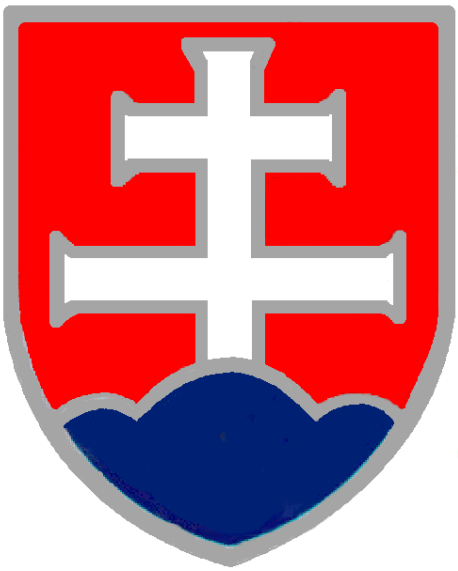
ANSWERS TO QUESTIONS

ON

NATIONAL REPORT OF

THE SLOVAK REPUBLIC



COMPILED ACCORDING TO THE TERMS OF THE CONVENTION ON NUCLEAR SAFETY

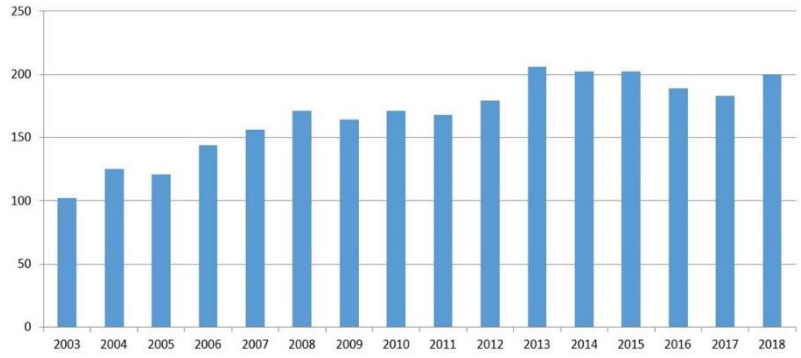
BRATISLAVA
MARCH - APRIL 2020

<table>
<tr><td>1.</td><td>Country
Jordan</td><td>Article
General</td><td>Ref. in National Report
3.1.3.3 Role of the Regulatory Authority, p. 57</td></tr>
<tr><td colspan="2">Question</td><td colspan="2">Could you provide statistics concerning the number and topics of the inspections performed per sites? It would be interesting to have information about the nature of the significant events recorded.</td></tr>
<tr><td colspan="2">Answer</td><td colspan="2">Statistics concerning the number of the inspections performed per sites:
<table>
<tr><th rowspan="2">Nuclear facility</th><th colspan="3">Planned</th><th rowspan="2">Unplanned</th><th rowspan="2">Summarry</th></tr>
<tr><th>Routine</th><th>Special</th><th>Team</th></tr>
<tr><td>JAVYS (V1)</td><td>4</td><td>8</td><td>2</td><td>2</td><td>16</td></tr>
<tr><td>SE – EBO (V2)</td><td>4</td><td>16</td><td>13</td><td>5</td><td>38</td></tr>
<tr><td>SE – EMO 1,2</td><td>5</td><td>18</td><td>13</td><td>2</td><td>38</td></tr>
<tr><td>SE – MO 34</td><td>4</td><td>6</td><td>2</td><td>15</td><td>27</td></tr>
<tr><td>JAVYS – VYZ</td><td>4</td><td>15</td><td>3</td><td>0</td><td>22</td></tr>
<tr><td>VUJE</td><td>0</td><td>2</td><td>0</td><td>0</td><td>2</td></tr>
<tr><td>Nuclear materials & RW transport</td><td>0</td><td>5</td><td>0</td><td>6</td><td>11</td></tr>
<tr><td>NM Record Keeping and Checking</td><td>0</td><td>27</td><td>0</td><td>15</td><td>42</td></tr>
<tr><td>Others inspections</td><td>0</td><td>4</td><td>0</td><td>1</td><td>5</td></tr>
<tr><td>Summary</td><td>21</td><td>101</td><td>33</td><td>46</td><td>201</td></tr>
</table>

<u>Topics of the inspections:</u>
• Decommissioning and RAW management
• Aircraft special operations permitting (in the scope of Physical protection) – airspace LZ P1, check compliance with the directive on the operation of the drones
• personal training and qualification
• physical protection
• Coordination for emergency response in the whole area for emergency exercise
• Operation and Fire safety
• Safety systems surveillance test
• Fresh fuel/spent fuel storage
• Modification documentation control
• Emergency planning – monitoring systems performance inspection
• Technical Specifications/Limits and Conditions of operation: recording
• Post-Refuelling inspection</td></tr>
</table>

- Maintenance, testing, calibration and revisions of I&C selected equipment
- Fulfilment of the action plan for LTO
- on-line transfer of technological, radiation and meteorological data
- earthquake resistance upraising
- PSA study
- Containment integrity test, regular overhaul
- Inspection of the processes of elaborating, assessment, approval, verification and validation, update and review of Emergency Operating Procedures (EOP)
- QA system control
- Coordination for emergency response in the whole area for emergency exercise
- Preparedness for commissioning
- safety culture
- integrated management system
- cyber security
- RAW transport
- spent fuel storage
- Fresh fuel transport
- nuclear materials

Number of inspections of ÚJD SR from 2013 to 2017



Number of findings / year

2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
94	71	56	57	44	68	26	26	34	32	47

The increase in 2018 are in areas of operational documentation & quality assurance at EBO 3&4 and EMO 3&4 (under construction)

Types of findings

Type of finding	Description / Significance	Amount in Number	Amount in %
Training and activity of personnel (TP)	Deficiencies in documentation, Compliance with qualification requirements, Errors and mistakes of personnel	6	12,8
Nuclear safety (NS)	Finding of new significant risk, other deficiencies	5	10,6
Operational documentation (OD)	Other deficiencies, Uncompleted rules	13	27,7
Quality assurance (QA)	Deficiencies in: management process, evidence Violations of quality regulations	19	40,4
Safety culture (SC)	Deficiencies in cooperation with state authority, Other deficiencies in safety culture	3	6,4
Equipment status (ES)	Other deficiencies	1	2,1
TOTAL		47	100

Safety significance of inspection findings:

- **Category 1**: findings may be or they are with a low impact on nuclear safety, or they have indirect effect to nuclear safety. Findings doesn´t jeopardize the barriers of defence in depth.
- **Category 2:** findings may be or they are with a middle impact on nuclear safety, or repeatedly occurred Category 1. Findings doesn´t jeopardize the barriers of defence in depth, but the barrier has been compromised.
- **Category 3:** findings with a high impact on nuclear safety or repeatedly occurred Category 2. Incidence of these findings led to the damage one of the barriers of defence of depth. The level of vigilance of licensee is low.

2.	Country **Jordan**	Article **General**	Ref. in National Report **2.5 Interim Spent Fuel Storage - ISFS**
Question		Please describe if there is a defined siting process to identify a potential future location for a spent fuel disposal facility in Slovakia?	
Answer		Yes, in Slovakia, there is a programme for selection of potential site for location of deep repository to store SNF and radioactive waste (RAW) which is not possible to store on the surface storage facility. Project „Development of deep geological repository in the SR“ is being implemented in Slovakia since 1996. So far, as many as five potential sites have been selected on the basis of performed research works and in compliance with approved criteria for the site selection, where geological survey in order to gain data for their comparing and selection of the most suitable site will be performed in line with approved project of geological task. In compliance with the time schedule of the project „Development of deep geological repository in the SR“, the final site for deep geological repository shall be selected until 2030. Further information is in the National Report prepared under the Joint Convention (www.ujd.gov.sk) https://www.ujd.gov.sk/ujd/WebStore.nsf/viewKey/NS_august2017/$FILE/NS%20SR%20VJP%20a%20RAO_2017_%20EN_final1.pdf	

3.	Country **Russian Federation**	Article **19.8**	Ref. in National Report **Section 5.3**
Question		What is the procedure of exemption of radioactive waste?	
Answer		**There is no possibility to exempt the radioactive waste from a regulatory control in the Slovak Republic.** According to the Act No. 541/2004 Coll. on peaceful use of nuclear energy (the Atomic Act) and on changes and amendments to certain laws, radioactive waste shall mean any unusable material in gaseous, liquid or solid form, which due to the content of radionuclides in them or due to the level of their contamination with radionuclides **cannot be released to the environment**. Act No. 87/2018 Coll. on radiation protection regulates requirements for the management of radioactive materials, radioactive substances, institutional radioactive waste (shall mean radioactive waste produced during work with sources of ionizing radiation with the exception of spent nuclear fuel and radioactive waste from nuclear installations) and radioactive waste of unknown origin. According to the § 24 of the Act No. 87/2018 Coll. on radiation protection, there is possibility to exempt radioactive materials or substances from notification duty and regulatory control under these conditions: Radioactive material which contains radioactive substance or release this substance and for this radioactive substance following is valid 1. sum of portions of activities of radionuclides in it and respective exemption levels of radionuclides according to enclosure No. 5 table No. 1 column No. 2 is not bigger than 1, or 2. sum of portions of mass activities of radionuclides in it and respective exemption levels of radionuclides according to enclosure No. 5 table No. 1 column No. 3 is not bigger than 1, 3. exemption levels of radionuclides relate to total quantity of radioactive substances used by physical person - entrepreneur or legal person during performance of reasoned activity.	
4.	Country **Russian Federation**	Article **14**	Ref. in National Report **p. 96**
Question		The Report states that PSA is also used in real-time monitoring of risks. How a probability of equipment failure is calculated in this approach? What software is used in these calculations? How the repair and maintenance are planned given such risk-monitoring?	
Answer		The probability of the equipment failure is calculated based on the appropriate probabilistic model and using a relevant failure	

		rate and relevant time information, e.g. standby time, operational time, time for repair, etc. The Licensee uses RiskWatcher ™ software for monitoring the risk. Outage management prepares schedule of outage 8, 5, 3 and 2 months before the outage. Schedule of outage is entered into RiskWatcher ™ software and the analysis of the outage is made in planning mode. After recalculation of the data, the risk profile is created. If the risk is below the high-risk level, or at the expected levels, the nuclear safety department provides the result graphically and verbally to the plant management. However, if the risk is above the high-risk level or in unexpected levels, the nuclear safety management department calls meeting with the outage management to discuss the problem, propose and implement solution, or to decide on performing a new analysis. Daily risk evaluations are performed during the real outage.	
5.	Country **Russian Federation**	Article **General**	Ref. in National Report **General**
Question		Are the cybersecurity works being done at NPPs, if yes, what do they include?	
Answer		Yes. There is the Act on Cyber Security in the Slovak Republic, which defines requirements for ensuring the cyber security of networks and information systems, including those networks and information systems operated at nuclear installations. Some specific consideration, e.g. of the IAEA Nuclear Security Series No. 33-T Computer Security of Instrumentation and Control Systems at Nuclear Facilities, are taken into account. Based on the Act, the Cyber Security Strategy of SE has been approved by SE Board of Directors. Following the Cyber Security Strategy security measures will be implemented to achieve adequate level of protection of networks and information systems against the cyber security threats.	
6.	Country **Russian Federation**	Article **11**	Ref. in National Report **Section 4.2**
Question		Could you explain what was the monetary amount spent in 2016-2018 for financing the following works: - raising nuclear, radiation, environmental, technical and fire safety of NPPs; - upgrading of existing NPPs; - decommissioning of NPP power units; - training and maintenance of the personnel qualifications?	
Answer		Raising nuclear, radiation, environmental, technical and fire safety of NPPs; aprox. 45,6 MEur/y Upgrading costs are difficult to assess because the projects last usually for several years.	

		Decommissioning of NPP is described on the National Report under the Joint Convention. Training and maintenance of the personnel qualifications; aprox. 3 MEur/y.	
7.	Country **Russian Federation**	Article **General**	Ref. in National Report **General**
Question		How the engineering solution made at reactor uprating were tested and qualified by the analysis?	
Answer		During the power uprate all relevant License Documentation was updated and approved by ÚJD SR. • Safety Analysis Report – TH safety analysis, emergency preparedness and zones, operational aspects, limits and conditions, affected chapters related with project description • Probabilistic safety assessment • Operational technological procedures The process was subject to Environmental impact assessment.	
8.	Country **Russian Federation**	Article **10**	Ref. in National Report **Section 4.1**
Question		Do the applicable atomic energy regulatory requirements contain a requirement for maintaining safety culture at nuclear facilities?	
Answer		Yes, requirements for maintaining safety culture at nuclear facilities are formulated in the Slovak legislation, as well as in the WENRA reference levels. As an example, see few quotations of the relevant decree: Decree on Quality management system No.431/2011 Coll. as amended, §3: (7) A permit applicant or an authorisation holder must apply quality management system requirements in a graduated manner and at all levels of the quality management system in accordance with the current condition of nuclear facilities in order to increase safety culture and allocate the necessary resources … (8) In his quality management system, a permit applicant or an authorisation holder must implement: b) measurable process performance indicators and safety culture assessment; Decree on Quality management system No.431/2011 Coll. as amended, Appendix 1: A quality management system of a permit applicant or authorisation holder must include: q) Requirements for human resources, for procedures during hiring, selection and assignation of work positions with direct influence on nuclear safety and with an influence on nuclear safety, qualification and maintenance of employee	

		skills with an emphasis on the ability to ensure strong safety culture, and for records of results of vocational employee training, u) Requirements related to processes that include, planning, design, verification, implementation, manufacture, operations, providing services, inspections, tests, maintenance and repairs, including requirements for emergency preparedness, physical protection, nuclear and radiation safety, safety culture, design changes and modifications, selected facilities and quality plans of selected facilities, am) Continuous improvement and increased effectiveness of his processes based on input from self-assessment processes, independent assessment, management review, monitoring and measurement, with emphasis on nuclear safety, radiation protection and safety culture, including plans for providing suitable resources for these activities, ap) Ensuring and maintaining a strong safety culture. An amendment to the Atomic Act is under preparation, where the requirements for safety culture will be extended. The review of the safety culture level is a mandatory part of the periodic safety review of nuclear facilities.
9.	Country **Russian Federation**	Article **General**	Ref. in National Report **General**
Question		If the requirements of the applicable atomic energy law are breached, within what time the licensee should eliminate these breaches? If there are such time limits, how are they determined and on what basis?	
Answer		The determination of any breaches of the Atomic Act is conducted pursuant to Sections 31 – 34 of the Atomic Act in conjunction with provisions of the Act No. 10/1996 Coll. on Control in State Administration and the Act No. 372/1990 Coll. on Offences that lay down the substantive and procedural rules governing inspections. Pursuant to Sections 31 and 33 of the Atomic Act, ÚJD SR as a regulatory body carries out planned or unplanned national and international inspection that are aimed to examine the compliance with binding legal obligations as well as internal regulations. The time frame of legal periods provided for the elimination of deficiencies depends on the particular breach and its character. Accordingly, ÚJD SR evaluates the breaches and may provide the licensee with a legal period within which the violation of the Atomic Act provisions must terminate. The prescribed legal period depends on the extent to which the breaches of applicable law affect the nuclear safety, physical protection or emergency preparedness. Furthermore, in accordance with Section 34 of the Atomic Act, ÚJD SR may	

