESW system, etc. • Reactor building of EMO12 • Electrical switchboards Based on the progress achieved, the activity is considered as closed. Nevertheless, external hazards are regularly being reviewed and measures to be taken identified, if relevant, within the periodic safety reviews . The project "*Reassessment of the classification of buildings and equipment of NPP EMO units 1,2*" was composed of several aspects, while those with serious impact on the project schedule could be characterized as "administrative" and "managerial". As for the "administrative aspect" it was necessary for the project to go through an EIA evaluation process and subsequently, after the submission of changes for approval by ÚJD SR, to be assessed by the relevant department of the Ministry of Environment. In the second case, the project was managed by the licensee in a way to have as small as possible supply chain, which could not be carried out within the expected time. This aspect was also reflected in the project schedule. Further progress was achieved when the licensee managed to harmonize the project organization and the supplier organizations, which has had a significantly impact on the schedule in terms of the quality of the submitted documents to ÚJD SR.	
23.	Article **7**	Ref. in National Report **3.1.1.2, p. 47**
Question	**"Regulations and guides shall be reviewed and revised as necessary to keep them up to date, with due consideration of relevant international safety standards and technical standards and of relevant experience gained." (IAEA, GSR part 1, requirement 33). Is there a periodicity for the review and update of regulations and safety guides? If yes, is this periodicity legally binding or an internal rule?**	

Answer	The process of a periodical review and revision of safety regulations and guides is governed by 3 ÚJD SR internal documents. The Directive on Assessment of Safety Standards and their Transposition into the ÚJD SR requirements determines the procedure and periodicity for the review and update of UJD's decrees and safety guides. Information on the issuance of a new safety standard will be prepared for the ÚJD SR management meeting. Following that, a proposal will be submitted for the transposition of the safety standard into the ÚJD SR requirements (according to the Directive on the Preparation and Internal Process of Approval of Decrees and the Directive for Issuing the ÚJD SR Safety Guides) with a view to achieve compliance of the national legislation and/ or the ÚJD SR safety guides within the 5 years since the publication of the safety standard (note: safety standards are the IAEA safety fundamentals, general safety requirements, specific safety requirements, general safety guides, specific safety guides, the WENRA Reference levels, OECD/NEA common rules and other documents of a similar nature). In case of changes to the national legislative act (e.g. Atomic Act), the period is extended. The Directive on the Preparation and Internal Process of Approving decrees stipulates that Decrees, including their amendments, are prepared according to the approved plan for the relevant year. The plan for the preparation of decrees reflects the need for the issuance of decrees and their amendments and is initiated when a new safety standard is issued (e.g. from the IAEA) or based on the new knowledge in the field, R&D results and international experience. This approach is followed appropriately also for the preparation of Acts and their amendments. The revision of a national legislation also reflects the adoption of new EU legislative documents.	
24.	Article **8**	Ref. in National Report **3.1.3.3, p. 54**	
Question	**"Counterfeit and fraudulent items (CFIs) are of increasing concern in the nuclear industry" (IAEA). Does ÚJD SR conduct any specific action (like inspection, workshop visit, etc.) against CFIs? Does any specific regulation exist in Slovakia addressing this concern?**		
Answer	Slovakia doesn't have a standalone Act dealing with counterfeit and fraudulent items (CFI).. Nevertheless, the use of CFIs can be considered a crime, as defined by the Criminal Act. The categories of CFI-related crime listed in the Criminal Act are, inter alia,: Fraud, General threat, Damaging and endangering the operation of a generally beneficial facility, Falsification and alteration of control technical measures for the marking of goods, Violation of regulations on state technical measures for labeling goods. UJD SR has been conducting more reactive inspections focused on CFI metal products used in nuclear installations. It has also extended its collaboration with the National Criminal Agency in this field. At the level of licensee, an internal comprehensive investigation to verify the installed pipeline components was performed, with UJD SR actively supervising all steps. Such regulatory oversight consisted of establishing a basic framework of requirements, continuous dialogue		

		with internal and external material experts, evaluation of major documents, achieved results and the adoption of corrective actions.	
25.		Article **General**	Ref. in National Report **1.2, p. 14**
Question		**Is there a political commitment or support to build or to develop SMRs? If yes, for what use? What are the ongoing projects and what are the perspectives in 2030? 2040? Will these projects rely on proven or on new technologies? Will these projects be first of a kind or reactors with abroad operating experience? Is there a particular type of reactors that is considered in Slovakia to be more mature or more suited to Slovakia's needs?**	
Answer		Slovakia perceives the potential of technology brought by SMR thanks to their ability to satisfy the need for flexible energy production and its various applications (e.g. production of electricity, hydrogen, heating). The benefits of SMR technology also include enhanced safety through basic and passive safety features incorporated into their design. Several reasons are currently being analyzed and examined with respect to the SMR technology and its possible advantages over large reactors. This mainly concerns the possible distribution of the investment as it appears to be possible to build several smaller units over several years, according to the demand, in comparison with the one-time long-term investment in case of a large reactor. Another argument in favor of SMR technology is the possible reduction of a construction costs. The reasons for extending the construction of the 2 new units at the Mochovce NPP are related to their complexity or increasing safety requirements, whereas in case of SMR, the risks of prolongation and overpricing are partially eliminated. Slovakia has supported the European Commission in establishing the so-called "European SMR Partnership" to represents an appropriate regulatory and financial framework to ensure a European supply chain for SMRs. In November 2022 a "Memorandum on cooperation in the field of nuclear energy within the framework of the development of new nuclear sources and small modular reactors" was signed between Slovakia and the Czech Republic convering, among other things, aspects of cooperation related to SMR technology.	
26.		Article **General**	Ref. in National Report **1.3.6, p. 20**
Question		**Have any requirements been changed or improvements been requested to take into account the feedback from the Covid-19 pandemic period?**	
Answer		During the Covid-19 pandemic, respirators and AG self-tests are distributed among workers. The licensee has also developed an Epidemic Plan to define the activities, personnel needed and the rotation schedule to be followed during the pandemic. As of now, all measures of the Epidemic Plan have been completed. Based on the experiences and lessons learned from the Covid-19 pandemic, the licensee has implemented the following actions: • a Generic pandemic plan with guidelines covering different types of pandemics, including Covid-19	

		• a change of requirements for a standby reserves by creating - a training program for reserve shifts.	
27.		Article **General**	Ref. in National Report **Challenge**
Question		**CHALLENGE: Given the current geopolitical context, one of the challenges for the nuclear safety regulator will be to maintain its independence of decision-making from possible political pressure both in the context of diversification of suppliers of technologies and services and of the need to increase energy production capacity.**	
Answer		As described in the NR, ÚJD SR was established on 1 January 1993 and its powers result from the Act No. 575/2001 Coll. on the Organization of Activities of the Government and on the Organization of the Central State Administration. ÚJD SR is an independent state regulatory body headed by the Chairman appointed by the Government and reporting directly to the Government. Its independence from any other authority or organisation dealing with the development or use of nuclear energy is administered and applied in all relevant areas (legislation, human and financial resources, technical support, international cooperation, enforcement tools, etc.). Energy production and the associated supply chain is under the responsibility of licensee (i.e. SE a.s.). Details of the licensing procedure (in the field of nuclear safety) are described in Chapter 3.1.3. The regulatory authorities of countries operating VVER-type nuclear power plants have a long-standing cooperation within the VVER Forum, including, on ad hoc basis, e.g. in licensing of new fuel designs. While the licensing of new fuel design may represent a challenge on a technical level, it does not represent a challenge to the independence of the decision-making process of the regulator.	
28.		Article **8**	Ref. in National Report **p. 62**
Question		**Could your country please provide an overview how the state nuclear regulator ÚJD communicates with the public to show the openness and transparency of its regulatory activity? Does ÚJD receive an external technical support? Please provide the key facts about its organisation, its budget, and its human resources.**	
Answer		ÚJD SR communication with the public is described in detail in Chapter 4.8. Public Relations (especially on p. 130 - 131). In addition to this information, the main methodological document related to ÚJD's SR communication externally and also internally is the Public Communication Strategy. This document is regularly updated (with the latest update being in 2019 and valid until 2023). In the Strategy, openness and transparency is defined as one of the main principles of the communication with the public. It means that the information related to nuclear safety is available to the public in clear, logical and accessible form; and an open communication with thee public, media and other entities as well as with international community is ensured. Further, UJD SR, As an objective and independent regulatory body, constantly strives to provide information to the public and the media through press releases, news published on the ÚJDs website as well as through its Facebook profile. A special e-mail address and and a	