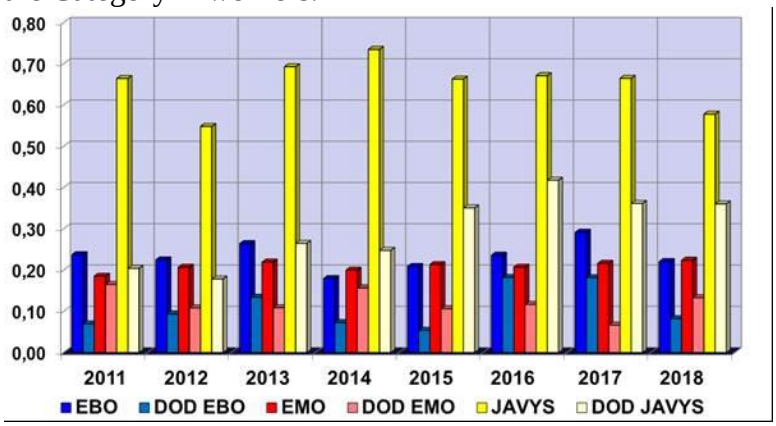
		impose fines for breaches of legal obligations arising from the Atomic Act.	
10.	Country **Russian Federation**	Article **General**	Ref. in National Report **p. 59**
Question		The Report says that in case of violation of requirement of the applicable atomic energy law the licensee may be subject to sanctions, including economic ones. What are these sanctions, except for economic ones?	
Answer		In case of a breach of obligations originated in the Atomic Act by the licensee, ÚJD SR may, besides the economic sanctions, also terminate or modify an issued licence or authorisation. Pursuant to Section 9 (2) of the Atomic Act, in case of a breach of legal obligation arising from the Atomic Act, or non-compliance with the conditions of the license or authorization prescribed by ÚJD SR, an already granted license may be terminated or modified by ÚJD SR. Furthermore, pursuant to Section 9 (3) a) ÚJD SR may terminate an issued license or authorisation in case of licensee´s non-compliance with a condition to cease the breach within prescribed period. According to Section 32 (1) of the Atomic Act, in case of violation of its provisions with a risk of impairment of nuclear safety, physical protection or emergency preparedness, ÚJD SR shall decide to restrict the scope or validity of the license, prescribe to carry out the necessary measures or even to shut-down the operation of a nuclear installation.	
11.	Country **Russian Federation**	Article **General**	Ref. in National Report **General**
Question		At what stage of construction are Units 3 and 4 of NPP Mohovce?	
Answer		Mochovce Unit 3 is in the stage of non-active tests, which are currently finalizing, before the load of fist fuel assembly into the reactor. Cold hydro, small revision, hot hydro and extended revision were performed. Currently the preparation of machine room technology before commissioning and related tests of machine room facilities are being performed. Also some deficiencies and discrepancies, that were identified during previous test stages, are being solved. Tests of electromagnetic compatibility are finalizing. Final report on the stage of non-active test results of the facilities and systems is being prepared and it will be submitted to ÚJD SR as one of the important documents that will be used as basis for issuing decision for start of the commissioning of Unit 3. ÚJD SR has issued a license for handling of fresh nuclear fuel in spaces designated for this use (fresh fuel node of Mochovce Unit 3 and 4) Inspectors of the Nuclear Regulatory Authority of the Slovak Republic inspect, directly at the construction site, the preparation of facilities and systems for commissioning (i.e. loading of the	

		first fuel assembly). ÚJD SR will issue the license for commissioning of Unit 3 after all planed tests are completed to their full extend. Mounting of primary loop and secondary loop devices is being performed on Unit 4. According to the state of works rinsing and pressure tests of facilities are being performed as well as hand over of facilities for testing by the commissioning division of Slovenské elektrárne. Individual tests of components are being performed.	
12.	Country **Russian Federation**	Article **General**	Ref. in National Report **General**
Question		Do you plan to raise power capacity of units of the power plans above 107% of rated power?	
Answer		Not at the moment.	
13.	Country **United States of America**	Article **6**	Ref. in National Report **p. 33**
Question		The report states that the Periodic Safety Review (PSR) for the Nuclear Power Plant Mochovce Units 1&2 (EMO 1&2) were not complete at the time of the preparation of the National Report. Please provide a status of the EMO 1&2 PSR.	
Answer		The license holder completed the periodic nuclear safety assessment (PSR) for the NPP Mochovce Units 1&2 (EMO 1&2) in March 2018. The PSR was performed for the state of the nuclear power plant as of 31 March 2017. The results of PSR including proposals for corrective actions were documented in the Report on the Periodic Assessment prepared according to the relevant requirements (the Decree No. 33/2012 Coll., as amended by the Decree No. 106/2016 Coll.) and submitted to ÚJD SR in April 2018. ÚJD SR reviewed the documentation of the PSR including the integrated plan for the implementation of proposed corrective actions and safety improvements to remove identified negative findings. The regulatory review of the PSR, carried out within May 2018 and September 2019 within the framework of the ÚJD SR inspection No. 306/2018, was aimed at verifying compliance of the results of the PSR with the actual status and requirements of generally binding legal regulations of the Slovak Republic, the WENRA reference levels (the Western European Nuclear Regulators Association), the International Atomic Energy Agency (the IAEA) safety standards and the good practice. The review was carried out by ÚJD SR inspectors, by contracted independent external experts, as well as the Public Health Authority of the Slovak Republic. The inspection No. 306/2018 to review the periodic assessment was closed with a Protocol.	

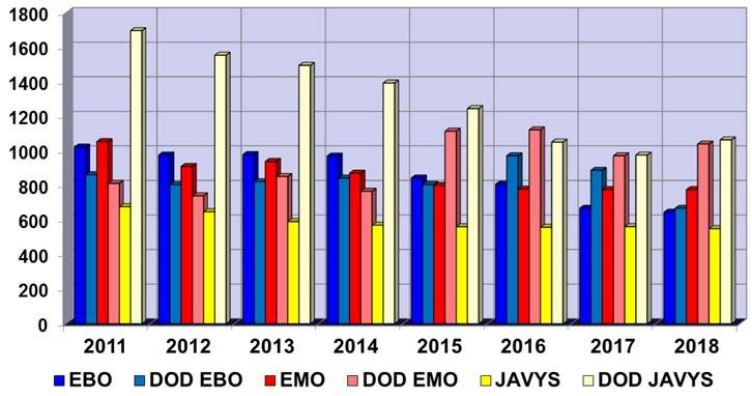
		The Protocol summarizes integrated corrective actions to remove identified deficiencies and to ensure the required level of nuclear safety of the MO12 NPP until the next periodic assessment. ÚJD´s report on assessment of the licensee´s PSR is on the web page www.ujd.gov.sk.	
14.	Country **United States of America**	Article **14**	Ref. in National Report **p. 96**
Question		The report states that probabilistic safety assessments (PSAs) are used to assess safety, promote safety enhancements, and promote safe operations. The report further states that PSAs are also used to monitor real-time risk and plant configuration management. (1) Besides real time risk and configuration management, please discuss how PSAs are utilized to promote safe operations. (2) Does ÚJD SR foresee any additional uses for PSAs beyond those currently being used?	
Answer		Legislative requirements for the use of probabilistic safety assessments (PSAs) are defined in Annex 1 par. C of the Atomic Act; and in Annex 4., section B., II., par. C of the ÚJD SR Decree No. 430/2011. (1) Based on these PSA is used for example: - to identify necessary changes of installations and operating procedures, including the severe accident management measures, in order to reduce the risk from the plant, - to identify the required scope of IEs to be addressed in EOPs and SAMGs - to assess the overall risk from the plant, to demonstrate that a balanced design has been achieved, and to provide confidence that there are no "cliff-edge effects", - to assess the adequacy of changes of plant installations, operational limits and conditions, operating procedures and to assess the significance of operational events, - to develop and verify training programs of the licensee, including training on a full scope representative simulatoraccording of main contributors to CDF. (2) ÚJD SR does not plan to introduce another new use of aplications for PSA.	
15.	Country **United States of America**	Article **16**	Ref. in National Report **p. 121**
Question		The report states that deficiencies were identified during the performance of the 2018 interoperability emergency exercises. (1) Please summarize the deficiencies identified.	

	(2) Describe the process for how those deficiencies are resolved.
Answer	1. The following findings are identified: 1.1 Communication - insufficient transmission of information between the Operational Center of the Police Force Coordination Center of Integrated Rescue System in Nitra, caused by time jumps between operational time in exercise and real time for conduct of staff and practical activities during the exercise. **Corrective measures taken on point no. 1.1** At the level of the Regional Directorate of the Police Force in Nitra, personnel responsible for the communication flow during an emergency situation due to a nuclear accident underwent specialized training. 1.2 Insufficient material equipment of Police force units assigned to operate in the area affected by a radiation event. 1.3 The outcomes of the exercise state that it is necessary to equip Emergency Reception Center at the University Hospital in Nitra with additional instrumentation for measurement of surface and spatial radioactivity, personal dosimeters and personal protective equipment for personnel which provides emergency medical care to patients contaminated by radiation. **Corrective measures taken on points no. 1.2 and 1. 3** Government Resolution No. 597 of 13 December 2017 has adopted a Proposal for a Procedure to achieve a state of preparedness of the Slovak Republic for the protection of public health and the provision of health care after the occurrence of a nuclear or radiation event. In order to provide and supplement the equipment for healthcare providers under the authority of the Ministry of Health and units of the Integrated Rescue System under the authority of the Ministry of the Interior. Financial resources in the budget of units of the Integrated Rescue System. 1.4 Insufficient staffing at the Civil Protection Control Chemical Laboratory in Nitra to fulfill the tasks of radiation monitoring and dosimetric control in the affected area. **Corrective measures taken on point no. 1.4** The staff of the Civil Protection Control Chemical Laboratories in Slovenská Ľupča and Jasov will be assigned to ensure the fulfillment of radiation monitoring tasks in the affected area for the duration of the emergency. 1.5 Insufficient staffing with qualified personnel of the Crisis Staff of The District Office of the Nitra Region in order to ensure the 24-hour operation of the crisis staff secretariat in case of an emergency caused by a nuclear accident.

		Corrective measures taken on point no. 1.5 The District Office has taken organizational measures to assign employees from other departments of the District Office to fulfill the tasks of the Secretariat of the Crisis Staff of the District Office after the occurrence of an emergency or crisis situation.	
16.	Country **United States of America**	Article **Planned Activities**	Ref. in National Report **p. 20**
Question		The report discusses that a feasibility study and Environmental Impacts Assessment have been completed for the potential new Jaslovské Bohunice project; however, no timeline has been established for the completion of the project. Please describe the project, as envisioned (e.g., reactor technology, number of units, etc.).	
Answer		"The new nuclear power plant project in Jaslovske Bohunice site (new NPP) is considering the preparation of 1 unit equipped by pressurized water reactor (PWR) of generation III+ and installed electric net capacity up to 1 200 MW in the next stage of project implementation. The expected lifetime is at least 60 years. The aim is to use such a reactor type that currently represents the best available technology, an existing project licensed in the country of origin, as well as in some other EU country or other nuclear-advanced country (e.g. the USA, Russia, Japan, South Korea, China, etc.) and that has been tested and safely operated in the other nuclear-advanced country in time before commissioning this type of reactor in the Slovak Republic. Work on the new NPP continues with the implementation of pre-preparatory activities in accordance with the approved Business Plan for the period 2019 – 2025. The main objective is to obtain regulator's (ÚJD SR) *Approval for Nuclear Facility Siting* (according to the Atomic Act) by the end of 2024 and subsequently start Site Permit proceedings according to the Civil Construction Act in 2025. The main activity during this period is the preparation of the documentation required to obtain the aforementioned permits. The decision to implement further project stages will be taken after 2025."	
17.	Country **India**	Article **15**	Ref. in National Report **p. 103**
Question		It is mentioned that 'Personal doses are determined through individual monitoring. Individual monitoring shall be carried out systematically for Category A workers. When a suspicion arises based on the monitoring or calculation that the limits for exposure of workers with ionizing radiation sources can be exceeded, then the exposure conditions and circumstances shall also be taken into consideration while determining personal	

	doses. Personal monitoring can be carried out by an authorized dosimetric service, holder of authorization from Public Health Authority SR for provision of services important in terms of radiation protection.' a) Could Slovakia share data on average dose received by Category A workers during the reporting period? b) Further, could Slovakia clarify whether latest ICRP recommendations have been considered while formulating dose limits of occupational workers?
Answer	*a) Could Slovakia share data on average dose received by Category A workers during the reporting period?* To Category A are assigned workers, whose effective dose per calendar year could be higher than 6 mSv or equivalent dose for eye lens per calendar year could be higher than 15 mSv, or equivalent dose in skin and extremities per calendar year could be higher than 150 mSv. All NPPs workers who perform their activities in controlled areas are Category A workers.  **Figure No. 1 Average effective doses [mSv] (2011 – 2018)** Note: EBO – NPP Bohunice own staff; DOD EBO – NPP Bohunice outside workers; EMO – NPP Mochovce own staff; DOD EMO – NPP Mochovce outside workers; JAVYS – Nuclear and Decommissioning Company own staff; DOD JAVYS - Nuclear and Decommissioning Company outside workers. *b) Further, could Slovakia clarify whether latest ICRP recommendations have been considered while formulating dose limits of occupational workers?* ICRP recommendations were taken into account. § 15 "*Dose limits"* of the Act No. 87/2018 Coll. on radiation protection: Dose limits for workers in calendar year are: a) effective dose 20 mSv, b) equivalent dose in eye lens 20 mSv,

		c) equivalent dose in skin 500 mSv, it relates to average dose on the area of any 1 cm^2 regardless of the size of irradiated area of skin, d) equivalent dose in extremities 500 mSv.	
18.	Country **Germany**	Article **18**	Ref. in National Report **(5.2.1), p. 134f**
Question		Could Slovakia please provide information on the implemented measures to avoid long term off-site contamination in case of natural impacts exceeding the design basis?	
Answer		The basic measures include the implementation of the SAM project and post Fukushima measures including the seismicity project of important buildings and technology. Thus, systems of SAM are in place such as: „Siphon“ and Reactor Cavity Flooding system Depressurization of Primary Circuit Management of Hydrogen in Containment Vacuum Breakers in Containment Alternative Coolant System Alternative Electric Power Supply System 6kV DG Information Sources I&C for SAM - PAMS and Long-Term Heat Removal System from Containment Details can be found in Chapters 2.2.1, 2.3.1 and Annex 6.5 of the National Report.	
19.	Country **Germany**	Article **13**	Ref. in National Report **(4.4), p. 88**
Question		It is stated in the National Report that individual management systems of the license holder are developed as part of the Integrated Management System (IMS) and based on IAEA Safety Requirements No. GS-R-3. The mentioned IAEA Safety Requirements No. GS-R-3 has been superseded by the document GSR Part 2 “Leadership and Management for Safety”, which was issued in 2016. Could Slovakia please clarify, whether it is planned to adjust/update the Integrated Management System in accordance with the new requirements?	
Answer		SE, a.s., has already implemented requirements / recommendations of the new IAEA document GRS Part2 into the Integrated management system. It was also during the preparation of National report - probably wrong reference for the previous version of IAEA document.	
20.	Country **Germany**	Article **15**	Ref. in National Report **(4.6), p. 105-107**
Question		Could Slovakia please provide the information about the dose limit level for the exposed workers per calendar years and the	

	measured individual annual doses for both NPPs for the exposed workers as well as for the public?
Answer	§ 15 "*Dose limits"* of the Act No. 87/2018 Coll. on radiation protection: Dose limits are sorted as limits for: a) workers, b) apprentices or students, c) public. Limit of effective dose for workers relates to the sum of all annual effective doses from external exposure and annual effective doses from intake of radioactive substances from all sources of ionising radiation to which workers was exposed during working activity leading to exposure in one employer or concurrently in several employers. Limit of equivalent dose for workers relates to the sum of all annual equivalent doses from external exposure and of annual equivalent doses from intakes of radioactive substances from all sources of ionising radiation to which workers was exposed during working activity leading to exposure in one employee or concurrently in several employers. Dose limits for workers in calendar year are: e) effective dose 20 mSv, f) equivalent dose in eye lens 20 mSv, g) equivalent dose in skin 500 mSv, it relates to average dose on the area of any 1 cm^2 regardless of the size of irradiated area of skin, h) equivalent dose in extremities 500 mSv.  **Figure No. 1 Number of workers (2011 – 2018)** Note: EBO – NPP Bohunice own staff; DOD EBO – NPP Bohunice outside workers; EMO – NPP Mochovce own staff; DOD EMO – NPP Mochovce outside workers; JAVYS – Nuclear and Decommissioning Company own staff; DOD JAVYS - Nuclear and Decommissioning Company outside workers.

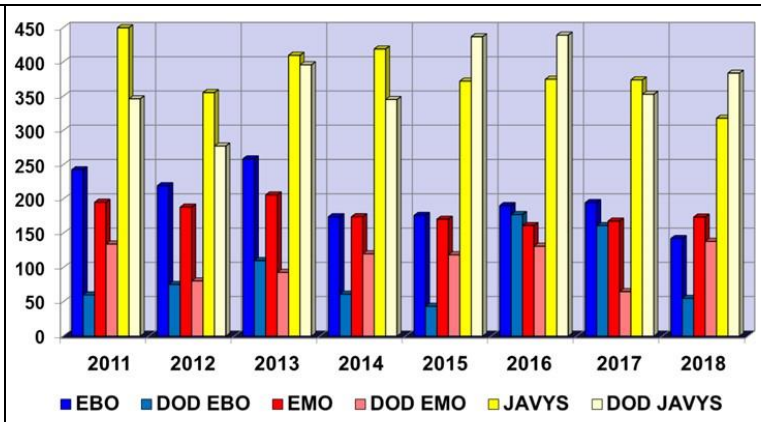


Figure No. 2 Collective effective doses [man.mSv] (2011 – 2018)

Note: EBO – NPP Bohunice own staff; DOD EBO – NPP Bohunice outside workers; EMO – NPP Mochovce own staff; DOD EMO – NPP Mochovce outside workers; JAVYS – Nuclear and Decommissioning Company own staff; DOD JAVYS - Nuclear and Decommissioning Company outside workers.

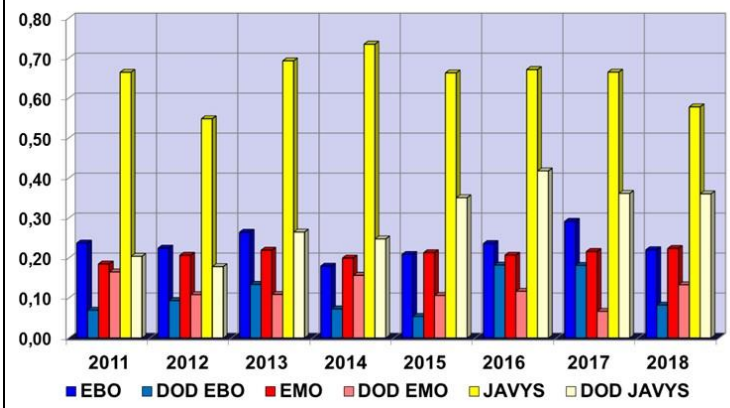


Figure No. 3 Average effective doses [mSv] (2011 – 2018)

Note: EBO – NPP Bohunice own staff; DOD EBO – NPP Bohunice outside workers; EMO – NPP Mochovce own staff; DOD EMO – NPP Mochovce outside workers; JAVYS – Nuclear and Decommissioning Company own staff; DOD JAVYS - Nuclear and Decommissioning Company outside workers.

Limits of exposure for public relate to, if it is a limit of effective dose, the sum of all annual effective doses from external exposure and of effective doses from internal exposure, and if these are the limits of equivalent doses, to the sum of all annual equivalent doses. Into the exposure of public there are counted the doses coming from all ways of exposure of an individual from population, from all sources of ionising radiation and all registered and authorised activities with sources of ionising radiation which come to account.

Dose limits for public in calendar year are:

a) effective dose 1 mSv,
b) equivalent dose in eye lens 15 mSv,

		c) equivalent dose in skin 50 mSv, it relates to average dose on the area of any 1 cm^2 regardless of the size of irradiates area of skin. § 91 *"Liquid and Gaseous Discharges"* of the Act No. 87/2018 Coll. on radiation protection: Dose constraints for representative person for projecting, construction and operation of nuclear facility for one operator of nuclear facility is 0,25 mSv for calendar year; dose constraint for representative person is set particularly for individual discharges as follows: a) effective dose 0,2 mSv for calendar year in gaseous discharges and b) effective dose 0,05 mSv for calendar year in liquid discharges. If there are more nuclear facilities in one area or region, which influence dose of representative person, this value relates to total exposure from all nuclear facilities in the area or region. **NPP Bohunice**: In the year 2018 a representative person lived in the sector No. 75 Pečeňady. The annual effective dose was **0,194 µSv,** it was **0,388 %** from the annual effective dose limit for the public **50 µSv /year.** **NPP Mochovce:** In the year 2018 a representative person lived in the sector No. 64 Nový Tekov. The annual effective dose was **0,288 µSv,** it was **0,58 %** from the annual effective dose limit for the public **50 µSv /year.** The calculated peak value of the 50(70) year individual effective dose render for a representative person for the individual years is incomparably lesser (~0,2-0.3 µSv) as the base radiologic limit stated by the Public health authority in the radiologic release permit for NPPs (50 µSv).
21.	Country **Germany**	Article **8**	Ref. in National Report **(3.1.3.2-5), p.62**
Question		Could Slovakia please provide an overview of how the state nuclear regulator ÚJD communicates with the public?	
Answer		Public communication and informing public is one of the ÚJD SR priority tasks with purpose to provide competent, topical, objective and comprehensive information about activities under the competence of ÚJD SR to the domestic and foreign public; Public communication of ÚJD SR follows the rules stated in **Public Communication Strategy of ÚJD SR up to 2023** – updated in January 2019 available on www.ujd.gov.sk - https://www.ujd.gov.sk/ujd/WebStore.nsf/viewKey/Public_information_Strategy/$FILE/Update_Strategia_Komunikacie_ENG_MV.pdf; the objective of the Strategy is to inform the domestic and international public about activities in the scope of the	

		Nuclear Regulatory Authority providing up-to-date, objective and comprehensible information and establishing mutual and open communication channels; Information to the public and media is provided proactively through the publication of press releases, news on the ÚJD SR website and Facebook account; ÚJD SR web page, updated also for mobile access, provides information both in Slovak and English languages; Among other means, ÚJD SR enables media and public to communicate via a special email address: info@ujd.gov.sk as well as via a special form on ÚJD SR website; ÚJD SR regularly answers questions from public and both domestic and foreign media; in 2019, as it was in previous years, the topic of completion of units 3&4 of Mochovce NPP was the most frequently asked (more than 80%); 6 press releases and 4 extensive interviews by the ÚJD SR Chairperson were also concentrated on explanation of the status of completion and the regulatory approach to nuclear safety oversight; ÚJD SR as the central body of the state administration is obliged to respond to the questions sent pursuant to **Act No. 211/200 Coll. on Free Access to Information**; in 2019 received 13 requests, and issued 4 decisions; In compliance to the National Strategy and Action Plan for Access and Use of Open Public Administration Data (**OPEN DATA**), ÚJD SR makes available selected sets of data – so-called datasets – on its website and through the special open data portal of public administration data.gov.sk; all ÚJD SR orders, contracts, invoices and a list of licence holders are published and regularly updated; Continuous communication with public in the vicinity of NPP, active participation to Civil Information Commissions at NPP Bohunice and NPP Mochovce, to meetings of the Association of the Towns and Municipalities Bohunice and Interest Regional Association of Towns and Municipalities Mochovce.
22.	Country **Germany**	Article **11**	Ref. in National Report **(4.2.1), p. 73**
Question		Could Slovakia please provide a statement if the financial resources of the license holder are adequate to ensure the nuclear safety and radiation protection?	
Answer		**The financial strategy of license holders is defined as providing adequate financial resources for the operational and investment needs of the company to ensure the nuclear safety and radiation protection, while making optimum use of own and external resources (e.g. bank loans).**	

		On behalf of Slovenské elektrarne, a.s. we do confirm that the company has sufficient financial resources to cover its operational and capital expenditures including investments into maintenance and continual enhancement of nuclear safety and radiation protection.	
23.	Country **Germany**	Article **11**	Ref. in National Report **(4.2.1), p. 73**
Question		Could Slovakia please provide detailed information on how Slovakia complies with the provisions of the Vienna Convention on Nuclear Liability and how the country will ensure the necessary financial resources in case of a radiological emergency?	
Answer		The Vienna Convention on the Civil Liability for Nuclear Damage entered into force in the Slovak Republic on 7 June 1995. On 19 March 2015 the National Council of the Slovak Republic approved the Act No. 54/2015 Coll. on Civil Liability for Nuclear Damage and on its Financial Coverage and on amendment and supplement of certain acts, which entered into force on 1 January 2016 and based on which the operator's liability for nuclear damage caused by each nuclear incident is limited to EUR 300 million for a nuclear installation for energy generation purposes and EUR 185 million for other nuclear installation and transport of nuclear material. Slovenske elektrarne, a.s. – the Slovak nuclear operator, has in place nuclear liability insurance policies compliant with the statutory indemnity limit of EUR 300 million for each of its nuclear installations in operation. The above information is provided solely on behalf of Slovenske elektrarne, a.s. and not the utility JAVYS - Nuclear and Decommissioning Company (Jadrova a vyradovacia spolocnost, a.s.). As regards company JAVYS, a.s. the idemnity limit is 185 MEUR (not operating NPPs). As regards the case of a radiological emergency the situation is different because it does not relates directly to idemnity. In case of an emergency the legal framework and actions are described in chapter 4.7.6.2 of the National Report. The Government by its resolution No. 48 dated 25 January 2017 approved measures to support national defence for the period 2017 – 2022. Part of this document, among others, shall ensure support and maintenance of the medical support system, services and activities within the scope and the structure according to the requirements of armed forces within the defence system of the SR. Currently there are negotiations being held at ministerial level to improve the status for securing health care in case of nuclear of radiation accident.	

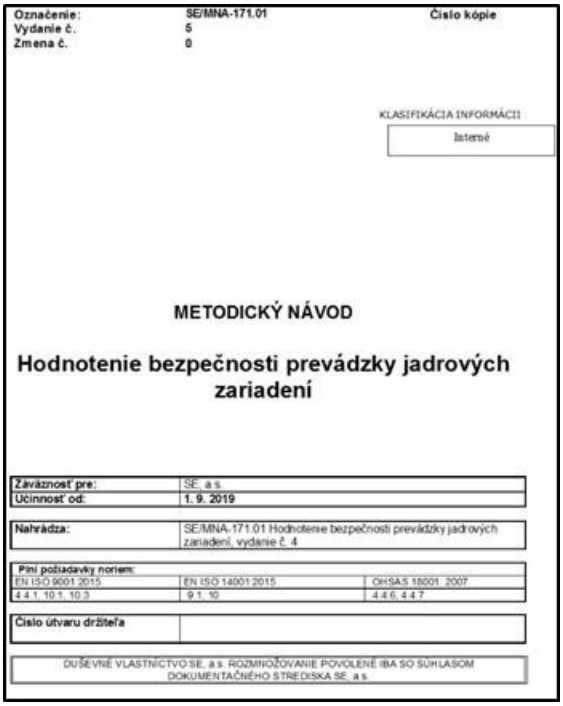
24.	Country **Germany**	Article **6**	Ref. in National Report **(2.3.2.3), p. 37**
Question		Could Slovakia please provide more information on the status of the commissioning tests for the Mochovce NPP Unit 3 and 4 as well as the planned issue of the operation license?	
Answer		Mochovce Unit 3 is in the stage of non-active tests, which are currently finalizing, before the load of fist fuel assembly into the reactor. Cold hydro, small revision, hot hydro and extended revision were performed. Currently the preparation of machine room technology before commissioning and related tests of machine room facilities are being performed. Also some deficiencies and discrepancies, that were identified during previous test stages, are being solved. Final report on the stage of non-active test results of the facilities and systems is being prepared and it will be submitted to ÚJD SR as one of the important documents that will be used as basis for issuing decision for start of the commissioning of Unit 3. ÚJD SR has issued a license for handling of fresh nuclear fuel in spaces designated for this use (fresh fuel node of Mochovce Unit 3 and 4). Inspectors of the Nuclear Regulatory Authority of the Slovak Republic inspect, directly at the construction site, the works on facilities and systems for commissioning (i.e. loading of the first fuel assembly). ÚJD SR will issue the license for commissioning of Unit 3 after all planed tests are completed to their full extend. The draft ÚJD SR decision on commissioning is made available to the public on ÚJD´s web page. There is 2 month time to comment the draft. Mounting of primary loop and secondary loop devices is being performed on Unit 4. According to the state of works rinsing and pressure tests of facilities are being performed as well as hand over of facilities for testing by the commissioning division of Slovenské elektrárne. Individual tests of components are being performed.	
25.	Country **Germany**	Article **8**	Ref. in National Report **(3.1.3.2), p. 56-57**
Question		Could Slovakia please provide more information on the development and maintaining human resources over the past three years?	
Answer		Over the period of the last three years, ÚJD SR managed to create sufficient material, financial and information resources, as well as to strengthen human resources, to ensure a demanding process of reviewing and assessing documentation, but also inspection activity, particularly in connection with the completion of NPP Mochovce 3&4.	

	In addition, NRA has personally strengthened the area of cyber security and data protection, which, both, is becoming a highly topical issue. Quality human resources management is one of the basic prerequisites for achieving strategic goals and tasks of NRA and meeting the adopted nuclear safety policy. Human resources management focused mainly on hiring and selection of new staff to provide for the current and future work activities, as well as, on provision and development the employee training in order to strengthen human potential and create an atmosphere of motivating employees to meet NRA goals. Over the period of the last three years, NRA slightly increase the total number of staff. The hiring process of vacancies, as they are classified as the civil service positions, had a standardized form in accordance with the Civil Service Act, and the Regulation on the details of the selection procedure. Announcement of all vacancies is done via the governmental register of selection procedures on the portal www.slovensko.sk. In cases of civil service positions for temporary civil service, with the lowest interest in these positions, NRA publishes these vacancies also through the most popular jobs portal http://www.profesia.sk/. In average, NRA held 20-25 selection procedures annually. Training and development of staff is another precondition for mastering the new challenges of the current demanding legal, economic and highly demanding technical environment, part of which is also nuclear energy sector. The training plan for all employees of NRA has been elaborated in the plan of continuing education of employees for the upcoming year, which is an operative management plan with a year-round content focusing on the training needs of all NRA organizational units. In addition, ad hoc general and vocational training activities offered by different educational institutions were used. Training focused on all expert areas provided for by the NRA. In the course of the year, NRA staff, in addition to classical forms of education, also utilized other forms of education – flexible education, e-learning, information and communication technology in education, as well as education through the Education and Assessment Centre of the Slovak Government Office, and by participating in many workshops and educational activities organized by international organizations, in particular by the IAEA in Vienna. Training and shaping work capabilities and skills becomes a lifelong process in NRA, because it must permanently take into account all current needs caused by the reality of changes. Expenditures for training of staff were budgeted at about € 200,000 Euros annually of which more than 65 % was allocated

		to vocational training (mainly in the field of nuclear regulation), 10% was allocated to language training, more than 6% to management training, 6% to training in information technology, and 2% to personal development. ÚJD SR places great emphasis on a highly specialized vocational training of staff in the fields of competence of NRA, through which inspectors and surrogate inspectors gain the necessary knowledge and skills to perform permitting, assessment, evaluation and inspection activity. Financial resources were allocated separately also for IT training. However, due attention is also paid to specialized staff and other employees, so that their training is continuous and current due to ongoing changes in legislation and in public administration. Adaptation of new employees was ensured through adaptation training and mentoring, i.e. through assigned mentor.
26.	Country **France**	Article **General**	Ref. in National Report **Summary**
Question		In his report, the President of the 7th review meeting had recommended that Contracting Parties consider the implementation of the good practices that where identified during the meeting. Could your country provide information on the actions carried out with regards to the implementation of those good practices in your country ?	
Answer		Good practices identified at the 7th Review Meeting: 1. The first topical peer review was launched in a proactive manner, even before date for transposition of the nuclear safety directive by EU Member States (Euratom). *Response:* Slovakia as a member state of EU actively particpated in the first Topical Peer Review. 2. The implementation of the Instrument for Nuclear Safety Co-operation Program for assisting non-EU countries (Euratom). *Response:* Slovakia as a member state of the EU supports the INSC. Slovakia actively participates in the implementation on INSC projects in third countries. 3. The Canada Nuclear Safety Commission fosters openness and transparency in its regulatory process for which it has in particular launched a participant funding program, which gives the public, aboriginal groups and other stakeholders the opportunity to request funding from the CNSC to participate in its regulatory process. The participants present their results directly to Commission members. The awarding of participant funding is done by a Board independent of the licensing and technical support branch of the regulator. The participant funding contributes to increasing safety by providing additional information to the Commission. (Canada).	

	Response: The budgetary rules does not permit to use a similar model as in Canada. However there are other forms (incentives) to support financially non governmental organizations or stakeholders (aboriginal groups are not exists) for example by donating 2% of the taxes paid by physical persons to the Tax Offices to the NGO or to philanthropic, charitable, etc. groups. An additional source of financing is according to Act No. 582/2004 Coll. on local taxes. The licensee of a nuclear power plant is obliged to pay a tax to villages in the emergency planning zone. This revenue can be used by the villages to finance different activities. The participation of the public in the decision making process is assured by the EU and national legal framework. For example: In compliance with Act No. 71/1967 Coll. on Administrative Procedure (Adminitrative Code) as amended as well as in compliance with Convention on Access to Information, Public Participation in Decision-making and Access to Justice in Environmental Matters (the Aarhus Convention) all concerned stakeholders all relevant information are not only published on ÚJD SR website in Slovak and English language, but the decisions and important information are addressed directly to involved organisations and concerned public individuals via personalised letters; this communication channel is set not only with domestic stakeholders, but with organisations and individuals abroad (all neighbouring countries, Germany, …). 4. Extensive outreach to members of the public and to neighbouring and other countries, and conduct of public hearings regarding licensing of nuclear facilities, as well as educational conferences. The extent of the outreach was well beyond that generally undertaken by other contracting parties. The thorough preparation for these outreach activities strengthened the licensing review. (Hungary). *Response:* ÚJD SR in compliance with the legislative requirements and its Public information strategy informs continuously on the progress of administrative proceedings with regard of issuing authorisations and licences in connection with the completion of NPP Mochovce 3&4. In compliance with Act No. 71/1967 Coll. on Administrative Procedure (Administrative Code) as amended as well as in compliance with Convention on Access to Information, Public Participation in Decision-making and Access to Justice in Environmental Matters (the Aarhus Convention) all concerned stakeholders all relevant information are not only published on ÚJD SR website in Slovak and English language, but the decisions and important information are addressed directly to involved organisations and concerned

		public individuals via personalised letters; this communication channel is set not only with domestic stakeholders, but with organisations and individuals abroad (all neighbouring countries, Germany, …). Regularly updated information is provided during the annual bilateral meetings, organised under intergovernmental agreements on issues of common interest in the area of nuclear safety and radiation protection – Austria, Czech Republic, Hungary, Slovenia, Poland; ad-hoc technical meetings are organised upon request of concerned stakeholders (Government of Austria, NGO Global 2000, …). Updated information is provided to the Embassies of the SR abroad and to foreign Embassies in Slovakia.	
27.	Country **Austria**	Article **14**	Ref. in National Report **p. 101**
Question		The system of safety indicators was complemented with a number of new indicators to monitor individual processes. The updated version was reflected also in the SPUB software to create new functionalities supporting the generation of reports in the required time periods. Can you give an overview of the system of safety indicators in detail? / SPUB software	
Answer		On the 1. Sept 2019 new revision of methodical guide SE/MNA-171.01 Safety evaluation of nuclear equipment was adopted. The guide describes indicators and the way how to evaluate them. The overall number of the performance indicators has been mildly decreased when compared to the previous revision (e.g. the Number of P1 (priority 1) attributed events of the individual safety systems). On the other hand there have been added some index indicators mainly related to the area of self-assessment (OE (Operating Experience) index, SAB (self assessment and benchmarking) index, CAP (corrective action program) index, HUPI (human performance improvement) ndex etc.), but also the ERI (equipment reliability) index (related to equpment reliability) or the FME (foreign material exclusion) index). The indicators have been devided to: • mandatory (basic) which are mandatory for the power plants' reports and the SE Corporate reports shipped to the ÚJD SR (regular authority) • additional which are required by the management Appended guite (from page):	



Označenie: SE/MNA-171.01 Číslo kópie
Vydanie č. 5
Zmena č. 0

KLASIFIKÁCIA INFORMÁCIÍ
Interné

METODICKÝ NÁVOD

Hodnotenie bezpečnosti prevádzky jadrových zariadení

Záväznosť pre:	SE, a.s.
Účinnosť od:	1. 9. 2019
Nahrádza:	SE/MNA-171.01 Hodnotenie bezpečnosti prevádzky jadrových zariadení, vydanie č. 4

Plní požiadavky noriem:

EN ISO 9001:2015	EN ISO 14001:2015	OHSAS 18001: 2007
4.4.1, 10.1, 10.3	9.1, 10	4.4.6, 4.4.7

Číslo útvaru držiteľa	

DUŠEVNÉ VLASTNÍCTVO SE, a.s. ROZMNOŽOVANIE POVOLENÉ IBA SO SÚHLASOM DOKUMENTAČNÉHO STREDISKA SE, a.s.