	dedicated channel on the website (@Write us…) is also available (info@ujd.gov.sk) to enable the public to send questions. Press conferences are regularly organized and ÚJD SR also compiles and disseminates annual reports, leaflets, articles, etc. Information on current issues in the field of nuclear safety in the Slovak Republic and abroad, as well as on legislative, evaluation and inspection activities of UJD SR are continuously presented and the information requests from the interested parties are responded to. Special meetings, consultations and public hearings are held over the course of the decision-making processes for projects concerning environmental issues, according the relevant provisions of the Act No.50/1976 Coll. on Spatial Planning and Construction Order (Construction Act) as amended, the EIA Act and the Administrative Code. Furthermore, the municipalities mayor with nuclear installations in their vicinity have the contact details of the ÚJD SR Chairperson, with whom they can communicate directly, if needed. UJD SR website (www.ujd.gov.sk), has been completely renewed in 2021. It is used as a primary information channel to proactively inform the public of its competencies, powers and activities; as well as to publish and continuously update the laws and regulations, related legislation, full text of safety guides and reports elaborated by the ÚJD SR. The website is also available in English version. Other communication channels of UJD SR are: - Facebook profile; - participation at the meetings of the Civic Information Committees (OIK) in the regions with nuclear installations (Mochovce and Bohunice) to ensure communication with mayors and members of the local governments; - communication with universities, schools, expert groups and institutions, etc. Some examples of good practice of UJD SR communication are as follows: • **UJD SR Electronical Official Notice Board** for publication of all initiated and ongoing administrative proceedings on matters, which are of public interest, including all UJD SR decisions (https://www.ujd.gov.sk/ujd/www1.nsf/ID/Sk-09-01-06) • **A dedicated page on the ÚJD SR website** containing a detailed information on administrative proceeding **in connection to the completion of Unit 3&4 of Mochovce NPP** https://www.ujd.gov.sk/public-information/informacie-k-mo-34/?lang=en • **Public opinion pools** as an options how to obtain the opinions of the citizens (performed annually) As for the external technical support, UJD SR does use external support for some specific cases where no experts, limited capacity and/or limited technical or computational means are available. With respect to the key facts about the ÚJD SR organization, its budget and human resources, an elaborated response is provided in the Chapter 3.1.3 of the report, including the link to the UJD SR Annual Reports https://www.ujd.gov.sk/authority/annual-reports/?lang=en.

		Latest information of the budget and human resources is provided in Chapter 9 of the 2022 Annual Report https://www.ujd.gov.sk/wp-content/uploads/2022/11/UJD-VS-2021-EN-OK.pdf	
29.		**Article 11**	Ref. in National Report **p. 72**
Question		**Please provide detailed information how your country complies with the provisions of the Vienna convention on nuclear liability and how the Slovak Republic will ensure the necessary financial resources in the event of a radiological emergency.**	
Answer		Act No. 54/2015 Coll. on civil liability for nuclear damage and on its financial coverage issued by the National Council entered into force on 1 January 2016. This Act is fully compliant with the Vienna Convention.It stipulated the following: The licencee shall be liable for nuclear damage caused by any single nuclear incident if: • NIs with a nuclear reactor or nuclear reactors for power purposes during commissioning and operation up to EUR 300 000 000; • other NIs during commissioning and operation, transport of radioactive materials and all NIs in the decommissioning phase up to EUR 185 000 000. Section 6 of this Act further stipulates that the operator is obliged to cover its liability for nuclear damage up to the liability limit according to Section 5, par. 1, 2 or 3 by insurance or by financial security. It is prohibited to commission, operate and decommission a nuclear installation or to transport radioactive materials without the financial coverage for liability for nuclear damage up to the liability limit. The operator, insurance provider or provider of financial security are independently required to notify the Authority of material changes in the insurance or material changes in the financial security, especially if there is a termination of the relevant policy, change in the period of insurance or the term of financial security, any change in the limit of indemnity or financial security, in the conditions for releasing or payout of the insurance claims, or other claims from the financial security, change in the method of joint guarantee or change affecting the performance of obligations arising from an international treaty and from another international convention, by which Slovakia is bound, and that is by written notice no later than 15 days from the date of effect of such material change in the insurance or in the financial security. Each year by January 15, the licensee notifies the ÚJD SR of the method of financial coverage for the next period. The Authority is required, when reviewing the proof of coverage for liability for nuclear damage, to seek from the National Bank of Slovakia information on the eligibility of the proposed entity, designated as the insurer or provider of financial security, to provide such insurance or financial security.	
30.		Article **16**	Ref. in National Report **p. 125ff**
Question		**As part of the post-accident management, points such as the decontamination of affected areas or the resettlement of the population after the assessment of the current exposure situation and forecast of its development are given in the 9th National Report (Table 12, page 126). Could your country please clarify how**	

	detailed the plans for these measures are? How are aspects such as the disposal of waste and sewage or the handling of food and feed that can no longer be used in slightly contaminated areas taken into account in the planning?
Answer	Such measures and procedures are planned in connection with the operation of the NPP and are included in the public protection plans. These plans are revised once a year after which the municipal offices submit the current version to the Crisis Management Section of Ministry of Interior. In addition to the regular annual update, ad hoc updates are applied when necessary. The documentation of counter-radiation measures from the perspective of national emergency planning is currently being developed; with the international conventions and IAEA Safety Standards being taken into account. Moreover, at the end of 2022, the status of the Working Group of the Central Crisis Staff of Slovakia on Radiation Threats was updated, aimed at ensuring a qualified, professional, transparent and independent assessment of emergency situations with possible radiation consequences in case of their occurrence, or the possibility of their occurrence on the territory of Slovakia and beyond. The level of decision making is dependent on the territory that is affected by the emergency. In case the emergency exceeds territory of one region, MV SR's Central Crisis Headquarters (CCH) is responsible for the coordination of activities and for orders issued during an emergency. CCH provides advice to the Government of the Slovak Republic that makes decisions. According to the Act on Radiation Protection, the Office of Public Health (ÚVZ SR) recommends to the civil protection organizations protective actions and other measures, such as decontamination, with the aim to protect the public and workers. This Act provides generic criteria for doses received within a short period of time for which protective actions and other response actions are expected to be taken under any circumstances in a nuclear or radiological emergency to avoid or to minimize severe deterministic effects. It also provides generic criteria for taking protective actions and other response actions in a nuclear or radiological emergency to reduce the risk of stochastic effects and to reduce the risk of stochastic effects from the ingestion of food, milk and drinking water and from the use of other commodities in a nuclear or radiological emergency.
31.	Article **8** / Ref. in National Report **p. 60**
Question	**„This process distinguishes between adaptation training and competency training." What exactly does adaptation training include in the case of the Nuclear Regulatory Authority of the Slovak Republic (ÚJD SR)? „Currently, ÚJD SR is running a project "Implementation of Knowledge Management", to ensure that the regulator´s staff pass-on knowledge between experienced and less-experienced staff, but also to maintain critical knowledge within the regulatory authority." What are the main experiences of ÚJD SR with the implementation of Knowledge Management?**
Answer	Adaptation training is a systematic, organized and evaluation-based training process aimed to the acquisition, development and use of