28.	Country **Austria**	**Article 14**	Ref. in National Report **p. 103**
Question		Could you provide the results of the aging program for EBO and EMO, especially for the non-interchangeable components? / At present, there are 19 ageing management programs, which are common for both nuclear power plants, EBO and EMO.	
Answer		Ageing management at nuclear power plants in Slovakia is systemically performed. The licensee have developed and implemented ageing management programs to ensure that all ageing effects related to systems, structures and components (including non interchangeable components) relevant to safety are identified and maintained within the acceptable limits. During the inspections of aging management programs at NPPs in Slovakia, no major deficiencies were identified that would require immediate corrective measures. The capability of systems, structures and components relevant to nuclear safety to perform their safety functions is assured. Results of ageing management programmes of main primary components are regularly submitted to ÚJD SR. **Programmes** • JE/NA-311.09-02 Reactor pressure vessel • JE/NA-311.09-03 Steam generators • JE/NA-311.09-04 Reactor coolant (main circulation) pump • JE/NA-311.09-05 Main isolating valves • JE/NA-311.09-06 Primary piping • JE/NA-311.09-07 Pressurizer • JE/NA-311.09-08 Secondary piping • JE/NA-311.09-09 Essential service water piping	

		• JE/NA-311.09-10 Main condensers • JE/NA-311.09-11 Cables • JE/NA-311.09-12 Reactor building • JE/NA-311.09-13 Reactor internals • JE/NA-311.09-14 Corrosion monitoring • JE/NA-311.09-15 Diesel generator station • JE/NA-311.09-16 Central pumping station • JE/NA-311.09-17 Essential service water (forced draft) cooling towers • JE/NA-311.09-18 Building of chemical treatment eater	
29.	Country **Austria**	Article **17**	Ref. in National Report **p. 131**
Question		Which methodology was applied when conducting the assessment of the safety regarding more severe earthquakes? Until when do you expect the analyses be available for beyond design basis earthquakes? / There are plans for advanced analyses to quantify the safety margins of key systems, structures and components for the beyond-design-basis earthquake and development of seismic PSA.	
Answer		According ÚJD SR requirement NPPs are assessed in accordance with the guide NS G-2.13. Two methodologies for performing an evaluation of the seismic capacity of a nuclear power plant are presented in this Safety Guide: (a) the deterministic SMA and (b) the probabilistic SPSA. For Slovak NPPs the SMA methodologie has been used. Seismic PSA has been developped for CDF and LERF quantification and identification of the most critical SSCs. For example the probabilistic seismic hazard assessment (PSHA) for the NPP Mochovce site was elaborated in 2003 by the Geophysical Institute of the Slovak Academy of Sciences (*Probabilistic seismic hazard computation forthe locality of the NPP Mochovce, P. Labák, Bratislava, 2003*. The earthquake catalogue used for the PSHA was compiled in 2000 by the Geophysical Institute (*The seismological database for the Mochovce NPP, P. Labák, Bratislava, 2000* [2]). In 2003 the IAEA review mission declared the catalogue as suitable for PSHA calculations for the NPP Mochovce site (*Report of the Review Mission on the Probabilistic Seismic Hazard Assessment of Mochovce Site, Follow-Up II, Bratislava, Slovakia, 2003* [3]). In future analyses for the Mochcovce NPP site up-to-date methods reflecting on the modern practices will be used.	
30.	Country **Austria**	Article **19**	Ref. in National Report **p. 142**
Question		Could you please explain the graded approach in more detail? / On page 142 it is stated that “In preparing operations to perform maintenance intervention, graded approach is applied, which ensures that all works on the components relevant for nuclear	

		safety will be prepared, implemented and evaluated with the required level of assertiveness, attention and detail."	
Answer		SE, a.s. has documentation describing aspects of the graded approach. Documentation include a matrix of prioritization of work in troubleshooting. Work management focuses mainly on aspects of the graded approach and planning matrix. A graded approach means assessing the priority and urgency of work based on a risk assessment. The licensee checks and verifies the reports of the deficiencies. Grade of approach may acquire four values: A, B, C, D. While the A stands for the most complicated and the most risky orders. The approach is evaluated from the point of view of the: 1, nuclear, radiation and industrial safety; 2, task difficulty; 3, human factor performance; 4, employees qualification.	
31.	Country **Austria**	Article **19**	Ref. in National Report **p. 142**
Question		Please describe the procedure for the case of non-compliance. Which measures are taken to rule out a repetition of the non-compliance as far as possible? / From 2010 all non-compliance cases (from minor non-compliance up to failures) are recorded, evaluated, managed under the programme SAP NUCLEAR.	
Answer		There is a standard corrective action programme in place (CAP) at the operating SE nuclear power plants. Every issue minor or major is reported by employees who identifiy it. They are obliged to place a condition report (in the SAPN SW it is called a Notification Generale). All the Notification Generales are being evaluated by shift management practically online and then by a multidisciplinary comitte on daily basis (this is called screening). The problems are categorized and the problems of level 1(the most significant), 2 and 3 (less significant) are analyzed. The depth of the analysis performed for the given problem (or also event) is respective to the level of severity of the problem. For the problems 1 and 2 we automatically carry out a full root cause analysis (RCA) where the ultimate goal is to prevent the event recurrance. For the level 3 events there might be performed a RCA also based on the managerial decision. Problems evaluated as minor (level 4) are coded and based on these codes are then performed trend analysis and if an adverse trend is identified then a common cause analysis is performed. For low level problems generally the goal is to fix the problem, for the high level problems to prevent its recurrance, and recurrance of similar events also (with the same root causes). The SW application used for implementation of this process is SAP NUCLEAR and the process is described in written procedures.	

32.	Country **Austria**	Article **19**	Ref. in National Report **p. 142**
Question		Please explain the LTO system of parallel implementation of corrective actions in V2 in detail. / Based on the inspection, ÚJD SR concluded that the LTO Program of V2 with parallel implementation of corrective actions enables further safe operation of SSCs of NPP V2.	
Answer		**Development of an:** 1. Action Plan of corrective actions for the long-term operation program of NPP V2. 2. Implementation of corrective action. 3. Regulatory body inspection of corrective action implementation. 4. Long-term operation of NPP. Corrective actions with their completion deadlines are set forth in ÚJD SR letter – statement to the LTO Program Action Plan and final report from LTO Program of V2. Licensee informs ÚJD SR in an annual summary report about status of implementation of corrective actions.	
33.	Country **Austria**	Article **6**	Ref. in National Report **p. 23**
Question		What significance do the deficiencies in the implementation of seismic reinforcement measures identified by ÚJD SR, have for the safety of Nuclear Power Plant Mochovce, units 1&2, ? / It is stated in the National Report "During 2018, ÚJD SR identified deficiencies in the implementation of seismic reinforcement measures."	
Answer		In 2018 delays in the completion of seismic reinforcement of units EMO1 and 2 were identified by ÚJD SR and confirmed by the licensee. During the early phase of the project several contractors were changed for different reasons The SSEL (safe shutdown equipment list) after an earthquake was finally developed during 2017 – 2018 by a group of contractors. The assessment of seismic capacity of SSC which are on the SSEL list is ongoing. In parallel to the assessment of seismic capacity of SSC, seismic reinforcement of buildings/structures have been completed or is ongoing (e.g.): • Fire station building – completed • Emergency feed water system - completed • Emergency Response Centre – completed • Air duck to venting stack - completed • Venting stack - completed • Diesel Generator Station – ongoing • Diesel oil system – ongoing	

		• Central pumping station of Essential Service Wather - ESW and firefighting water - completed • Forced draft cooling towers of ESW system - completed • Nuclear auxiliary service building - ongoing • Etc.	
34.	Country **Korea**	Article **13**	Ref. in National Report **p. 92**
Question		It is stated that in case of any deficiencies identified on the selected equipment, in activities or the documentation, the inspector is authorized to impose measures for their removal. In this case, after the removal, what actions should the licensee take?	
Answer		If the inspector identifies deficiencies in the selected equipment, activities or documentation, the inspector shall impose measures to correct them. The authorization holder must then follow the steps according to the valid documentation. If it is required to carry out (additional) tests on equipment, they have to carry out them, etc.	
35.	Country **Korea**	Article **15**	Ref. in National Report **p. 104~105**
Question		With reference to Article 15, Section 4.6.2 in page 104 states that individual monitoring shall be carried out systematically for Category A workers. 1) Please explain if there are Category B workers in NPPs. 2) If so, please specify their tasks in NPPs, and how to manage their individual doses.	
Answer		To Category A are assigned workers, whose effective dose per calendar year could be higher than 6 mSv or equivalent dose for eye lens per calendar year could be higher than 15 mSv, or equivalent dose in skin and extremities per calendar year could be higher than 150 mSv. All NPPs workers who perform their activities in controlled areas are Category A workers.	
36.	Country **Korea**	Article **12**	Ref. in National Report **p. 84~85**
Question		With reference to Article 12, page 84~85 of the Slovak Republic national report, it is stated that the Slovak uses TapRooT system to investigate events. With respect to the provided information in the article in question, Korea would like to inquire the following questions: 1) How are HPES and TapRooT systems different in terms of purpose, process and responsible organization?	

		2) How was the analysis result of TapRooT system applied to RCA (Root Cause Analysis) and ACA (Apparent Cause Analysis)?	
Answer		1) The TapRoot and HPES methodologies are similar, both are using a flow chart of events over time, where weaknesses are identified and further investigated. Both methodologies provide techniques that help to better understand the root causes of events and correctly identify them. SE, a.s. use them both for RCA (Root Cause Analysis). Taproot provides better tools (books, root cause tree, TapRoot vocabulary, suggestions for corrective action, software), but it's not exclusively for the nuclear industry. On the other hand HPES was invented for nuclear industry and is cheaper. 2) Taproot is used only for RCA (Root Cause Analysis), as it is the methodology of performing root cause analysis. Application of TapRoot methodology results in defined root causes.	
37.	Country **Korea**	Article **13**	Ref. in National Report **p. 91**
Question		Does the regulatory body receive or verify IMS audit and NOS (nuclear oversight) assessment results?	
Answer		Not directly. ÚJD SR has a possibility/obligation (resulting from Atomic law) to perform planned/unplanned inspections focused on IMS or specifically on the process of planning, execution and evaluation of IMS audits and NOS (nuclear oversight) assessments. The process and its results are presented and reviewed by ÚJD SR.	
38.	Country **Korea**	Article **13**	Ref. in National Report **p. 91**
Question		Does the regulatory body conduct supplier audit or monitoring? If not, are there regulatory requirements on the licensees to ensure supplier quality?	
Answer		These are the responsibility of the licensee in accordance to the established ISO 9001 system. This obligation also results from Annex no. 1 (ac) of Decree no. 431/2011 Coll.which states that "the quality management system of the applicant and the license holder must include inspections of suppliers and inspections of activities performed by suppliers, including the possibility of participation of the inspectors of the regulatory body in these inspections".	
39.	Country **Korea**	Article **13**	Ref. in National Report **p. 91**
Question		It is stated that requirements posed on the suppliers are transferred through contracts, including general terms and	

<table>
<tr><td colspan="2"></td><td colspan="2">conditions, technical and safety requirements for performance, which are attached to the contracts.
What action does the licensee take if an audit of the supplier finds any deficiencies?</td></tr>
<tr><td colspan="2">Answer</td><td colspan="2">It depends on requirements of valid contracts with particular supllier and results of previous audits. It is defined in IMS procedures that the audit has to be performed before the signing of contract (in time pressure in exceptional cases, the audit has to be performed up to 30 days (at least 60 days) after the closing of contract).

The validity of audit is max. 3 years (2 years for contractors of MO34 completion project). After the 3 years period, the supplier follow-up audit is performed only in case if the supplier has been again included into the Annual plan, or there is still valid contract with supplier.

If some deficiences are identified during the audit, the contractor has the obligation to take corrective/preventive measures. Their fulfillment is checked during the follow-up audit (after 1 or 3 years).

Information is saved in the Database of audited/potential suppliers of SE (in case of deficiences with the evaluation of "included with comments or conditionally included" depending on significancy of deficiences) and the result is also provided to procurement department and included into the Vendor rating system.</td></tr>
<tr><td>40.</td><td>Country
Korea</td><td>Article
General</td><td>Ref. in National Report
p. 18</td></tr>
<tr><td colspan="2">Question</td><td colspan="2">The status of NPP Bohunice V1 is in decommissioning but safety analysis report is still updated continuously according to the national report. What contents are included in the latest update of the safety analysis report?</td></tr>
<tr><td colspan="2">Answer</td><td colspan="2">For V-1 NPP under decommissioning, Safety Analysis report are not prepared at time intervals, but safety analysis are prepared for each decommissioning stages as is shown in table no. 2.
<table>
<tr><td>Plant</td><td>NPP Bohunice V1</td><td>NPP Bohunice V2</td><td>NPP EMO 1,2</td><td>NPP MO 3,4</td></tr>
<tr><td>SITE</td><td>Bohunice</td><td>Bohunice</td><td>Mochovce</td><td>Mochovce</td></tr>
<tr><td>Reactor type</td><td>WWER-440/230</td><td>WWER 440/V213</td><td>WWER 440/V213</td><td>WWER 440/V213</td></tr>
<tr><td>Reactor thermal power, MWt</td><td>1375</td><td>1471</td><td>1471</td><td>1375</td></tr>
<tr><td>Gross electric power, MWe</td><td>440</td><td>505</td><td>470</td><td>440</td></tr>
</table></td></tr>
</table>

Plant status	*In decommissioning*	In operation	In operation	Under construction
Date of first criticality	1978-80	1984 - 85	1998 - 99	Under construction
Latest update of Safety Analysis Report	*Continuously*			
Latest update of PSA Level 1/Level 2	-	*2014/2015*	*2019*	*2016*
Last Periodic Safety Review	-	*2016*	*2018*	-

Table 2 Information on nuclear units that are subject of the National Report

NPP V-1 is decommissioned in two stages. For details see National Report prepared under the Joint Convention.

Nuclear Regulatory Authority of the Slovak Republic (ÚJD SR) issued a Decision under ref. 400/2011 for the first stage of V1 NPP decommissioning (Unit 1 and Unit 2) as to the 20th of July 2011. All spent fuel was transported from the NPP by the 15th of February 2011.

From the 1st of January 2015 the V1 NPP is under the second stage of decommissioning, which was permitted by the Nuclear Regulatory Authority of the Slovak Republic in a Decision under ref. 900/2014, with an assumed date of completion in 2025.

The Regulator obliged the license holder for the 2nd stage of V1 NPP decommissioning to comply with the following conditions:

1. Prior to implementation of the decommissioning projects as well as related activities of the radioactive waste management, for which the general envelope safety analyses according to the **Appendix P11-1 Safety Assessment Report for the V1 NPP Decommissioning in the V1 NPP Decommissioning Plan** will not be sufficient, it will be necessary to submit the documentation related to these projects to ÚJD SR including detailed safety analyses of radiological and non-radiological risks so that these analyses also reflect current configuration of the facility and integrated risks resulting from the parallel implementation of other decommissioning activities.
2. Implement the post-project analysis in line with scope required under item 5 of part VI. of the Final Statement of the Ministry of Environment of the Slovak Republic No. 2850/2014-3.4/hp, issued on the 18th of June 2014.

Last update of the safety assessment reports for the V1 NPP was approved as an "Appendix P11-6 – Risk and Safety Analysis" within the D4.2 project of the document "V1 NPP Decommissioning 2nd Stage Plan B6.5-D14" approved in a Decision issued by the Nuclear Regulatory Authority of the

		Slovak Republic under ref. 235/2018, dated the 13th of August 2018 for the implementation of change affecting nuclear safety during the V1 NPP decommissioning in the scope of implementation of project DZM No. 5310/2017 "BIDSF D4.2 Dismantling of Reactor Coolant System Large Components, Dismantling of Contaminated Equipment" and for the implementation of change of documentation assessed by the Regulator in the following documents: 1. Amendment No. 3 to the V1 NPP Decommissioning 2nd Stage Plan, B6.5-D14, rev. 2 2. RAW management and transport plan – RAW from the V1 NPP Decommissioning 2nd Stage, rev. 5	
41.	Country **Korea**	Article **10**	Ref. in National Report **p. 70**
Question		With reference to Article 4.1.2, page 70 of the national report of the Slovakia Republic, the main safety requirements and principles of nuclear safety and radiation protection are set to achieve safety goals. With respect to the provided information in the article in question, Korea would like to inquire the following questions: 1) What are the safety goals (or requirements) set in terms of PSA (e.g. CDF, LERF) and DSA (e.g. dose limit during severe accident) in the Slovakia Republic? 2) Are the safety goals (or requirements) above linked to the terms of operation permit?	
Answer		There is a legislative requirement for the licensee (Decree on Quality management system No.431/2011 Coll. as amended, Annex 6 Requirements for quality of nuclear facilities), to define the safety goals. Based on this requirement also this quantitative safety goals have to be defined: radiation goals, probabilistic safety goals, probabilistic safety criteria and their relation to internationally accepted requirements, methodology of probabilistic safety assessment. The safety goals proposed by the licensee are subject to approval by the regulator. The Slovak regulator (ÚJD SR) recommends the probabilistic safety goals in the regulatory guide for PSA as follows: 10-5/year for frequency of fuel damage (CDF), 10-6/year for frequency of the large release (LRF) and for frequency of the large early release (LERF). The licensee may in its quality management documents set up more stringent goals, than the above recommended values.	

42.	Country **Korea**	Article **14**	Ref. in National Report **p. 96(94)**
Question		The report states that natural hazards are considered in plant design. How do you consider man-made hazards?	
Answer		Man-made hazards, i.e. hazards caused by human or industrial activity, are also considered in plant design, and within safety evaluation by deterministic and probabilistic analyses, as well as within a periodic safety review. As an example, see few quotations of the relevant decrees: Decree on Nuclear safety requirements No.430/2011 Coll. as amended, Appendix 3, part B, chapter I., J – Protection against external hazards: (1) Classified equipment must be designed so that during natural hazards that can be realistically expected, such as earthquakes, windstorms, flooding, deluge, extreme temperatures, extreme cooling water temperatures, precipitations of all forms, moisture, frost, the effects of flora, fauna and so on, or during events caused by human activity outside the nuclear facility or during combinations thereof… (2) …the design must also take into account a) The most serious natural hazards historically recorded in the area around the site of the nuclear facility and extrapolated taking into account limited accuracy as far as size and time of occurrence are concerned; b) A combination of effects of phenomena caused by natural hazards and human activity, etc. (3) To protect nuclear installations against external events that can be caused by natural conditions or by human activity, a protection area of the nuclear installation must be included in its the design. Decree on Nuclear safety requirements No.430/2011 Coll. as amended, Appendix 3, part B, chapter II., E: (2) The design must include response analyses for the proposed facility for at least the following postulated external initiating events: a) Unfavourable natural conditions, including 1. Extreme wind load, 2. Extreme outdoor temperatures, 3. Extreme rain and local flooding, 4. Extreme cooling water temperatures and icing, 5. Earthquakes. b) Aircraft impact, c) The effect of human activity and industrial activity including explosions, near the nuclear facility. Decree on Periodic safety review No.33/2012 Coll. as amended, §9b – Unintended internal and external hazards, (2) The authorization holder shall review	

		a) Considered internal hazards and external hazards to nuclear facilities and their probable combinations that may affect the safety of nuclear installations, particularly in the case of internal hazards to internal fire and explosion, internal floods, pipe whip, internally generated missiles, load drop, leak of steam, hot or cold gases, vibrations, crash of structures, loss or degradation of performance of heat and air-conditioning systems; in the case of external hazards to external fire, flood, extreme weather conditions, including the occurrence of tornadoes, electromagnetic interference, human activities and industrial activities, including explosions in the vicinity of nuclear installations, earthquake, geological hazards, lightning, biological phenomena, aircraft crash.	
43.	Country **Korea**	Article **10**	Ref. in National Report **p. 70**
Question		How does your country consider the multiple failures with regard to IAEA SSR-2/1?	
Answer		**Multiple failures** are considered within various areas and approaches aiming on safe use of nuclear energy, as e.g. within application of defence-in-depth principle, determination of design extension conditions (DEC), in accident management, safety analyses, etc. As stated in the **Atomic act** No.541/2004 Coll. as amended, §23a (Nuclear Safety): Defence-in-depth principle is applicable to design and to all phases of nuclear installation existence. Defence-in-depth principle shall be applied to ensure that: (a) the impact of extreme external natural and unintended man-made hazards is minimised; (b) abnormal operation and failures are prevented; (b) abnormal operation is controlled and failures are detected; (c) accidents within the design basis are controlled; (d) severe conditions are controlled, including prevention of accidents progression and mitigation of the consequences of severe accidents; Where “severe conditions” are conditions that are more severe than conditions related to design basis accidents; such conditions may be caused by **multiple failures**, such as the complete loss of all trains of a safety system, or by an extremely unlikely event. A nuclear installation shall be designed, sited, constructed, commissioned, operated and decommissioned with the objective of preventing accidents and, should an accident occur, mitigating its consequences and avoiding:	

	(a) early radioactive releases that would require off-site emergency measures but with insufficient time to implement them; (b) large radioactive releases that would require protective measures that could not be limited in area or time. **Decree on Nuclear safety requirements** No.430/2011 Coll., Annex 3, part B, chapter II., E – Safety analyses and severe accidents: (5) Based on operating experience, relevant safety analyses and the results of research, the design must also focus on design extension conditions (DEC), while taking into account: a) The possibility of **multiple failures** of safety systems with a subsequent threat to the integrity of physical barriers preventing the escape of radioactive substances; preventive or mitigating measures need not include the application of a conservative approach to ensuring nuclear safety; b) A set of selected events that are identified from among postulated initiating events using a combination of probabilistic methods, deterministic methods and engineering judgement, and that have been subsequently reviewed using a set of criteria in order to determine which severe accidents the design will address; c) Assessment and implementation of any design changes, changes to documentation or operating procedures that could reduce the likelihood of the occurrence of events selected pursuant to (b) or mitigate their consequences, if their implementation is reasonably practicable; d) The ability to utilize some safety systems as well as systems not directly related to nuclear safety, or additional temporary systems for the accomplishment of functions other than those originally planned, and under operating conditions other than originally expected, for putting the nuclear facility into a controlled state or to mitigate the consequences of selected events pursuant to (b); e) Enactment of operating procedures for the management of accidents during their occurrence; f) For multi-unit nuclear facilities with a nuclear reactor, the use of available support measures from other units, as long as these units' safe operation is not threatened. **Regulatory guide** BN 5/2019 (the 6th revision) **on Requirements to deterministic safety analyses** Section 6.3 Identification of DEC and selection of boundary scenarios

	In identification of DEC without significant fuel degradation an attention should be paid to supporting and auxiliary systems (e.g. air conditioning, cooling, electric power supply), since some of these can cause immediate or delayed subsequent **multiple failures** of operational and safety systems. Annex 1 – Categorization of initiating events DEC For purpose of performing and evaluating deterministic safety analyses, all initiating events, events leading to DEC and accidents are grouped to a limited number of categories, corresponding to the state of nuclear installation according to the frequency of occurrence (the indicated values are illustrative and considered more qualitatively than quantitatively): … c) Events of the DEC category are more severe than design basis events, or they represent events with **multiple failure** (of equipment, operator, safety systems) originally not considered in the design. Occurrence of events of this category is not likely (mean occurrence frequency is 10^{-6}-10^{-4}/year). Their radioactive releases to environment shall be minimize as reasonably practicable, and early releases or large releases shall be practically eliminated. d) Accidents (severe accidents) are extremely unlikely (occurrence frequency is < 10^{-6}/year). They are caused by an effect of extreme conditions or **multiple failures** (of equipment, operator, safety systems). Damage of fuel and the radiological consequences to population () may require protective measures to minimize the consequences. For new nuclear installation the events with fuel melt (that could lead to early or large radioactive release from nuclear installation) shall be practically eliminated. In case it is not possible, then the design measures shall be applied that only protective measures limited in area or time for protecting people would be sufficient (i.e. no need for permanent relocation, evacuation only within close proximity to the NI, only a limited sheltering, no long term restriction for food consumption) and there is sufficient time for their implementation. **Regulatory guide** BNS I.4.5/2018 **Requirements to safety of nuclear installation in relation to natural hazards** A nuclear installation shall be protected against design basis events (these design basis events are individual natural hazards or combinations of hazards (causally or non-causally linked). A protection concept shall be established to provide a basis for the design of suitable protection measures. The protection concept shall:

		(a) apply reasonable conservatism providing safety margins in the design and avoid cliff edge effects (b) rely primarily on passive measures as far as reasonably practicable; (c) ensure that measures to cope with a design basis accident remain effective during and following a design basis event; (d) take into account the predictability and development of the event over time; (e) ensure that procedures and means are available to verify the plant condition during and following design basis events; (f) consider that events could simultaneously challenge several redundant or diverse trains of a safety system, multiple SSCs or several units at multi-unit sites, site and regional infrastructure, external supplies and other countermeasures; (g) minimize interactions between buildings containing important safety items (including cables and control cables), and other constructions of the nuclear installation, that could occur as a result of external events considered in the design; (h) ensure that sufficient resources remain available at multi-unit sites considering the use of common equipment or services; (i) ensure adequate margin to protect SSC ultimately necessary to prevent an early radioactive release (it is a radioactive release that would require off-site emergency measures but with insufficient time to implement them) or a large radioactive release (it is a radioactive release that would require protective measures that could not be limited in area or time) in the event of levels of natural hazards exceeding those considered for design, derived from the hazard evaluation for the site. (j) ensure that the applied measures do not adversely affect the protection against other design basis events (not originating from natural hazards).
44.	Country **Slovenia**	Article **17**	Ref. in National Report **p. 131**
Question		The original design value for horizontal peak ground acceleration (PGA) for NPP Bohunice V2 was increased from 0.025 g through PGA = 0.25 g (in 1995), up to the currently valid value of PGA = 0.344 g, which corresponds to the updates completed in 2008. Q: The design PGA increased for more than 13-fold (!) in comparison with the original value. Does this mean that some of the buildings and structures of the Bohunice NPP had to be reinforced or even rebuilt? Can you explain at least briefly how this was accomplished and what structures/systems were involved in the process?	
Answer		Yes, all relevant SSCc were reinforced as requiered.	

		The deterministic SMA method (NS G-2.13) was used to evaluate the seismic capacity. A safe shutdown equipment list was established to determine the scope of the SSC. Brief description (example) of actions taken to increase seismic resistance of buildings, constructions and components - SSC: - to secure necessary resistance, stability, integrity and functionality of buildings, constructions and equipments of seismic class 1 during seismic event - to eliminate possible interactions of buildings, constructions and equipments of seismic class 2 with buildings, constructions and equipments of seismic class 1 Definition of seismic classes are according to IAEA NS-G-1.6. Seismic categorization complies with requirements of IAEA NS-G-1.6	
45.	Country **Slovenia**	Article **14**	Ref. in National Report **p. 93**
Question		Legislative requirements for safety assessment are set for all phases of life cycle of the nuclear installation (siting, design, construction, commissioning, operation including long-term operation, decommissioning, as well as required capabilities and important activities of the license holder, including periodic nuclear safety review). Q: Does this include modifications on the existing NPPs as well? If so, how are these modifications assessed and licensed? (this also refers to Chapter 5.3.4 on page 145 and Chapter 5.4 on page 157.)	
Answer		PSR is elaborated every ten yaers. Modification of plant are included too. All changes affecting nuclear safety must be justified in advance, carefully planned. These changes shall be performed in accordance with principles and requirements applicable for the original facility or documentation. Changes to original design requirements or implementation of new requirements must be justified and relevant analyses must be performed to document their acceptability. A permit applicant or a permit holder shall submit based on function and importance for nuclear safety: an analysis of the causes of the proposed change, with justification of the goal of the change, an assessment of the impact of the change on nuclear safety, proposed measures to eliminate possible negative effects of a new facility on existing facilities during its installation, tests, maintenance and operation, proposed measures to eliminate possible negative effects of the change, including its inclusion in quality management system documentation or employee vocational training. For significant changes a permit applicant or a permit holder shall to add a safety	

		assessment for the proposed change performed by an independent organisation/institution through risk analysis and the designer evaluation of the proposed change by the author of the original project, or another qualified individual in case of absence of the original designer.	
46.	Country **Slovenia**	Article **12**	Ref. in National Report **p. 78**
Question		Particular importance is given to the existing conditions at the workplace that affects the behaviour and which result from the organizational processes, culture or other conditions. Q: Can you explain how the staff workload (e.g. amount of regular working hours, overtime, etc.) is regulated at Slovak NPPs?	
Answer		Working time in SE is planned in accordance with the legislation of the Slovak Republic. For all employees the weekly working time is 37.5 hours per week on the basis of Corporate Collective Agreement, which also includes a reduction in weekly working time for employees working in one-shift or two-shift schedule instead of the statutory time of 40.00 or 38.75 hours per week. When using overtime work, SE, a. s. also comply with the statutory/legal limits and have implemented the control in information systems (rest, average weekly working time including overtimes, evidence of overtimes, ordered or agreed overtimes..). Of course, when planning the schedule of working time and overtimes, the safety of work is taken into account.	
47.	Country **Slovenia**	Article **6**	Ref. in National Report **p. 33**
Question		During 2018, ÚJD SR identified deficiencies in the implementation of seismic reinforcement measures. By decision of ÚJD SR the deadline for completion of seismic reinforcement was extended to 31 December 2022 provided that the licensee will provide reports to the regulator on status of implementation and planned measures on annual bases. Q: What particular kinds of deficiencies in the implementation of seismic reinforcement measures were found at the Mochovce NPP?	
Answer		In 2018 delays in the completion of seismic reinforcement of units EMO1 and 2 were identified by ÚJD SR and confirmed by the licensee. During the early phase of the project several contractors were changed for different reasons The SSEL (safe shutdown equipment list) after an earthquake was finally developed during 2017 – 2018 by a group of contractors. The	

		assessment of seismic capacity of SSC which are on the SSEL list is ongoing. In parallel to the assessment of seismic capacity of SSC, seismic reinforcement of buildings/structures have been completed or is ongoing (e.g.): • Fire station building – completed • Emergency feed water system - completed • Emergency Response Centre – completed • Air duck to venting stack - completed • Venting stack - completed • Diesel Generator Station – ongoing • Diesel oil system – ongoing • Central pumping station of Essential Service Wather - ESW and firefighting water - completed • Forced draft cooling towers of ESW system - completed • Nuclear auxiliary service building - ongoing • Etc.	
48.	Country **Slovenia**	Article **6**	Ref. in National Report **p. 29**
Question		Severe Accident Management Program included projects in the following areas: … Q: What is the current status of those Severe Accident Management Projects?	
Answer		All projects are completed. Details can be found in Chapters 2.2.1, 2.3.1 and Annex 6.5 of the National Report.	
49.	Country **Slovenia**	Article **6**	Ref. in National Report **p. 28**
Question		In Table 5 (penultimate row) and similarly in Note of Table 5: DEC W – are those measures associated with DEC (conditions of extended design), that are currently methodologically unclear and/or need more time for implementation. Q: Can you give any examples of DEC W measures according to the given description?	
Answer		Within the integrated measures from Periodic Safety Review findings, the role of DEC W is set for the DEC W area. To carry out a feasibility study on DEC-related corrective actions. The study should focus on: 1. Analyses related to reflooding/quenching of the degraded core; 2. Completeness of the current spectrum of accident analyses for EBO V-2 NPP and its update with an emphasis on	

		a systematic approach to coverage of DEC A, DEC B areas and practically eliminated events.	
50.	Country **Lithuania**	Article **19**	Ref. in National Report **p. 146**
Question		How do you solve issues related to cyber and information security?	
Answer		Yes. There is the Act on Cyber Security in the Slovak Republic, which defines requirements for ensuring the cyber security of networks and information systems, including those networks and information systems operated at nuclear installations. Some specific consideration, e.g. of the IAEA Nuclear Security Series No. 33-T Computer Security of Instrumentation and Control Systems at Nuclear Facilities, are taken into account. Based on the Act, the Cyber Security Strategy of SE has been approved by SE Board of Directors. Following the Cyber Security Strategy security measures will be implemented to achieve adequate level of protection of networks and information systems against the cyber security threats.	
51.	Country **Lithuania**	Article **19**	Ref. in National Report **p. 136**
Question		Is it foreseen to officially notify the neighbouring countries on the completion and results of the commissioning stages of the Mochovce NPP units 3/4?	
Answer		ÚJD SR informs about the Unit 3 preparedness and about licensing process on its web site. Access: https://www.ujd.gov.sk/ujd/www1.nsf/$All/58D2014BED8FF4C8C1257F7D002FA95D (Slovak) and https://www.ujd.gov.sk/ujd/www1.nsf/$All/DDF0CD538E85B9C8C12580C800539E42 (English) ÚJD SR in compliance with the legislative requirements and its Public information strategy informs continuously on the progress of administrative proceedings with regard of issuing authorisations and licences in connection with the completion of NPP Mochovce 3&4. In compliance with Act No. 71/1967 Coll. on Administrative Procedure (Administrative Code) as amended as well as in compliance with Convention on Access to Information, Public Participation in Decision-making and Access to Justice in Environmental Matters (the Aarhus Convention) all concerned stakeholders all relevant information are not only published on ÚJD SR website in Slovak and English language, but the decisions and important information are addressed directly to involved organisations and concerned public individuals via personalised letters; this communication channel is set not only	

		with domestic stakeholders, but with organisations and individuals abroad (all neighbouring countries, Germany, …) Regularly updated information is provided during annual bilateral meetings, organised under intergovernmental agreements on issues of common interest in the area of nuclear safety and radiation protection – Austria, Czech Republic, Hungary, Slovenia, Poland; ad-hoc technical meetings are organised upon request of concerned stakeholders (Government of Austria, NGO Global 2000, …) Updated information is provided to the Embassies of the SR abroad and to foreign Embassies in Slovakia. Updated information is provided within the participation of ÚJD experts in various technical committees and working groups of international organisations, and other international expert fora.	
52.	Country **Lithuania**	Article **15**	Ref. in National Report **p. 104-108**
Question		1. How is the equivalent eye lense dose monitored in your country? Which type of the dosimeters do you use for that: special Hp3 dosimeters, or Hp(0,07) or Hp(10)) for monitoring the eye lense dose? What principles are used to select workers for eye lens dose monitoring (e.g., the individual annual dose should exceed 0,3 of the annual dose limit of 20 mSv, or special workplace conditions)? Which period of monitoring is selected? 2. What kind of dosimeters do you use for monitoring neutrons' exposure of the personnel working at ISFSF? What registration level do you use for neutrons? What dose quality factor do you use when calculating the neutron dose (how do you determine the energy of neutron field, if applied)?	
Answer		Three categories of workers who might routinely receive significant doses to the lens of the eye need to be considered: 1. Workers exposed to a relatively uniform whole-body radiation field, shall not need any specific eye lens monitoring. The whole-body dosimeter will provide a good estimate of the eye-lens dose. This is the most frequent situation, and thus in most cases no special monitoring or procedures shall be required. 2. Workers exposed to weakly penetrating radiation in a non-uniform radiation field producing a significant dose to the lens but a low effective dose. This might be the case for contaminated areas or near high levels of directional dose-equivalent rate produced by beta radiation. 3. Workers exposed to highly non-uniform radiation fields in which the eyes may be especially exposed, such as the case of interventional radiologists and cardiologists who work close to the radiation source but with a part of their body protected with a lead apron or similar situations.	