	professional and personal potential necessary for the performance of the civil servant duties. The training is planned and evaluated by Personnel Office and be briefly described as follows: • it initiates on the day of the establishment of the civil servant's contrcat and concludes at the end of his/hers probationary period; • It does not apply to the civil servants without a probationary period; • It is provided by initial and continuous adaptation training; • It is provided under the guidance of another civil servant (mentor) who provides support and assistance in fulfilling tasks, and systematic transfer of knowledge and experience to support the professional and personal development of the civil servant during the probationary period (mentoring). The experience of ÚJD SR with the implementation of the Knowledge Management project is as follows: • Identification of knowledge management as a management process, • Implementation of this process to the management system of the UJD, • Development of a questionare for the first self-assessment, • KM strategy planning of based on the self-assessment results, • preparetion of the KM policy (as part of the MS policy) • identification and categorization of knowledge • establishmente of a platform for knowledge processes (storing, sharing, protection, dissemination, using, transformation, etc.) • use of the KM portals
32.	Article **6** / Ref. in National Report **p. 28 – 29, 31 - 32**
Question	**Periodic Safety Review (PSR) was carried out at Bohunice Unit 3&4 in 2016 and at Mochovce Unit 1&2 in 2017. One item on the review list was Deterministic Safety Analyses (DSA). Were there any corrective actions determined after the PSR regarding the DSA area? If so, what were the most significant corrective actions?**
Answer	From the point of view of deterministic analyses, some improvements to the 3rd and 4rd level of DiD were considered. These relate mainly to the completion of analyses of the Design Extension Conditions (DEC), while also considering the implemented SAM systems: • RCS depressurization, • SAM emergency source of coolant for adding water to the RCS • SAM emergency source of electricity, • flooding of the RPV from the outside of the vessel with a coolant in the reactor cavity, • HZ vacuum breaker, • hydrogen management in HZ, • heat removal from HZ. The performed DSA confirmed the success of the strategies.

33.		Article **6**	Ref. in National Report **Section 4.5.3, p. 99**
Question		**It is mentioned "Some of the recommendations of the European Nuclear Safety Regulator Group (ENSREG), adopted on the basis of a comprehensive evaluation of stress test results, build on ongoing projects such as: 1. Implementation of SAM, such as: - Analysis of the need of filtered venting for containment to support SAM;" Could Slovak Republic clarify whether the filtered containment venting provision is envisaged for the operating NPPs as well as for the Units under construction / commissioning?**	
Answer		After the implementation of HW and strategies for maintaining the corium in the in-vessel phase, measures were introduced for: - RCS depressurization, - SAM source of coolant for makeup of coolant to the RCS, - emergency source of electricity, - flooding of reactor shaft for external cooling of reactor vessel – in-vessel phase, - HZ vacuum breaker, - hydrogen management in HZ, - heat removal from HZ. By maintaining these strategies and the availability of HZ, together with the buble tower and chambers, thee analysis has shown that, from a long-term perspective, the design of the VVER 440 reactor type does not require additional solutions for venting. Nevertheless, the strategies in place address the issue in a controlled manner.	
34.		Article **11**	Ref. in National Report **p. 52**
Question		**Slovak Republic may like to share the methods used to assess the sufficiency of staff at nuclear installations.**	
Answer		Maintenance of the NPP staff competencies is defined and required by the national legislation. SE a.s. as a licensee is obliged to provide and ensure a system of professional training of employees, training programmes for professionally competent employees andfor selected employees and to keep the professional competence and special professional competence of its employees. The selected employees/staff re those that: • perform tasks and activities with a direct impact on nuclear safety, • have a second university degree obtained either in Slovakia or in another EU Member State, • have undergone the required training, • are medically, physically and mentally, fit, • their special competence has been verified by an examination board established by ÚJD SR followed by an issuance of. licence card Competent emploxees/staff shall carry out task andactivities with an impact on nuclear safety at the NPP. Their special competence is also been verified by an ÚJD SR examination board.	

35.		Article **General**	Ref. in National Report **n/a**
Question		**The Report says the periodic safety assessment results are used to justify the possibility of NPP power unit operation till the next periodic safety assessment. What is the deadline before the end of the justified operation time the results of justification of the next operation period should be submitted to the Regulatory Body (for up to the next periodic safety assessment)?**	
Answer		According to the Decree no. 33/2012 (on the execution of the PSR), after 12 months from the date on which the PSR was carried out (i.e. 10 years from the date of the last PSR). It should, however, be noted that the authorisation for an NPP operation (the opeerating license) is valid without time limitation.	
36.		Article **General**	Ref. in National Report **n/a**
Question		**Should the Operating Organization prepare a safety justification of a NPP power unit at decommissioning if the Regulatory Body admits insufficient the safe operation justification for the next operating period? This should be done in parallel with drafting a report containing periodic safety assessment results or after rejection of an operating license?**	
Answer		According to §37bc of the Atomic Act, the authorisation for an NPP operation is valid without time limitation. The results of the PSR together with the integrated corrective action plan, demonstrate the safety of the nuclear installation to continue operation until the next PSR. The intervals and scope of the PSR during the decommissioning phase are defined in §3 of the Decree no. 33/2012.	
37.		Article **General**	Ref. in National Report **n/a**
Question		**Is there a connection between systems supporting the process at Units 1, 2, 3, 4 of Mochovce NPP? If yes, how the lack of influence on operating safety of Units 1, 2 of Units 3, 4 under construction at Mochovce NPP is ensured?**	
Answer		The connection between the support systems of blocks 1,2,3,4 exists. In the Mochovce NPP, 4 VVER 440 reactor type units were designed in the original project. The design is a double-block design, i.e. Unit 1 and 2 share a common building and some equipment/systems are common to both units. Similarly to this layout, Units 3 and 4 share a common building and some equipment/systems are also common to both units. Some of the plant's support systems were designed for 4 units from the beginning, for example: • Raw water pumping station on the Hron River, • Chemical water treatment, • Feed and cooling water treatment, • Low pressure air compressor station and cooling source station, • Auxiliary boiler house, • Ambient Radiation Control, • Workshops and warehouses,	