		For monitoring of the lens of the eye, a depth of 3 mm is recommended by the ICRU (International Commission on Radiation Units and Measurements), so the operational quantity to be used is Hp(3) with a dosimeter worn as close as practicable to the eye. **In practice, however, the use of Hp(3) has not yet been implemented for routine individual monitoring.** In specific cases, when actual workplace radiation fields are known, monitoring of the lens of the eye using dosimeters calibrated for Hp(0.07) or Hp(10) could be acceptable. Hp(0.07) can be considered a good operational quantity for the lens of the eye for exposures to fields for which most of the dose is due to photons, including X rays. In such cases, it should be borne in mind that the uncertainty associated with the estimation of equivalent dose will be higher. Often, the worker is exposed to more than one type of radiation. Monitoring should therefore be undertaken for all types of radiation contributing more than about 1 mSv in a year, in line with the recommendation in the IAEA Safety Standards Series No. RS-G-1.1, but only in those cases where the total dose to the lens of the eye is estimated to exceed 5 mSv. In a mixed radiation field, more than one dosimeter may be necessary. The following monitoring levels are recommended: - 3/10th of the limit, - for the lens of the eye, if there is a reasonable probability to receive a dose in a single year greater than 15 mSv or in consecutive years greater than 6 mSv per year, - for doses levels expected to be lower than the recommended monitoring levels, a survey, demonstrating that the levels are not exceeded, should be sufficient, - for doses above the monitoring level, a monitoring period of one month is recommended.
53.	Country **Ukraine**	Article **General**	Ref. in National Report **Section 2.5.2, pages 40, 41**
Question		Is an international inspection of SSNF planned? If so, what is the timeframe? What is the design period of storage for SNF in SSNF/DSSNF? Are there any systems at SSNF of Slovakia that can control the temperature of not only the pool water, but also the SNF itself? Is a hydraulic accumulator (or other water supply systems) provided in case of emergency shutdown of the make-up pumps? Are there criteria to decide if SNF can be placed in SSNF/DSSNF? Where is SNF that cannot be put in SSNF stored?	

	What do you plan to do with fuel after the storage expiration date?
Answer	In the Interim spent fuel storage (NF ISFS) there is a planned inspection of SNF performed by IAEA and EURATOM inspectors with the presence of the National Regulatory Authority of the SR (NRA SR). Apart from this, in 2021 there is a mission ARTEMIS being planned in Slovak Republic, which includes also the SNF management. In 2000 reconstruction of civil structures, technological systems and facilities of the existing ISFS, inter alia aimed at increasing storage capacity and seismic reinforcement with the expected period of SNF storage of at min. 50 years (from the completion of reconstruction), i.e. until 2050. The so-called dry interim storage construction of which is currently under construction is considered for the period of time at minimum of 100 years. In the ISFS which is currently the only operated storage of SNF in Slovakia, the temperature of the spent nuclear fuel itself is not being monitored. Temperature of cooling media (of pool waters) is continuously being monitored and recorded in all SNF storage pools. The temperature of the cooling media is 30 - 40°C. There is an inspection stand for SNF to check the status of the SNF if required. Emergency make-up of water to storage pools of ISFS is solved by means of special connection for emergency supply by mobile equipment from surge water tanks with the volume of 3000 m^3, which are situated in the vicinity of ISFS. Criteria determining the possibilities of SNF storing in currently operated so-called „wet“ storage of SNF are stated in relevant safety documentation of the NF ISFS approved by the ÚJD SR. Criteria determining the possibility of SNF storage in the so-called „dry“ storage are stated in particular safety documentation in the spent nuclear fuel storage currently being built, which forms part of the documentation submitted to ÚJD SR within the project for building permission and documentation to subsequent licensing proceeding during the commissioning process. The original ISNF was built in the 80´s. At that time the preferred solution was wet storage. The selection of the SNF dry storage variant is derived from the feasibility study developed in 2013. The main advantages of dry storage of SNF are: - Lower risk of crash situations (compared to wet storage) resulting from the principle of storage (from dry warehouse SNF does not flow cooling water) - Dry storage does not require active cooling systems (or requires only at a minimal rate)

		- Low maintenance requirements - Easy operation and possibility to adapt to changed requirements - Low production of secondary waste All the SNF from the production of Slovak nuclear units which met the conditions for transport was safely transported and is stored in NF ISFS. During the present operation of the nuclear units in Slovakia, there was no such SNF which would not meet the conditions and criteria set forth in the approved safety documentation and could not be safely stored in ISFS. In valid project and approved safety documentation of ISFS there is no set maximum period of SNF storage. From the long-term final point of view the storage of SNF will be solved by the development of Deep geological repository of the SR.	
54.	Country **Ukraine**	Article **19**	Ref. in National Report **Section 5.3.3.4, p. 142**
Question		Is there a problem of increased salt content in the cooling pond during long-term operation, which worsens its ecological state (overgrowing by aquatic vegetation) and alters (worsens) the chemical composition of the secondary water? Have measures to reduce salt content been developed?	
Answer		This problem has not been identified for the NPPs in SR. The tertiary circuit of the cooling water of NPPs in SR is constantly replenished by river water, which is free from unwanted impurities. The chemical regime of the cooling water is regularly monitored and adjusted as necessary by dosing the chemical reagents. The area of chemical regimes of all water circuits in the NPP was also examined under the LTO program. No corrective actions have been defined for this area. Chemical regime of SC (Secondary circuit - enclosed) is monitored by online system on measurement of selected chemical parameters. The system was modified in 2017 (cation-exchange conductivity, conductivity-by SWAN, measurement of Na, etc.). There are no identified problems with biofilm formation recovery respectively with build-up of deposits on the internal surfaces of the SC tanks. In the circulation cooling water circuit (tertiary circuit - open), where there are cooling towers with ponds for the accumulation of cooling water, the cooling tower fill has been gradually replaced since 2018. The cooling circuit is monitored online, the concentration and salt content are maintained to prevent excessive build-up or increased corrosion rate. Regularly evaluated (1xweek) RI-Ryznar index, PSI-Puckorius index, LSI-Larsson-Skold index. On cooling towers, monitoring of deposit formation using monitoring baskets is introduced. Means for controlling the chemical regime are dosed into the cooling circuit. To this date, problems with excessive build-up or biofilm	

		formation in the open cooling circuit have not been identified. At regular intervals, during the outage, individual pools under the cooling towers are delayed and deposits of sludge and dirt from the bottom of the pools are mechanically removed.	
55.	Country **Ukraine**	Article **19.8**	Ref. in National Report **Section 2.6, p. 41-43**
Question		Question for information in section 2.6 "Technologies for RAW Treatment and Conditioning": Is there an incinerator in the radioactive waste treatment facility?	
Answer		In the nuclear facility Technologies for RAW Treatment and Conditioning in the site of Jaslovské Bohunice there is an incineration plant since 2000 to treat of very low level and low level radioactive waste.	
56.	Country **Ukraine**	Article **General**	Ref. in National Report **p. 39-40**
Question		As at 31 December 2018, the ISFS had 12 374 spent fuel assemblies in storage. The storage capacity of the Interim Spent Fuel Storage is 14 112 fuel assemblies. When the capacity of the ISFS will become critical for the operation of reactors? What technical safety measures were taken during the reconstruction of the current ISFS?	
Answer		Based on actual information the maximum storage capacity of current ISFS will be reached in 2023 and to this date all the works leading to increasing the storage capacity of the ISFS are oriented – the implementation of the investment project „The completion of building the storage capacities of SNF“ (dry technology). During the reconstruction of NF ISFS which was performed from 1997 to 2000, the following technical and safety measures had been adopted: - increasing the storage capacity of NF ISFS from 5040 to 14 112 pcs of SNF, - seismic reinforcement of structures and technological systems of NF ISFS to the level 8° MSK 64, - extension of lifetime of civil structures, technological systems and facilities of NF ISFS for the period of at min. 50 years from the time of reconstruction completion, - building the system of long-term monitoring of civil and technological part of NF ISFS including monitoring of status of SNF (inspection stand of SNF), - reconstruction of important technological, control, electrical and safety systems of radiation control, - adding a system of SNF tightness inspection,	

		- adding autonomous cooling circuit of SNF storage pool waters, - adding diesel-generator as another source to secure own supply of the NF ISFS, - adding a system of emergency make-up of pool water.	
57.	Country **Ukraine**	Article **General**	Ref. in National Report **p. 30**
Question		When is the commissioning of the center planned? How conditions are currently ensured for the team managing the consequences of severe accidents?	
Answer		The standby emergency response organization is composed of the personnel – emergency commission, including the response of severe accidents - of emergency control and support centres on continuous weekly standby service in 4/5 shifts, i.e. personnel of: 1. Emergency Control Centre (on /off site) 2. Technical Support Centre (on /off site) 3. Emergency Monitoring Centre (on/off site) 4. Emergency Information Centre (on/ off-site) 5. Personnel Protection and Logistic Centre These centres are located at both NPP EMO and EBO. Already the capacity and different areas to be considered in the design related to: o Radiological shielding o RP criteria and equipment o HVAC systems o Electrical supply o Personnel needs (foods, WC, medical provisions and others) o Expected autonomy of all features These centres (Bohunice and Mochovce) are seismically qualified. They supports the habitability for at least 72 hours without external support with equipment that facilitates the protection of personnel against the effects of radioactive substances, poisons and biological products. ECC has back-up electrical supply: - UPS (battery with high capacity – 20 kVA) - emergency diesel generator. Water supply is ensured from the water tanks In addition to these ERCs backup of ERCs in distance about 15 km from the NPP were build (in Trnava and in Levice towns). Criteria are identified when these backups are used **Civil Protection shelters for employees and other persons at the site are equipped with**: • filtering and venting equipment with filters intended for capture of radioactive substances	

		• water system with separate storage tanks for service/potable water • emergency illumination system • decontamination part • communication means • sanitary material, bottled water and PPE are prepared in the shelters • radiation equipment (to measure personnel and air monitoring system)	
58.	Country **Ukraine**	Article **General**	Ref. in National Report **Section 2.3.1, page 31**
Question		Please briefly describe the essence of the differences and the areas that they cover? Are there any contradictions between the two documents? Are the differences conservative?	
Answer		The differencies are minimal and not significant. Mainly on the bases of specific desing of plant.	
59.	Country **Ukraine**	Article **15**	Ref. in National Report **Para 4.6.2, p. 104-105**
Question		This section does not contain the following information: - maximum values of annual releases and discharges for individual radionuclides; - cases when annual release and discharge limits for individual radionuclides were exceeded. Questions: What is the contribution of each controlled radionuclide released and discharged into the environment to the annual effective dose of a representative individual? Have such calculations been performed?	
Answer		Reference levels of annual discharges are in chapter 6.4 of the National Report. § 91 Discharge of radioactive substances to the air and waters of the Act No. 87/2018 Coll. on radiation protection: Dose constraint of representative person for projecting, construction and operation of nuclear facility for one operator of nuclear facility is 0,25 mSv for calendar year; in discharges to the air and also to surface waters value of dose constraint of representative person is set particularly for individual discharges as follows: c) effective dose 0,2 mSv for calendar year in discharges to the air and d) effective dose 0,05 mSv for calendar year for discharges to surface waters.	

If there is more nuclear facilities in one area or region, which influence dose of representative person, this value relates to total irradiation from all nuclear facilities in the area or region.

Compilation sheet for reporting airborne discharges from nuclear power reactors
according to European Commission recommendation no. 2004/2/Euratom, 18 December 2003

Atmospheric discharges for year 2018

Country	Slovakia
Site	NPP Mochovce
Type	VVER 213
Air volume released (m^3)	5,30E+09

Radionuclide	Highest value of detection limit acctually achieved for key nuclides (Bq/m^3)	Activity discharged per year (Bq)	Commentary	
Noble gases				
Ar-41		1,89E+11	1,	
Kr-85	5,90E+02	8,86E+10	1,	11,
Kr-85m		2,25E+09	1,	
Kr-87		2,91E+11	1,	
Kr-88		9,97E+09	1,	
Xe-133	1,81E+01	6,57E+09	1,	12,
Xe-133m		3,38E+09	1,	
Xe-135		8,26E+09	1,	
Paticulates				
Cr-51		1,26E+06	2,	
Mn-54		1,35E+06	2,	
Co-57		8,66E+03	2,	
Co-58		1,24E+06	2,	
Fe-59		2,06E+05	2,	
Co-60	8,27E-06	1,42E+06	2,	10,
Zn-65		5,48E+04	2,	
Se-75		2,07E+04	2,	
Sr-89		7,52E+02	3,	
Sr-90	1,39E-08	3,26E+03	3,	10,
Zr-95		4,57E+05	2,	
Nb-95		7,84E+05	2,	
Ru-103		4,54E+04	2,	
Ru-106/Rh-106		4,15E+04	2,	
Ag-110m		1,94E+06	2,	
Sb-122		2,29E+04	2,	
Sb-124		1,56E+05	2,	
Cs-134		1,59E+04	2,	
Cs-137	1,82E-04	3,96E+04	2,	13,
Ce-141		1,80E+04	2,	
Ce-144		6,06E+04	2,	
Hf-181		1,45E+05	2,	
Pu-238		2,81E+01	4,	
Pu-239+Pu-240	5,92E-08	1,68E+02	4,	13
Am-241	5,92E-08	1,13E+02	4,	13
Iodine				
I-131 - total		8,67E+05		
- particulates	1,23E-04	2,06E+04	2,	13,
- gaseous	8,09E-05	8,46E+05	5,	13,
I-132		1,54E+07	5,	
I-133		1,51E+06	5,	
Tritium H-3	2,40E-01	5,17E+11	6,	10,
Carbon C-14 - total	7,10E-02	3,83E+11		10,
-inorganic		1,93E+10	7,	
-organic		3,64E+11	7,	
Se-75 - gaseous		1,55E+06	5,	
As-76		3,85E+06	5,	

Commentary:
1, The yearly balance from continual total beta noble gas monitor was recalculated according the results of gamma spectrometry measurements of high pressure bottle samples sampled 1 per week
2, The weekly samples of aerosol filters sampled by high volume sampler were measured by HPGe gamma spectrometry system
3, The quartely samples of aerosol filters were measured by radiochemical analyses
4, The quartely samples of aerosol filters were measured by alpha spectroscopy system
5, The weekly samples of impregnated active coal sampled by high volume sampler were measured by HPGe gamma spectrometry system
6, The samples were trapping in silikagel and measured by liquid scintillation counter
7, The samples were trapping in NaOH solution and measured by radioachemical analyses
10, All measured values were above detection limit, detection limit was calculated
11, All measured values were below detection limit, detection limit is from gamma spectrometry measurements of high pressure bottle samples
12, Detection limit is from gamma spectrometry measurements of high pressure bottle samples
13, The highest value of measured detection limit

Liquid discharges, 2018

Country	Slovakia
Site	Bohunice
NPP	**V2**
Type of reactors	VVER 213
Number of units	2
Operation mode	operation
Operator	Slovenské elektrárne, joint-stock company
Monitoring period	1 year
Water volume released (m3)	1,88E+04
River	Váh, Dudváh

Radionuclide	Highest values of detection limit MDA (Bq/m^3)	Activity discharged per year (Bq)	Commentary
Tritium H-3 (Váh)	1,20E+04	1,06E+13	1,
Tritium H-3 (Dudváh)	1,20E+04	7,40E+08	1,
Other radionuclides			
Cr-51	5,96E+03	3,23E+06	2,
Mn-54	7,90E+02	1,64E+06	2,
Co-57	5,83E+02	2,85E+05	2,
Co-58	7,86E+02	1,28E+06	2,
Fe-55	NA	NA	
Fe-59	1,54E+03	8,18E+05	2,
Co-60	8,25E+02	2,94E+06	2,
Ni-63	NA	NA	
Zn-65	1,84E+03	1,01E+06	2,
Se-75	8,31E+02	3,72E+05	2,
Sr-89	1,67E+02	4,07E+07	3,
Sr-90	1,67E+00	1,49E+11	3,
Zr-95	1,32E+03	8,14E+08	2,
Nb-95	7,90E+02	8,61E+05	2,
Ru-103	6,96E+02	3,95E+05	2,
Rh-106	7,60E+03	3,52E+06	2,
Ag-110m	7,29E+02	9,14E+05	2,
Sb-122	NA	NA	
Sb-124	7,10E+02	8,74E+05	2,
Sb-125	NA	NA	
I-131	8,19E+02	5,49E+05	2,
Cs-134	7,50E+02	4,01E+05	2,
Cs-137	8,36E+02	1,58E+06	2,
Ba-140	NA	NA	
La-140	NA	NA	
Ce-141	1,01E+03	5,60E+05	2,
Ce-144	4,34E+03	2,22E+06	2,
Hf-181	8,31E+02	1,10E+03	2,
Pu-238	8,33E-01	4,21E+03	4,
Pu-239+Pu-240	8,33E-01	1,91E+04	4,
Am-241	8,33E-01	7,21E+03	4,
Cm-242	NA	NA	
Cm-243	NA	NA	
Cm-244	NA	NA	
Gross alpha		3,05E+04	

Commentaries:
1, The activity has been measured by liquid scintillation spectroscopy
2, The activity has been measured by gamma spectroscopy
3, The activity has been measured by beta counter after radiochemical analyses
4, The activity has been measured by alpha spectroscopy, after radiochemical analyses
NA Not measured
If measured value for any identified nuclide was below the detection limits,
one half of the detection limit has been considered as a value of activity released.

NPP Bohunice: In the year 2018 a representative person lived in the sector No. 75 Pečeňady. The annual effective dose was **0,194 µSv,** it was **0,388 %** from the annual effective dose limit for the public **50 µSv /year.**

NPP Mochovce: In the year 2018 a representative person lived in the sector No. 64 Nový Tekov. The annual effective dose was

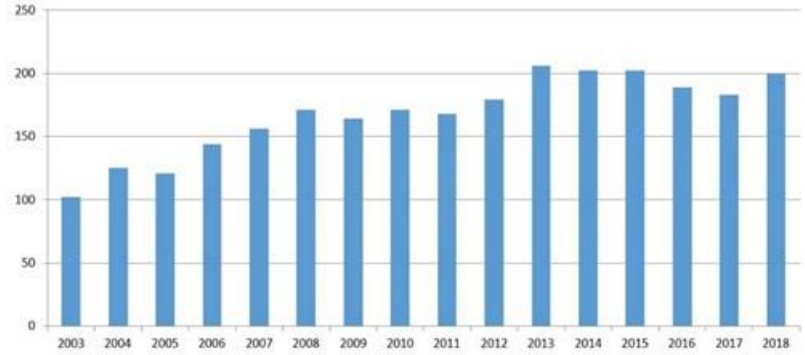
<table>
<tr><td colspan="2"></td><td colspan="2">0,288 µSv, it was 0,58 % from the annual effective dose limit for the public 50 µSv /year.</td></tr>
<tr><td>60.</td><td>Country
Pakistan</td><td>Article
16</td><td>Ref. in National Report
4.7.2.1</td></tr>
<tr><td colspan="2">Question</td><td colspan="2">Reference section 4.7.2.1, Slovak Republic may like to share the radii of emergency planning zones defined around its nuclear power plants.</td></tr>
<tr><td colspan="2">Answer</td><td colspan="2">Emergency planning zones radii are mentioned in Section 4.7.4, page 118/231. They are:

20 km for NPP Mochovce
21 km for NPP Bohunice

Emergency planning zones are determined according to Atomic Act, para 28.8 and Emergency Planning Decree No. 55/2016 Coll., para 18.</td></tr>
<tr><td>61.</td><td>Country
Pakistan</td><td>Article
7</td><td>Ref. in National Report
3.1.3.3</td></tr>
<tr><td colspan="2">Question</td><td colspan="2">Reference section 3.1.3.3, It is mentioned that analysis of inspection activity contains statistical evaluation of findings which is performed to establish distribution and frequency of findings from the inspection activity. Slovak Republic may like to share whether during this statistical evaluation the findings of inspection are categorized on the basis of their safety significance?</td></tr>
<tr><td colspan="2">Answer</td><td colspan="2">Statistics concerning the number of the inspections performed per sites:
<table>
<tr><th rowspan="2">Nuclear facility</th><th colspan="3">Planned</th><th rowspan="2">Unplanned</th><th rowspan="2">Summarry</th></tr>
<tr><th>Routine</th><th>Special</th><th>Team</th></tr>
<tr><td>JAVYS (V1)</td><td>4</td><td>8</td><td>2</td><td>2</td><td>16</td></tr>
<tr><td>SE – EBO (V2)</td><td>4</td><td>16</td><td>13</td><td>5</td><td>38</td></tr>
<tr><td>SE – EMO 1,2</td><td>5</td><td>18</td><td>13</td><td>2</td><td>38</td></tr>
<tr><td>SE – MO 34</td><td>4</td><td>6</td><td>2</td><td>15</td><td>27</td></tr>
<tr><td>JAVYS – VYZ</td><td>4</td><td>15</td><td>3</td><td>0</td><td>22</td></tr>
<tr><td>VUJE</td><td>0</td><td>2</td><td>0</td><td>0</td><td>2</td></tr>
<tr><td>Nuclear materials & RW transport</td><td>0</td><td>5</td><td>0</td><td>6</td><td>11</td></tr>
<tr><td>NM Record Keeping and Checking</td><td>0</td><td>27</td><td>0</td><td>15</td><td>42</td></tr>
<tr><td>Others inspections</td><td>0</td><td>4</td><td>0</td><td>1</td><td>5</td></tr>
<tr><td>Summary</td><td>21</td><td>101</td><td>33</td><td>46</td><td>201</td></tr>
</table></td></tr>
</table>

	Topics of the inspections: • Decommissioning and RAW management • Aircraft special operations permitting (in the scope of Physical protection) – airspace LZ P1, check compliance with the directive on the operation of the drones • personal training and qualification • physical protection • Coordination for emergency response in the whole area for emergency exercise • Operation and Fire safety • Safety systems surveillance test • Fresh fuel/spent fuel storage • Modification documentation control • Emergency planning – monitoring systems performance inspection • Technical Specifications/Limits and Conditions of operation: recording • Post-Refuelling inspection • Maintenance, testing, calibration and revisions of I&C selected equipment • Fulfilment of the action plan for LTO • on-line transfer of technological, radiation and meteorological data • earthquake resistance upraising • PSA study • Containment integrity test, regular overhaul • Inspection of the processes of elaborating, assessment, approval, verification and validation, update and review of Emergency Operating Procedures (EOP) • QA system control • Coordination for emergency response in the whole area for emergency exercise • Preparedness for commissioning • safety culture • integrated management system • cyber security • RAW transport • spent fuel storage • Fresh fuel transport • nuclear materials

Number of inspections of ÚJD SR from 2013 to 2017



Number of findings / year

2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
94	71	56	57	44	68	26	26	34	32	47

The increase in 2018 are in areas of operational documentation & quality assurance at EBO 3&4 and EMO 3&4 (under construction)

Types of findings

Type of finding	Description / Significance	Amount in Number	Amount in %
Training and activity of personnel (TP)	Deficiencies in documentation, Compliance with qualification requirements, Errors and mistakes of personnel	6	12,8
Nuclear safety (NS)	Finding of new significant risk, other deficiencies	5	10,6
Operational documentation (OD)	Other deficiencies, Uncompleted rules	13	27,7
Quality assurance (QA)	Deficiencies in: management process, evidence Violations of quality regulations	19	40,4
Safety culture (SC)	Deficiencies in cooperation with state authority, Other deficiencies in safety culture	3	6,4
Equipment status (ES)	Other deficiencies	1	2,1
TOTAL		47	100

Safety significance of inspection findings:

- **Category 1**: findings may be or they are with a low impact on nuclear safety, or they have indirect effect to nuclear safety. Findings doesn´t jeopardize the barriers of defence in depth.
- **Category 2:** findings may be or they are with a middle impact on nuclear safety, or repeatedly occurred Category 1. Findings doesn´t jeopardize the barriers of defence in depth, but the barrier has been compromised.
- **Category 3:** findings with a high impact on nuclear safety or repeatedly occurred Category 2. Incidence of these findings led to the damage one of the barriers of defence of depth. The level of vigilance of licensee is low.

62.	**Pakistan**	Article **7**	Ref. in National Report **3.1.3.2**
Question		Reference section 3.1.3.2, Slovak Republic may like to elaborate the CAF (Common Assessment Framework) of ÚJD SR and its utilization to improve the activities of the authority.	

Answer	The CAF model, i.e. Common Assessment Framework, is an internationally recognized tool dedicated specifically for self-assessment in public administration offices. It was developed based on analysis performed by the European Foundation of Quality Management (EFQM), the Speyer Academy (organizing the Speyer Quality Award for the public sector in the German-speaking European countries) and the European Institute of Public Administration in Maastricht. The CAF model is based on the premise that excellent results in organizational performance towards citizens/customers, people and society are achieved through leadership driving strategy and planning, through the people, partnerships, resources and processes. It provides a simple and easy to use evaluation concept for public administration. It represents a tool for understanding quality management techniques and their use within the organization. Application/implementation of the CAF model contributes to improvement of performance and effectiveness of the organization, focusing on the activities for the benefit of the citizens, employees and society. ÚJD SR implemented the CAF model to its quality management system and have already used it several times in self-assessment process of its management system efficiency with the aim of further improvement.		
63.	Country **Czech Republic**	Article **14**	Ref. in National Report **Pages 95-96/Section 4.5.2**
Question	4.5.2 Safety Assessment of Nuclear Power Plants Probabilistic Safety Assessment (PSA) COMMENT: A majority of nuclear sites have more than one unit. Consequently, units at the same site share common resources, structures and systems such as grid, ultimate heat sink, etc. The events at the Fukushima nuclear power plants draw attention to the need for consideration of risks from multiple nuclear reactor units co-located at a site. A traditional single-unit PSA approach might not be adequate for assessing the total radiological risk to the pub¬lic from NPP sites comprised of multiple sources. Therefore, the integrated Multi-Unit PSA or Site-Level PSA is currently being discussed in the world. This approach in¬cludes consideration of the potential for concur¬rent accidents involving multiple co-located radi¬ological sources. In the IAEA document “Multiunit Probabilistic Safety Assessment, 2019 (Draft)”, a Case Study provided by RELKO LTD (Slovakia) is presented in Appendix II.		

		QUESTION: Is the implementation of Multi-Unit PSA (Site-Level PSA) for NPP Bohunice or NPP Mochovce currently under consideration in Slovakia?	
Answer		Slovakia is actively involved in the development of the integrated Multi-Unit Probabilistic Safety Assessment (PSA) or Site-Level PSA (IAEA document "Multiunit Probabilistic Safety Assessment, 2019 (Draft)"). However, Multi-Unit PSA is not required by regulatory body, yet.	
64.	Country **Czech Republic**	Article **19**	Ref. in National Report **Section 5.3.5.2, p. 147**
Question		Could you please provide us more information on the involvement of the regulatory authority in the OEF process?	
Answer		ÚJD SR has access to most important databases and inspectors can check status of the NPP, reported problems, decisions, solutions, etc. In terms of legislation and also beyond the scope of the legislation NPP reports to ÚJD SR on: occurrence of events, event analyses, corrective actions, failure committees discussions, etc. Also ÚJD SR performs inspections and assess offered informations truthfulness, analyses accuracy, corrective actions, etc. **Extraordinary Failure Commission** The Extraordinary Failure Commission (hereinafter only as „EFC") is convened as soon as information is obtained from the Plant Shift Supervisor about the occurrence of an operational event meeting the criteria to convene EFC under the appropriate directive. The role of EFC is to identify the direct cause of the event, define immediate corrective action and set forth action for further operation of the unit. Minutes of the EFC convened with a view to immediately discussing the occurred operational event is submitted to ÚJD SR. Minutes of the EFC is a preliminary report on the operational event. The final analysis, including the root cause analysis, shall be prepared by the team in charge of investigation into the event as a standard report of an expert group. **Notification of a NI Operational Event to the Regulatory Authority** The operator notifies ÚJD SR of failure category operational events as per Decree No. 48/2006 Coll. by making written reports on failures summarily for the appropriate calendar month by the 20th day of the following calendar month. The operator shall be obliged to deliver ÚJD SR the original information on an incident or accident in writing within 45 minutes from its identification by fax, e-mail or in person	

		according to the time of incident or accident occurrence so that the information is demonstrably reported to the ÚJD SR. Also part of the information is OE preliminary assessment according to the INES. The licensee shall have internal regulations ensuring fulfilment of the reporting obligation as required by the ÚJD SR Decree No. 55/2006 (amended by ÚJD SR Decree No. 35/2012) and No. 48/2006 (amended by ÚJD SR Decree No. 32/2012. Final report on the operational event, in the category incident or accident, is submitted by the licensee to ÚJD SR as a summary for the relevant calendar month by the 20th day of the following calendar month by submitting failure reports.	
65.	Country **Czech Republic**	Article **16.1**	Ref. in National Report **Section 4.7.6**
Question		Can you explain in more detail the EMO 2018 Interoperability Exercise? What positive and negative experiences do you have from this exercise?	
Answer		Interoperability Exercises in general are performed at least once in three years for each site, where nuclear power plants are operated. Their aim is to exercise and check interoperability of On-site and Off-site Emergency plans. A total of 1519 persons were involved in the interoperability exercise "EMO 2018" on the territory of Emergency Planning Zone of NPP Mochovce 1 and 2 and NPP Mochovce 3 and 4 which is under construction. Persons involved belonged to crisis management authorities and their crisis staffs at the District Offices of Nitra, Levice, Nové Zámky and Zlaté Moravce, including selected institutions, legal entities, units of Integrated Rescue System and emergency response units of the NPP operator employees and those of contractors working at the site. As for experiences, there is a high degree of preparedness on-site as well as commitment to gradually improve it. There is a clear understanding, how possible emergencies would be solved on neighbouring construction site as well as training of relevant contractors and subcontractors. Lessons identified are described in more detail in an answer to question 15. 1. The following findings are identified: 1.1 Communication - insufficient transmission of information between the Operational Center of the Police Force Coordination Center of Integrated Rescue System in Nitra, caused by time jumps between operational time in exercise and real time for conduct of staff and practical activities during the exercise. **Corrective measures taken on point no. 1.1** At the level of the Regional Directorate of the Police Force in Nitra, personnel responsible for the communication flow during	

		an emergency situation due to a nuclear accident underwent specialized training. 1.2 Insufficient material equipment of Police force units assigned to operate in the area affected by a radiation event. 1.3 The outcomes of the exercise state that it is necessary to equip Emergency Reception Center at the University Hospital in Nitra with additional instrumentation for measurement of surface and spatial radioactivity, personal dosimeters and personal protective equipment for personnel which provides emergency medical care to patients contaminated by radiation. **Corrective measures taken on points no. 1.2 and 1. 3** Government Resolution No. 597 of 13 December 2017 has adopted a Proposal for a Procedure to achieve a state of preparedness of the Slovak Republic for the protection of public health and the provision of health care after the occurrence of a nuclear or radiation event. In order to provide and supplement the equipment for healthcare providers under the authority of the Ministry of Health and units of the Integrated Rescue System under the authority of the Ministry of the Interior. Financial resources in the budget of units of the Integrated Rescue System. 1.4 Insufficient staffing at the Civil Protection Control Chemical Laboratory in Nitra to fulfill the tasks of radiation monitoring and dosimetric control in the affected area. **Corrective measures taken on point no. 1.4** The staff of the Civil Protection Control Chemical Laboratories in Slovenská Ľupča and Jasov will be assigned to ensure the fulfillment of radiation monitoring tasks in the affected area for the duration of the emergency. 1.5 Insufficient staffing with qualified personnel of the Crisis Staff of The District Office of the Nitra Region in order to ensure the 24-hour operation of the crisis staff secretariat in case of an emergency caused by a nuclear accident. **Corrective measures taken on point no. 1.5** The District Office has taken organizational measures to assign employees from other departments of the District Office to fulfill the tasks of the Secretariat of the Crisis Staff of the District Office after the occurrence of an emergency or crisis situation.
66.	Country **United Kingdom**	Article **12**	Ref. in National Report **4.3.2 – p. 82**
Question		In section 4.3.2 on page 82, the report describes various ‘system of rules and instruments’ used to prevent human errors. In the	