	• Distribution and storage of industrial gases, • Laboratories, Some of the common facilities for the 4 units were already fully constructed during the construction of units 1 and 2. Some were supplemented with the necessary equipment required for the operation of units 3 and 4 during the construction of these units. The auxiliary systems common to the 4 units don´t have direct impact on nuclear safety. The operation of Units 1 and 2 during the completion of units 3 and 4 has not been affected since the rules and procedures for connecting units 3 and 4 to the common systems for the 4 units were strictly followed. The safety systems are designed for one reactor unit. Some systems, such as the essential water system designed to cool safety systems and systems important for operation and safety, are dedicated to a double unit,. In these cases units 1 and 2 and units 3 and 4 are completely separate and there is no mutual connection. The non-affection of the common systems of units 3 and 4 operated for unit 3 start-up, by the unit 4 completion activities is ensured by strictly separating all the systems and equipment of unit 4 so that these systems and equipment cannot affect the operation and safety of unit 3 in any case. Connection of unit 4 systems will only be carried out after the completion of unit 4 systems. Its equipment shall be connected to the common systems of units 3 and 4, according to the applicable rules in a way as not to affect the operation of unit 3.
38.	Article **General** / Ref. in National Report **n/a**
Question	**Does the regulatory framework provide for suspension of an operating license of a NPP power unit if the requirements of applicable law in the field of the use of atomic energy are violated? In case of suspension of an operating license, what state of the NPP power unit should its holder ensure?**
Answer	Yes. The Atomic Act stipulates that if the authorisation holder breaches his obligations laid down by this Act, by generally binding legal regulations issued on the basis thereof or the conditions specified in the permission or authorisation, ÚJD SR may modify or revoke the permission or an authorisation issued. ÚJD SR may revoke or modify the permission or the authorisation, if the holder: • Fails to remove the deficiencies identified by the Authority within the deadlines set by the Authority, • Requests in writing the revocation or modification. ÚJD SR can further impose to: • Reduce the output or suspend the operation or decommissioning of a nuclear installation, or its construction, • Suspend management of nuclear materials, radioactive waste or spent nuclear fuel, • Sanctions under the Atomic Act. The Atomic Act also stipulates that ÚJD SR designates • A new authorisation holder for the management of nuclear materials and of radioactive waste, the originator of which is not

	known or the originator is unable to manage nuclear materials or radioactive waste in a safe manner, • An obligation of the holder of relevant authorisation to assume the rights and obligations concerning safe management of nuclear materials or radioactive waste by an authorisation holder, whose authorisation terminated due to reasons stated under Section 9 par. 4, including the possibility of partial or complete removal of nuclear materials or radioactive waste from such authorisation holder. ÚJD SR may bind all its decisions to the fulfilment of conditions related to nuclear safety, physical protection, quality assurance or emergency preparedness. It may modify these conditions whenever the circumstances relevant to the nuclear safety, physical protection or emergency preparedness are changed, under which such decision was issued, or based on the latest knowledge of science and technology and when implementing feedback from international experience from incidents at nuclear facilities abroad or at a justified written request of the permission or authorisation holder. The NPP unit has to be put in a safe state in accordance with the operational documentation, which is assessed by the authority.
39.	Article **General** / Ref. in National Report **n/a**
Question	**When new regulatory documents in the field of the use of atomic energy are put into force, what is the timeframe within which NPP should be brought in compliance with these requirements? What is the basis for this timeframe?**
Answer	The new Acts as well as the Decrees contain transitional provisions that determine what to do with authorizations/permits that were issued before the new legislation came into force. Before their issuance, the authorization holder has the opportunity to express his opinion in the commenting procedure. As part of such proceedings, he can also suggest a time frame during which the new requirements are to be applied. One of the essential elements of the legislation process of an Act and a decree is the clause on the effects on the entrepreneurs under which consultations with the business entities is mandatory. Within this consultations, the affected business entities can submit their comments and the impact of the proposal on their activities must also be quantified. During this process, an agreement is reached on the transitional provisions of the new Act and Decree.
40.	Article **17** / Ref. in National Report **p. 133**
Question	**»The assessment of seismic activity level of locations was performed in accordance with the IAEA recommendations, reflecting the current level of knowledge and international missions. Compared to the original design, the ability of nuclear units to maintain their basic safety functions has been significantly increased as part of the safety enhancement...«** **Q: Could you further elaborate the approach used in already established seismic analysis. Is a linear or non-linear approach**

	used in analysis? What is the value of uncertainty used in analysis? How much conservatism is applied due to the above-mentioned fact?
Answer	In the seismic margin study conducted for the Unit 1 and 2 of the Mochovce NPP, an index of seismic margin is the HCLPF capacity of the SSCs. This quantity considers both the uncertainty and randomness variabilities, and 29epresents the acceleration value for which there is a 95% confidence that the failure probability is less than 5%. The deterministic approach to define the HCLPF of essential SSCs is commonly referred to as the "Conservative Deterministic Failure Margin Approach" (CDFM) and is developed under the following conditions: • The Seismic Margin Earthquake (SME) is conservatively specified • The predicted SSCs response to the SME is a centred median • The assessment of SSC capacity is conservative, The CDFM was used mainly for the structures and large components of the primary circuit. In addition, the GIP-VVER approach was also used to estimate the seismic capacity of the mechanical and electrical components. This includes special guidelines to verify the seismic capacity of anchorage and non-bearing masonry walls. The methodlogy was applied by experienced and professionally trained seismic capacity engineers. The HCLFP estimations are conservative. The differences between the standard US-GIP and the GIP-VVER are summarized in the IAEA TECDOC-1333. In the CDFM only the linear approach is used and the uncertainty is defined in the HCLPF values. As described above, HCLPF considers both the uncertainty and randomness variabilities and is the acceleration value for which the analyst has 95% confidence that the failure probability is less than 5%.
41.	Article **19** / Ref. in National Report **p. 152**
Question	**»The licence holder uses international information systems on operating experience (WANO, INPRO, IRS) to apply measures from the analysis of events of other NPPs to its own units and also to transfer its own experience to other licence holders. The aim of this activity is to prevent the recurrence of the same events by implementing preventive actions.«** **Q: How many dedicated regulatory inspections have been conducted in the field of OPEX in this reporting period and how many foreign operating events were selected and reviewed by the NPP and/or regulatory body?**
Answer	ÚJD SR did not conduct any special inspections in the field of OPEX during the reporting period. Within the regulatory body the Event Analyses Group operates on standing basis. The group has not selected any events for a more detailed analysis from the regulatory point of view within the reporting period.

<table>
<tr><td colspan="2">42.</td><td>Article
14</td><td>Ref. in National Report
p. 97</td></tr>
<tr><td colspan="2">Question</td><td colspan="2">»ÚJD SR performs independent operational safety assessment using safety indicators. Also important in terms of operational safety, is the event analysis, aimed at preventing the recurrence of events and the use of experience at a national level. ÚJD SR also uses experience from events at international level (International Reporting System for Operating Experience IAEA, OECD/NEA).«
Q: Could you specify how many improvements were introduced or implemented at NPPs as a result of OPEX lessons learned in the last decade?</td></tr>
<tr><td colspan="2">Answer</td><td colspan="2">In the last decade, over 11500 leassons learned from internal and external events have been implemented in the Slovak NPPs. Corrective actions related to the one-time information about an event were excluded from these numbers. A breakdown overview:
<table>
<tr><td></td><td>internal OE</td><td>external OE</td><td>together</td></tr>
<tr><td>Bohunice NPP</td><td>3127</td><td>1126</td><td>4253</td></tr>
<tr><td>Mochovce NPP</td><td>5799</td><td>1516</td><td>7315</td></tr>
<tr><td>together</td><td>8926</td><td>2642</td><td>11568</td></tr>
</table></td></tr>
<tr><td colspan="2">43.</td><td>Article
6</td><td>Ref. in National Report
p. 30</td></tr>
<tr><td colspan="2">Question</td><td colspan="2">»External risks - minimisation of external risks which could result in the loss of ability of safety systems to perform their safety functions (earthquake, aircraft crash, other industrial activities – gas explosion, etc.) «
Q: Could you specify the major contributors calculated or derived from the PSA study for aircraft crashes.</td></tr>
<tr><td colspan="2">Answer</td><td colspan="2">The total yearly frequency of aircraft crashes is below the screening value for the external events. It was therefore excluded from the detailed analysis.</td></tr>
<tr><td colspan="2">44.</td><td>Article
16</td><td>Ref. in National Report
4.7.2.2, p. 117</td></tr>
<tr><td colspan="2">Question</td><td colspan="2">Data on radioactive contamination of the environment necessary for decision-making on the implementation and termination of interventions and measures to limit exposure in the event of an accident at a NI.
Does the legislation related to nuclear and radiation safety set the responsibility for the termination of the emergency? (GSR Part 7, Req. 18) If yes, what organizations are tasked for terminating an emergency?</td></tr>
<tr><td colspan="2">Answer</td><td colspan="2">The regulatory requirements for the licensee applicable on-site are comprehensive and address the criteria for the termination of an emergency as well as the basic rules for the on-site recovery. However, there are no criteria developed by the Government for the termination of an emergency or transition into the recovery phase off-site. According to the current national legislation, the Office of Public Health (ÚVZ SR) determines the reference levels for optimization of exposure in an emergency situation or in case of a persistent exposure</td></tr>
</table>

		in an existing exposure situation. However, no criteria for the off-site teremination of an emergency, transition to an existing exposure situation, or transition to the recovery phase (typically included in the National Emergency Plan) have been developed by ÚVZ SR.	
45.		Article **16**	Ref. in National Report **4.7.2.2, p. 115**
Question		**The Emergency Staff is sufficiently staffed by the employees of the ÚJD SR and can work in four sequences in order to ensure continuity of its work even during long-lasting events.** **Q: How many people are in one shift and how long is the duration of a shift?**	
Answer		As stated report, the Emergency Staff is sufficiently staffed and composed by the ÚJD SR employees who can work in four shifts in order to ensure continuity of work, even during a long-lasting event. Each sequence has its own management, consisting of an emergency staff chairman, his assistant and the heads of the specialist groups: the Reactor Safety Group (including the Sub-group of on-site inspectors); the Radiation Protection Group (including experts from the Office of Public Health), Logistics Support group and the Media group. Each shift consists of 20 people and lasts for 7 days (outside of an emergency situation), starting each Monday. In case of an emergency, it is expected that the shifts will rotate after 8 hours.	
46.		Article **16**	Ref. in National Report **Section 4.7.3, p. 120**
Question		**It is indicated in the report that "On-site emergency plans and related documents are designed to ensure protection of employees and other organizations working in the territory of NI in case of an event at NI…"** **What are the main regulatory activities and inspections in terms of checking the licensee's emergency preparedness for NPP emergency situations?**	
Answer		Planned and reactive inspections in the field of Emergency Preparedness and Response are mainly focused at verifying the personal protective equipment, relevant EPR premises (such as the shelters and gathering points), compliance with the approved emergency procedures (On-site or Off-site Emergency Plans and other procedures and guidelines), systems and equipment related to communication and information transfer to the regulatory body and/, or conduct of the emergency drills and exercises. These inspections are also based on the results and findings from the operational experience, R&D and other states inspection programmes.	
47.		Article **17.1**	Ref. in National Report **Section 5.1.2, p. 133**
Question		**It is indicated that "There are no tectonic faults identified on the territory of Slovakia and its surrounding areas that could cause severe earthquakes comparable with the earthquake in Japan in 2011, which preceded the accident in NPP Fukushima Daichi." What is the distance criteria taken into account for the active tectonic faults, and to what extent the seismic evaluation activities are carried out?**	

Answer	Tectonic faults on which it would be possible to assume an earthquake of a comparable parameters to the Tohoku earthquake causing the accident at the Fukushima Daiichi NPP, are not located within the territorial scope of the Bohunice and/or Mochovce NPPs. The Tohoku was a phenomenon linked to the first-order interaction, i.e. the contact of the lithospheric plates. The Bohunice and Mochovce NPP region is located inside the lithospheric plate (intraplate). Evaluation criteria were used in accordance with the curren IAEA standards, especially the Specific Safety Guide SSG-9 on the Seismic Hazards in Site Evaluation for Nuclear Installations and the draft of tits revised version no. DS 507. The procedures used also correspond to the updated version of a Specific Safety Guide SSG-9 (Rev. 1) adopted in 2022. The selected evaluation radius of the Bohunice and Mochovce NPP region (seismotectonic model, seismological database, etc.) reached 305 km from both locations. The detailed analysis was carried out in the NPPs Polygon encompassing both near regions with a radius of 30 km and their outlying areas. The magnitude of the Tohoku earthquake reached 9.1 and it should be added that the accident was largely caused by the subsequent tsunami. The closest contacts of the lithospheric plates in Europe are found only in the Mediterranean area (i.e. outside the Bohunice and Mochovce NPP region). The North Anatolian Fault, which is probably the most important for the territory of Turkey, is a significantly more active interface compared to those documented in the Slovak NPPs cases.		
48.		Article **7**	Ref. in National Report **3.1.3.1, p. 52 and Table 6, p. 35**
Question	**Section 1.3.5 'Identification of suggestions for improvements, good practice and challenges' includes a self-identified challenge on providing information on the experience with the commissioning of Units 3 and 4 of Mochovce. Section 2.3.2 'Completion of NPP Mochovce Units 3 and 4' provides and overview of the licensing decisions and shortfalls in safety measures as identified during commissioning. Table 6 provides an extensive list of shortfalls to be resolved before operation, covering significant areas such as design of electrical, control and instrumentation systems, Main Control Room (MCR) habitability, fire protection, seismic design, design features for the protection of the containment function etc.** **Please provide the learning and potential improvements to the regulatory framework and process, for future design and safety assessments, so that in future, significant design shortfalls are identified and resolved prior to build and commissioning. This should be a candidate for an additional challenge, beyond the self-identified reporting on the status of Units 3 and 4 of Mochovce NPP.**		
Answer	There is a significant knowledge and experience in Slovakia with the operation and commissioning of WWER 440 reactors. More over experts from Slovakia participated in the commissioning of WWER 440 type reactors abroad (e. g. Czech Republic, Hungary). This knowledge and experience have been extensively used during the commissioning of Mochovce unit 3 and were in support of this process. Mochovce unit 3 and 4 represent the most advanced design of such reactor type incorporating in the basic design lessons learned from the		

	operation of other similar units and lessons learned from the Fukushima accident. These units were subject to the European Stress Test and detailed information on the implementation of the National Action plan was provided within the National Report for the 8th Review Meeting. For example, the habitability of the control room during severe accident, severe accident management, design features for the protection of the containment function or improved seismic design were incorporated into the basic design. There are also other new (not part of the stress test) advanced technologies used in the basic design for example in fire protection or physical protection. Therefore, there are no design shortfalls in contrary. A challenge in this area would not reflect the real situation. On other hand there have been certain shortcomings during the construction e. g. not following the technological procedures or in the proper certification of materials and equipment. All these shortcomings have been identified by the company (SE a.s.) and managed according to the so called "nonconformity report (NCR)". Within the SE-MO34 units management, all managers and leaders are responsible for the formation of conditions for the nonconformity management process, and they have to ensure implementation of this procedure through the CAPA APP and other selected tools. Solutions for these NCR have been proposed by the company (SE a.s.), discussed and agreed with the regulator. This was a precondition for proceeding with the start up of the unit 3 and is valid also for unit 4 which is under construction.
49.	Article **19** / Ref. in National Report **2.2.1, p. 27 and 5.3.5.3, p. 52; 5.1.2, p. 134**
Question	**Page 27 describes the goal of increasing the resilience of EBO V2 NPP nuclear units to extreme external events (see also Chapter 4.5) and consideration of new meteorological conditions for the Jaslovské Bohunice site. Section 5.3.5.3 describe the consideration of trends in extreme external events generally and page 134 states that the evaluations of the effects of extreme meteorological conditions in the stress test report are mostly qualitative (in particular in NPP Bohunice V2), based on operating experience and on engineering judgment. Nevertheless, the performed assessment and operational experience has proved that the resistance of the plant against meteorological extremes is acceptable.** **Please describe how consideration of external events (extreme rainfall, wind, temperature, etc and their combinations) has taken (or plans to take) consideration of climate change.**
Answer	A regular report on the extreme meteorological weather events for the Bohunice and Mochovce NPPs is being developed by the supplier in a 10-year interval. This report is processed by the national authority for the hydrometeorological science – Slovak Hydrometeorological Institute (SHMÚ). Such reports were developed and submitted in 2012 (for the period from 1998 - 2012) and 2021 (for the period from 2012 - 2021) for the Bohunice site. By comparing the results of these reports it was shown that there were no fundamental changes, neither in the meteorological effects/events nor in their impact on the NPP resistance project to the extreme meteorological effects/events. The assessment performed included: flood (Flood from water sources located outside the NPP area), temperature extremes (high air temperature, low air

	temperature), precipitation extremes (large volume of water precipitation, heavy snow cover, icing), wind extremes (Strong gusty wind, tornado), extreme drought (drought), atmospheric discharges (lightning) and their combinations. The new values from the analysis were compared with the values of the load capacity of buildings and measures against thee external hazards. The results of the comparison confirmed that no new/additional measures needed to be taken.		
50.	Article **6**	Ref. in National Report **2.3.2.4, p. 35 and Table 6, p. 36**	
Question	**Table 6 lists safety improvements required during the commissioning of Mochovce Units 3 and 4 and section 2.3 describe the challenges and protracted licensing process which has resulted in an extended commissioning phase.** **Please describe the potential adverse effects on the condition of the plant which could arise from delays between the commissioning tests and start-up and how they are being managed by the operator and the regulator.**		
Answer	Within the completion of the units of 3 and 4 of the Mochovce NPP, the requirements related to the SSCs ageing management were taken into account at all stages of the design. This was done as a part of the revision of the initial design and also by developing safety concepts for the most commonly occurring degradation mechanisms. These concepts included the specifics of the unit 3 and 4 design as well as the experience from the implementation of the AMP at Bohunice NPP and units 1 and 2 of the Mochovce NPP. Specific procedures were implemented for individual SSCs (e.g. RPV surveillance program, monitoring of the thermal ageing of primary circuit materials, monitoring of loop corrosion processes in primary circuit materials, erosion corrosion monitoring of components of secondary circuit, surveillance program for monitoring cables). These specific procedures are continuously reviewed, updated and/or complemented taking into account the supply chain during the extended construction period. ÚJD SR is performing continuous inspections to confirm and ensure the status of works. Further, Slovakia has actively participated in the work of the IGALL WG5 project focusing on the delayed construction periods, prolonged outages, extended shutdown and post final shutdown. The group's outcomes are taken into account by the licensee (SE a.s.) in its internal operational documents. As for the potential risks resulting from the delays in the system start-up after thee functional tests completion, these could relate to the electric heaters damage (deterioration of insulation), deterioration of piping (corrosion) and the loss of equipment functionality (pumps, fans,...). In order to prevent the adverse effects on the condition of the equipment potentially resulting from the delays in commissioning, the equipment has been developed in cooperation with the expert units after the functional tests completion, re-testing and preservation schedules. To protect the primary circuit equipment which was permanently filled with $H_3 BO_3$, the circulation of the coolant and its purification at water treatment was periodically started, according to the valid procedures. Based on the chemical analysis, the dosing of the required chemicals was performed and repeated tests of the equipment operability,		

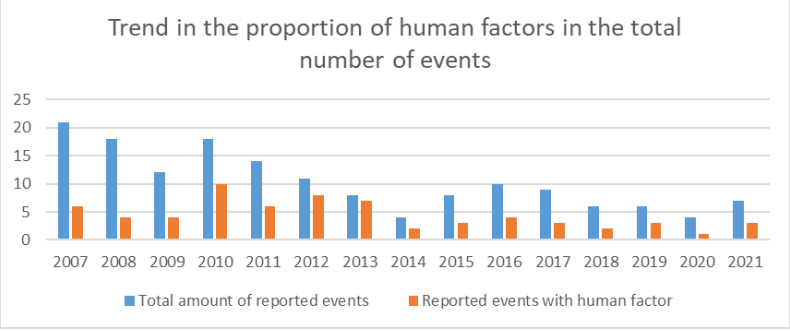
		including the verification of the functionality of the relevant measurements, protections and blockades, were carried out on a regular basis. The equipment preservation programmes have also been developed for selected systems (steam generators, heat and condensing circuit). The piping routes remained filled with coolant or preservation media with its continuous flow, and the quality of the media was checked regularly by sampling. Measures were taken in case of deviations (e.g. dosing of chemicals, water exchange, purifing of oils); and regular inspections were carried out on the electrical equipment, in accordance with the valid STN standards.	
51.		Article **6**	Ref. in National Report **Section 2.5, p. 36 (including 2.5.2, p. 37) and 2.5.4, p. 39**
Question		**Section 2.5 describes the Interim Spent Fuel Storage Facility (ISFS) including projects to increase capacity and section 2.5.2 describes the Interim Safety Reviews conducted during the construction and commissioning of ISFS and during its operation. Section 2.5.2 states that reports on ISFS operation, monitoring program results and the overall conditions of ISFS are submitted to ÚJD SR on an annual basis, and that no international safety reviews of ISFS have been conducted so far.**	
Answer		Since no specific question has been asked, we can only confirm the validity of the interpretations formulated by the United Kingdom.	
52.		Article **11**	Ref. in National Report **Fig. 13, p. 75 and 3.1.3.5**
Question		**Section 4.2.3 describes the training requirements and programmes for professional qualifications of operators according to 'training categories and Figure 13 shows that operator staff should be re-trained according to ÚJD SR Decree No. 52/2006 Coll.** **Regarding the regulatory body staff, Section 3.1.3 describes that inspectors are initially appointed as inspector-expectant and subject to training and exams to verify that they are familiar with and able to apply the regulations necessary for the performance of inspection activities. Section 3.1.3 (page 60) then generically states that modern forms of retraining are used by the regulatory body.** **Please explain how the competence of the operators and regulatory authority inspectors is periodically re-evaluated (frequency and approach / extent of retraining and validation).**	
Answer		ÚJD SR examines the professional competence of the employees that have impact on nuclear safety once every 5 years following the expiration of a license. Under this category fall the lectors for theoretical and simulator training of the selected personnel. Examination can only be organised after the successful completion of the periodical training based on the ÚJD SR Decree No. 52/2006 Coll. ÚJD SR also examines the special professional competence of the employees that have direct impact on nuclear safety once every 3 years following the expiration of a license. This entails the control room personnel (selected personnel) and the examination can only be	

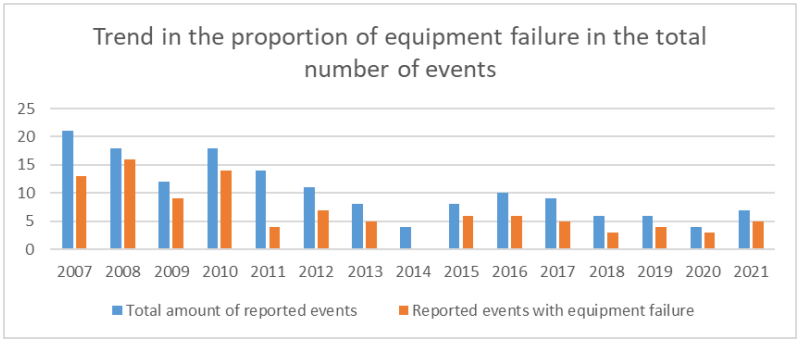
		organised after the successful completion of the periodical training based on ÚJD SR Decree No. 52/2006 Coll. ÚJD SR annualy plans a competency training activities for each inspector focusing on any changes in the licensee's organizations or on the changes on nuclear facilities as well as on strengthening their soft skills such as the communication, time management or questioning attitude without any verification. ÚJD SR uses annual evaluation of employees' competencies, similarly to other GBLD for civil servants.	
53.		Article **14**	Ref. in National Report **Table 7, p. 94 and Table 6, p. 35**
Question		**Table 7 states that Probabilistic Safety Analysis (PSA) for Mochovce Units 3 and 4 (MO) was conducted in 2019. The need for improvements across multiple measures identified during licensing and commissioning is highlighted in section 2.3.2.4 (Table 6). In this context, please describe how the MO PSA initially accounted for, and will be updated and used, to address the safety improvements highlighted in Table 6.**	

Answer		This is a misunderstanding probably caused by the addition of "before operation" in parentheses to the title of the Section 2.3.2.4. Table 6 provides examples of safety improvements in some area that were implemented to the basic design during the construction phase of Mochovce units 3&4. Theerefore, these improvements were already reflected in the mentioned PSA of 2019. After the collection of a sufficient set of specific data, an update of the PSA will be necessary which we estimate, at the latest, within the timeframe of the next prescribed periodic safety review.
		The obligation of PSAA regular reassessment is contained in the Decree No. 430/2011 Coll. on nuclear safety which states that:
		• Probabilistic assessment of nuclear safety of the first and second level shall be regularly reassessed during operation within the periodic safety review of nuclear installation and whenever
		  ○ there has been a significant modification in the design of the nuclear installation,
		  ○ there has been a significant modification in operating procedures,
		  ○ a new significant risk has been detected.	

54.		Article **14**	Ref. in National Report **4.5.6, p. 102**
Question		**Page 102 states that currently there are 19 Ageing Management Programs, common for both NPPs: Jaslovské Bohunice NPP and Mochovce Units 1 and 2, but reference for Mochovce Units 3 and 4 (MO) is not provided. Please describe how proactive management of ageing was considered in the design and planned operation of new NPPs (MO).**	
Answer		Ageing Management Programmes are valid and implemented for all Slovak NPPs (i.e. the Bohunice NPP, Mochovce NPP units 1&2 and units 3&4). As for the Mochovce units 3&4, all relevant preconditions for ageing management implementation were included in the design phase, inter ali, the fatigue monitoring system, surveillance programme for reactor pressure vessel, corrosion monitoring chamber and samples	

	for thermal ageing and cable deposit were installed. In addition to these design features, initial data of condition indicators from main components necessary for further monitoring and trending of ageing effects were obtained, such as the pipe wall thickness, electrical and tensile properties of cables and civil structures settlement.		
55.	Article **15**	Ref. in National Report **4.6.3, p. 109**	
Question	**Page 109 states that collective effective doses at NIs have been the highest each year since 2010 for employees of the Nuclear and Decommissioning Company, a. s., and for their external workers who performed work activities in the company's controlled area. It appears that the number of workers has actually decreased or remained the same across reported installations, but the doses are at the highest in this last year. Please provide the reasons for these increases in effective doses and how the operating organisations and the regulator are addressing them to ensure doses are reduced to As Low as Reasonably Achievable (ALARA).**		
Answer	For all works and activities implemented as part of the A1 NPP and V1 NPP decommissioning, specific programmes were prepared. These programmes include a mandatory chapter, titled "*Radiation Protection Optimization*". Once these programmes are completed they need to be evaluated by the ALARA Committee in terms of the received dose rates. Year 2019: Total number of employees working in the controlled area 2,074 of these employees of company JAVYS, .s. 579 of these employees of the contractors 1,495 Total number of entries into controlled area 240,026 Collective effective dose 921.366 man.mSv Average IED per employee 0.444 mSv Year 2020: Total number of employees working in controlled area 1,797 of these employees of company JAVYS, a.s. 595 of these employees of Contractors 1,202 Total number of entries into controlled area 215,836 Collective effective dose 1,054.164 man.mSv Average IED per employee 0.587 mSv Year 2021: Total number of employees working in controlled area 1,754 of these employees of company JAVYS, a.s. 579 of these employees of Contractors 1,175 Total number of entries into controlled area 218,871 Collective effective dose 1,254.060 man.mSv Average IED per employee 0.715 mSv Collective effective dose for all of JAVYS, Inc. grew in 2021 due to: 1) Increased decommissioning activities within the D 4.2 project "Reactor Coolant System Large Components Dismantling" in the controlled area of NPP V1 (Steam Generator cutting, pressure vessel cutting, ...)		

		2) Increased activities in the framework of NPP A1 decommissioning phases III and IV (cutting of primary pipelines, dismantling of equipment in the most contaminated areas, etc.	
56.		Article **17**	Ref. in National Report **5.1.2, p. 134 and 135**
Question		**Pages 134 and 135 state that extreme drought does not represent serious safety issue since it is a slowly evolving process and the site water inventory is sufficient for more than 10 days of residual heat removal. Please describe the learning extracted from the extreme temperatures and dryness of spring, summer and autumn 2022 for these sites and across the Slovak Republic generally.**	
Answer		During the warm and dry summer of 2022, the operation of the units at Bohunice NPP had no curtailment. The dry period in 2022 did not affect the Mochovce NPP units 1&2 production either, with both units operating at the 100% capacity throughout the period.	
57.		Article **19**	Ref. in National Report **5.3.5.3, Figs. 22 and 23, p. 154**
Question		**Fig. 22 shows the number of reported events and their assessment according to INES – NPP EBO V2 and Fig. 23 shows number of reported events and their assessment according to INES – NPP Mochovce. The report follows on to state that the most frequent causes of operational incidents in the period under review were equipment failures and staff mistakes. Please describe how the trending has informed equipment failures as a result of ageing management and human error / safety culture initiatives.**	
Answer		All events occurred at thee Mochovce and Bohunice NPPs sites are assessed from the safety culture point of view. The results are included in the quarterly safety culture index. As for the assessment of reported operational events, we differentiate between the effects causing the event/s related to the equipment or human failure. It can also happen that a single problem/event occurance can be caused by a combination of both – i.e. the equipment failure and the HR failure. The graphs below show the trends in these proportions for the period 2007-2021. Due to the low number of reported events, trends in each year were not evaluated, only recorded (listed in Fig. 22, p. 154 of the report.). We have applied a trending system for a low-level event where the greater number of coded problems has a higher informative value for the recorded negative trend. 	



58.		Article **General**	Ref. in National Report **Section 1.3.6**
Question		**Can you provide further detail on how inspection activities were complete with regards to COVID-19? (2) Specifically, can you describe any screening or risk considerations that you included in decided on whether to complete on site inspections, remote inspections or delaying inspections?**	
Answer		Following the declaration of a state of emergency by the Slovak Government, relevant arrangements were also taken for ÚJD SR. An internal order was issued, establishing, inter alia, the details of the inspection activity. In addition, ÚJD SR also respected the internal regulations of licencees, for example those related to the limitation of the number of persons (6) for physically participating at the inspections, or for other duties. During the Covid-19 pandemic, the inspections were carried out in an administrative form, in cooperation with the site inspectors, who had performed the necessary checks and controls at the NPP. Since the site inspectors were present on-site during the whole state of emergency, screening of the risk was not conducted. Whenever the inspectors conducting the inspection needed to check the site directly, they would ask the site inspector to conduct the on-site verification.	
59.		Article **14**	Ref. in National Report **1.2, p. 14**
Question		**It is mentioned in the report that Slovenské elektrárne, a. s. is engaged in extending the lifetime of the NPP EBO V2) up to 60 years, i.e. until 2045. The extension may lead to significant material degradation and ageing for the NPP systems, structures components (SSCs). Could you please share information about them and how to identify the SSCs remain lifetime?**	
Answer		The operation of the NPP units beyond the design life assumed in the original stage is based on the realization and implementation of a comprehensive long term operation (LTO) programme. For Bohunice NPP, LTO programme was performed in 2014 and also included the development of corrective actions plan which was subsequently implemented. The LTO programme consisted of ageing management review, revalidation of the time limited ageing analysis for the intended LTO period and evaluation of the plant programmes important for ageing management. The scope of SSCs under the review and topics to be reviewed is based on the ÚJD SR requirements (Regulation No. 33/2012 on Periodic Safety Review; §18 Long Term Operation) which follow the relevant IAEA safety standards for ageing management and	

		long term operation (SSG-48 Ageing Management and Development of a Programme for LTO of NPPs).	
60.		Article **14**	Ref. in National Report **4.5.2, p. 96**
Question		**Could you please share detailed information on how PSA used to monitor real-time risk and NPP configuration management?**	
Answer		Real-time risk monitoring of a NPP based on the probabilistic methods is one of the most advanced ways of assessing the safety of the plant. The NPP risk monitoring is able to provide up-to-date information about the risk level based on the current configuration of the reactor unit's equipment. In an integrated form it can also provide an insight to the safety and operational systems of the reactor unit and thus monitor these systems in a deep protection. Currently, a real risk assessment and monitoring tool for the NPP - RiskWatcher - is being implemented at both sites (Bohunice and Mochovce NPP). It is used to: • CDF/LERF evaluation based on the current block configuration, • minimise risk unit configurations in the planning and execution of work during outages, • Quarterly and annual evaluation of unit's real risk profile progress , peak CDF and cumulative value CDF/LERF (CDP/LERP) during unit operation and outages, • support the work management operation - confirmation/optimisation of the risk profile during the relevant working week according to the schedule • optimise maintenance planning	

Support document Article 15/Annex to the question no. 15

6.4 Reference Levels of Annual Discharges of Radioactive Materials into the Environment

Table 13 Reference levels of discharges of radioactive materials for SE, a. s., NPP Bohunice (V2) and Mochovce

***Reference levels* of annual discharges**							
	Ventilation stack					Liquid effluents	
	Rare gases (arbitrary mixture)	Iodines (gaseous and aerosol phase)	Aerosols - mixture of long- lived radionuclides	Sr 89, 90	Pu238,239,240 Am241	Tritium	Other corrosive and fissile products
	Bq/year	Bq/y	Bq/y	Bq/y	Bq/y	Bq/y	Bq/y
Bohunice JAVYS V1	$2{,}0.10^{15}$	$6{,}5.10^{10}$	$8{,}0.10^{10}$	$1{,}4.10^{8}$	$2{,}0.10^{7}$	$2{,}0.10^{13}$ Váh	$1{,}3.10^{10}$ Váh
Bohunice JAVYS V1	-	-	-	-	-	2.10^{11} Dudváh	$1{,}3.10^{8}$ Dudváh
Bohunice NPP EBO V2	$2{,}0.10^{15}$	$6{,}5.10^{10}$	$8{,}0.10^{10}$	$1{,}4.10^{8}$	$2{,}0.10^{7}$	$2{,}0.10^{13}$ Váh	$1{,}3.10^{10}$ Váh
Bohunice NPP EBO V2	-	-	-			$2{,}0.10^{11}$ Dudváh	$1{,}3.10^{8}$ Dudváh
Mochovce 1,2,3	$6{,}15.10^{15}$	$1{,}01.10^{11}$	$2{,}55.10^{11}$	unlimited		$1{,}8.\ 10^{13}$	$1{,}65.10^{9}$
JAVYS			$9{,}4.10^{8}$	$2{,}8\ .\ 10^{7}$	$8{,}8\ .\ 10^{6}$	$1{,}0\ .\ 10^{13}$	$1{,}2\ .\ 10^{10}$
						Váh	Váh
						$3{,}7.10^{10}$ Dudváh	$1{,}2\ .\ 10^{8}$ Dudváh
ISFS			$3{,}0\ .\ 10^{8}$				
	Reference levels of daily discharges - investigation					Volume activity [Bq/m^3]	
	Rare gases (arbitrary mixture)	Iodines (gaseous and aerosol phase)	Aerosols - mixture of long-lived radionuclides	Sr 89, 90		Tritium	Other corrosive and fissile products
	Bq/day	Bq/day	Bq/day	Bq/day		[Bq/m^3]	[Bq/m^3]
Bohunice NPP EBO V2	$1{,}6.10^{12}$	$5{,}3.10^{7}$	$6{,}6.10^{7}$	Unlimited		$6{,}5.10^{7}$	$3{,}7.10^{4}$
NPP Mochovce 1,2,3	$1.1.10^{13}$	$1{,}8.10^{8}$	$0{,}5.10^{9}$	unlimited		$6{,}0.10^{7}$	4.10^{4}
	Reference levels for daily discharges - intervention					Volume activity [Bq/m^3]	

	Rare gases (arbitrary mixture)	Iodines (gaseous and aerosol phase)	Aerosols - mixture of long-lived radionuclides	Sr 89, 90	Tritium	Other corrosive and fissile products
	Bq/day	Bq/day	Bq/day	Bq/day	[Bq/m^3]	[Bq/m^3]
Bohunice NPP EBO V2	$2,7.10^{13}$	$8,9.10^{8}$	$1,1.10^{9}$	Unlimited	$1,95.10^{8}$	$3,7.10^{4}$
NPP Mochovce 1,2,3	$8,25.10^{13}$	$1,35.10^{9}$	$3,75.10^{9}$	unlimited	$1,0.10^{8}$	$4,0.10^{4}$