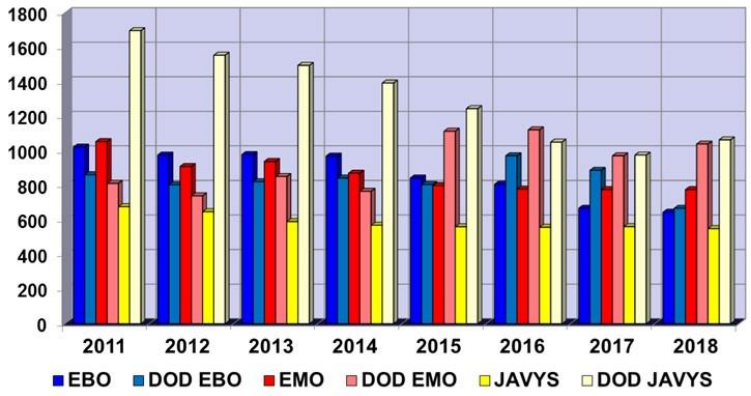
	sub-section 'Other measures applied by the operator to prevent human errors', the process of 'independent review' is described, where one individual is undertaking a task whilst another is watching. However, the report does not discuss a potentially more robust process: 'Independent Verification' (as called in the UK), where one individual undertakes the task and another checks the work some time later. Please report if 'Independent Verification' is a tool used to detect and correct human error and how tasks are analysed to understand which of the 'rules and instruments' would be most effective in preventing the consequences of human error.
Answer	Human performance improvement program was implemeted In the Slovak NPP. One part of human performance improvement program are Error prevention tools. Human Performance Tools are used regularly for any work activity, regardless of the task's risk or complexity and without prompting. These tools establish the foundation for excellent human performance. Human Performance Tools section provides the worker with error-prevention methods that depend on the work situation, the needs of the task or job, or risk involved. Fundamental human performance tools act as the basic building blocks of many conditional human performance tools. *Verification practices* refers broadly to two tools—independent verification, and peer-checking—that involve a second person to confirm the actions and results achieved by a performer. While peer-checking focuses on preventing a mistake by the performer, independent verification focus more on confirming the correct configuration, or status, of equipment. Procedures usually specify independent verification requiring the signature or initials of both individuals. For the sake of convention, the term "verification" refers to the confirmation of the *condition* of equipment consistent with the status required by a procedure. **Independent verification** is a series of actions by two individuals working independently to confirm the condition of a component after the original act that placed it in that condition. The independent verification process confirms the condition of equipment required to be in a particular condition to maintain the plant's physical configuration required for safe operation. Otherwise, adverse consequences could result later if the improper condition remains undetected. Independent verification can only be used when an immediate, adverse consequence of a mistake by the performer cannot occur, because independent verification catches errors after they have been made, not before or during. The independent verification process tends to have a higher probability of catching an error than peer checking, because the verifier's knowledge of the system, component, or work situation is unaffected by the performer. The verifier physically checks the component's condition without relying on

	observation of or verbal confirmation by the performer. Preferably, the verifier is not directly involved in the activity the performer is involved in. Independence exists when the verifier has freedom of thought from the performer. Separating the acts of the performer and verifier in time and by distance promotes freedom of thought. Separation in time exists such that the verification occurs after initial alignment of the component (or initial verification). Separation by distance is established when audible or visual cues of either person are not detectable by the other person. That means the performer, while establishing the desired condition, does not communicate with the verifier, or the verifier is not in a position to either observe or hear the performer. The specific method used to perform independent verification will likely vary depending on the type of component, such as air-operated valves, manual-locked valves, fuses, and circuit breakers. In many cases, independent verification occurs as each designated procedure step is performed. However, it may be desirable to perform all independent verifications at the conclusion of the evolution, if no hazard exists in doing so. Regardless of the approach taken, the procedure is followed as written. **When the Tool is used:** • During system alignments of safety-related or important equipment • During placement and removal of clearance tags • During restoration of equipment to service after maintenance • During alignment of fire protection systems or components • During installation and removal of temporary modifications such as jumpers, hoses, and so forth As-left position of reactor protection system process instrumentation after maintenance • When changes in equipment status could adversely impact core damage frequency. **Peer-checking** is a series of actions by two individuals working together at the same time and place, before and during a specific action, to prevent an error by the performer. The purpose of peer checking is to *prevent* an error by the performer. Error prevention is the principal function of the peer checking technique. peer checking augments self-checking by the performer—it does not replace it. peer checking involves two people (performer and peer) self-checking in parallel, agreeing together that the action is the correct action to perform on the correct component. Similar to concurrent verification but less formal, this technique takes advantage of a fresh set of eyes not trapped by the performer's task-focused mind-set. The peer, an individual familiar with the activity, may see hazards the performer does not see.

	Individuals often confuse peer checking and vice versa. Although both techniques help the performer avoid error for a specific action, the primary focus of concurent verification is status control of the equipment, while the primary focus of peer checking is the performer's action. Peer checking focuses more on the correct *act* than the *result* of that act, although the peer is more effective as a checker if he or she is aware of the intended results. Peer checking is usually requested by the performer to help him or her avoid a mistake. Peer check is typically specified in procedures or work packages and other guiding documents at vital steps in the sequence of activities. Intended to be informal, people can apply peer-checks at any time to any work situation. Peer-checks can be requested by anyone, and performed by anyone familiar with the task and formally trained in the peer check technique. In some cases, management establishes specific actions or classes of actions that require mandatory peer check. It is not recommended that peer check be mandated for all human actions. Eventually, because of human nature, the peer check practice will become mechanical, possibly leading to inattentive performance. Applying peer check to relatively insignificant actions as well as important ones will likely degrade people's rigor with the technique over time. Many activities are not necessarily important. The potential exists that peer check may not be applied rigorously when it really counts during important steps. Recurring use of peer check for all actions, regardless of their risk, will dilute the effectiveness of the tool in the long run. **When the Tool is used:** • critical steps • reactivity manipulations • comparisons of test data with acceptance criteria • start or stop of major components • return to or removal from service • identification of correct parts or correct component before • maintenance • during installation of similar components or parts that could be • interchanged or installed incorrectly • error-likely situations related to important actions.

67.	Country **United Kingdom**	Article **8**	Ref. in National Report **3.1.4 – p. 63**
Question		Section 3.1.4 on page 63 of the report states: "PHA SR issues various types of decisions, binding opinions, guidelines for the elimination of identified deficiencies, directives, recommendations, guidelines and expert guidance in the field of radiation protection." Section 3.1.1 on page 46 of the report states: "It [PHA SR] specifies conditions and authorized limits in nuclear installations and workplaces, for the operation of which the permit was issued."	

	However, it is unclear how regulatory bodies (such as PHA SR and ÚJD) interact to ensure the correct balance of safety. Please describe how (or if) regulatory bodies are required to co-operate to reach balanced decisions at nuclear installations and how such interactions are managed.
Answer	The interaction between the PHA SR and ÚJD SR depends on the character of proceedings in which both authorities are involved. The Act No. 575/2001 Coll. on Organization of Governmental Activities and on Organization of the Central State Administration in Section 35 and the following sets out the tasks and responsibilities of central bodies of state administration. Further specification of respective competencies of regulatory bodies is set out in particular laws. The Atomic Act in Section 4 (1) defines the competencies of ÚJD SR in the state supervision over the peaceful use of nuclear energy, physical protection and in emergency planning concerning nuclear installations. Pursuant to Section 6 (1) of the Act No. 87/2018 Coll. on Radiation Protection, the PHA SR is in charge of the state supervision over the radiation protection in the country. Given the complexity of supervision required in relation to the use of nuclear energy, there exist situations where the two regulatory bodies cooperate within their respective competencies. For instance, in administrative proceedings pursuant to Section 140a (1) a) of the Act No. 50/1976 Coll. on Spatial Planning and Building Regulations, the PHA SR acts as the concerned authority, while ÚJD SR is the competent construction authority in accordance with Section 121 (2) e). As such, the PHA SR issues a binding opinion that ÚJD SR as the competent construction authority must take into consideration when granting a decision. Cooperation between the two regulatory bodies is further prescribed in case of an emergency situation. Pursuant to Section 33 of the Atomic Act, regulatory bodies occasionally jointly conduct inspections in accordance with the Inspection Plan of ÚJD SR. For example, in the area of emergency preparedness the cooperation is maintained thanks to regular meetings and communication of responsible persons. Three times in recent years, employees of one institution participated in inspection activities of the other. Most recently, a common inspection, led by the PHA SR, was performed in the area of emergency preparedness of nuclear installation in construction, Mochovce 3 and 4. Also, Nuclear Regulatory Authority regularly (at least once a year) hosts meeting of relevant state authorities – including PHA SR – and license holders, where participants discuss issues of common interest and coordinate emergency planning actions.

68.	Country **United Kingdom**	Article **15**	Ref. in National Report **4.6 (p. 103)**
Question		Section 4.6 deals with radiation protection. However, unlike many countries reports, no employee/contractor dose information is provided and no statement is made to declare that dose uptake does not exceed statutory limits. Please provide dose information for employees and contractors involved in activities covered by the convention for the years 2016-2018 (inclusive).	
Answer		§ 15 "*Dose limits"* of the Act No. 87/2018 Coll. on radiation protection: Dose limits are sorted as limits for: d) workers, e) apprentices or students, f) public. Limit of effective dose for workers relates to the sum of all annual effective doses from external exposure and annual effective doses from intake of radioactive substances from all sources of ionising radiation to which workers was exposed during working activity leading to exposure in one employer or concurrently in several employers. Limit of equivalent dose for workers relates to the sum of all annual equivalent doses from external exposure and of annual equivalent doses from intakes of radioactive substances from all sources of ionising radiation to which workers was exposed during working activity leading to exposure in one employee or concurrently in several employers. Dose limits for workers in calendar year are: i) effective dose 20 mSv, j) equivalent dose in eye lens 20 mSv, k) equivalent dose in skin 500 mSv, it relates to average dose on the area of any 1 cm^2 regardless of the size of irradiated area of skin, l) equivalent dose in extremities 500 mSv.  **Figure No. 1 Number of workers (2011 – 2018)**	

Note: EBO – NPP Bohunice own staff; DOD EBO – NPP Bohunice outside workers; EMO – NPP Mochovce own staff; DOD EMO – NPP Mochovce outside workers; JAVYS – Nuclear and Decommissioning Company own staff; DOD JAVYS - Nuclear and Decommissioning Company outside workers.

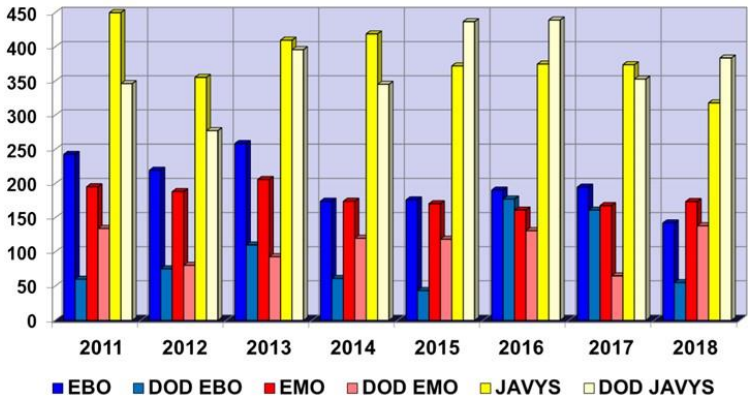


Figure No. 2 Collective effective doses [man.mSv] (2011 – 2018)

Note: EBO – NPP Bohunice own staff; DOD EBO – NPP Bohunice outside workers; EMO – NPP Mochovce own staff; DOD EMO – NPP Mochovce outside workers; JAVYS – Nuclear and Decommissioning Company own staff; DOD JAVYS - Nuclear and Decommissioning Company outside workers.

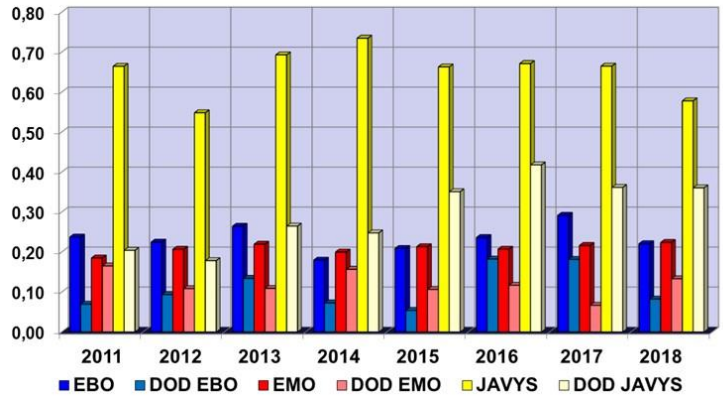


Figure No. 3 Average effective doses [mSv] (2011 – 2018)

Note: EBO – NPP Bohunice own staff; DOD EBO – NPP Bohunice outside workers; EMO – NPP Mochovce own staff; DOD EMO – NPP Mochovce outside workers; JAVYS – Nuclear and Decommissioning Company own staff; DOD JAVYS - Nuclear and Decommissioning Company outside workers.

Limits of exposure for public relate to, if it is a limit of effective dose, the sum of all annual effective doses from external exposure and of effective doses from internal exposure, and if these are the limits of equivalent doses, to the sum of all annual equivalent doses. Into the exposure of public there are counted the doses coming from all ways of exposure of an individual from population, from all sources of ionising radiation and all

		registered and authorised activities with sources of ionising radiation which come to account. Dose limits for public in calendar year are: d) effective dose 1 mSv, e) equivalent dose in eye lens 15 mSv, f) equivalent dose in skin 50 mSv, it relates to average dose on the area of any 1 cm^2 regardless of the size of irradiates area of skin. § 91 *"Liquid and Gaseous Discharges"* of the Act No. 87/2018 Coll. on radiation protection: Dose constraints for representative person for projecting, construction and operation of nuclear facility for one operator of nuclear facility is 0,25 mSv for calendar year; dose constraint for representative person is set particularly for individual discharges as follows: e) effective dose 0,2 mSv for calendar year in gaseous discharges and f) effective dose 0,05 mSv for calendar year in liquid discharges. If there are more nuclear facilities in one area or region, which influence dose of representative person, this value relates to total exposure from all nuclear facilities in the area or region. **NPP Bohunice**: In the year 2018 a representative person lived in the sector No. 75 Pečeňady. The annual effective dose was **0,194 µSv,** it was **0,388 %** from the annual effective dose limit for the public **50 µSv /year.** **NPP Mochovce:** In the year 2018 a representative person lived in the sector No. 64 Nový Tekov. The annual effective dose was **0,288 µSv,** it was **0,58 %** from the annual effective dose limit for the public **50 µSv /year.** The calculated peak value of the 50(70) year individual effective dose render for a representative person for the individual years is incomparably lesser (~0,2-0.3 µSv) as the base radiologic limit stated by the Public health authority in the radiologic release permit for the Mochovce NPP (50 µSv). Currently the plant draw ~0,5 % from the value. This value is also multiple times lesser than the public radiologic burden caused by the natural environment.
69.	Country **United Kingdom**	Article **19**	Ref. in National Report **5.3.5.1 (p. 148)**
Question		Section 5.3.5.1 on page 148 defines the meaning of an 'Operational Event'. However, it does not describe how such events are classified according to their significance. Please describe how operational events are classified according to their	

		significance and the licensee's and regulator's actions that occur according to each level of significance.	
Answer		Section 5.3.5.1 contains an excerpt from the legislation (Atomic Act), which lists the criteria of the most significant operational events for which the legislative requirements must be met. These are: failure, incident and accident. As chartered in ÚJD SR Decree 55/2006 Coll. on details concerning emergency planning nuclear incident or accident are classified in three levels. The characteristics of each severity classification are: a) 1 st degree - "alert" - for the condition upon which performance of safety functions is threatened or compromised, safety barriers are compromised or non-functioning, radioactive substance release is imminent or already occurred, which may lead or leads to unacceptable irradiation of persons within building structures of the nuclear facility, and in the case of adverse development of the event, release of radioactive substances outside of the nuclear facility premises is imminent. b) 2 nd degree - "state of emergency within the nuclear facility area" (On Site Emergency)- for a condition that may lead or leads to a release of radioactive substances outside of the nuclear facility building structures and to its area, c) 3 rd degree –"state of emergency within the nuclear facility surroundings" (Off Site Emergency)- for a condition that may lead or leads to a severe release of radioactive substances to the nuclear facility surroundings. The initial assessment and classification of the event is always performed by the shift engineer on the basis of the initial conditions, taking into account the nature of the initiation event, the state of the nuclear installation and the prognosis of the development of the radiation situation. Subsequently, based on the state of the technological equipment and the evaluation of the state of the barriers, the source term is determined and protective measures are determined.	
70.	Country **United Kingdom**	Article **18**	Ref. in National Report **5.2.1 (p. 134)**
Question		In section 5.2.1 on page 134, the report states: "Building structures, technological systems and components of relevance to nuclear safety of the nuclear installation shall be designed, manufactured, assembled, and tested so as to ensure their reliable function." However, the report does not provide any more detail. Please describe the graded approach to quality management, such that the level of quality system is kept in proportion with the structure, system and components nuclear safety significance.	
Answer		Requirements for the quality of selected facilities are described in Section 8 of the Decree of the Office no. 431/2011 Coll.	

		Fulfilment of the quality requirements for selected facilities is documented in the accompanying technical documentation. Requirements for accompanying technical documentation of selected facilities are given in Annex no. 8 of the Decree of the Office no. 431/2011 Coll. Part of the quality requirements for selected facilities is the inclusion in the safety class. According to Section 3 (1) of Decree of the Office no. 430/2011 Coll. And internal quality documents of SE, a. s. a graded approach is applied for the categorization of selected facilities: "Selected equipment must be identified and subsequently categorized based on their function and importance for nuclear safety into safety classes I to IV. Classification of selected facilities is performed in a graduated manner, so that Class I includes selected facilities with the highest demands on reliability, qualification, quality assurance, number and scope of inspections, and related documentation. Selected facilities must be designed, engineered, manufactured, operated and maintained so that their quality and reliability corresponds to their classification."	
71.	Country **United Kingdom**	Article **17**	Ref. in National Report **5.1.2 (p. 131)**
Question		In section 5.1.2 on page 131, the report sets the withstand limit for horizontal peak ground acceleration of the Mochovce NPP (current and planned) as 0.15g, whereas for the Bohunice site is it set at 0.25g. However, the report does not describe the reasons for the difference, despite the Bohunice site being of older construction. Please describe the reasons for the difference.	
Answer		Jaslovské Bohunice and Mochovce are two different sites, i.e. located in different parts of the country. Therefore they are different from geological, as well as seismological point of view. The seismic hazard value is currently determined by the seismic peak ground acceleration value (in the horizontal direction): for the Mochovce NPP site PGAH = 0.15g, for the NPP V2 Jaslovské Bohunice site PGAH = 0.344g. The reasons for the different value of PGAH are: 1. Different geological conditions of the background. NPP Mochovce is based on rock background (volcanic). NPP V2 Jaslovské Bohunice has a background of sediments (loess, sand-clay and gravel sediments). 2. Different seismological conditions of localities. Considering the different geological and seismological development in the both sites and based on the investigation of historical seismic events in the both surroundings of NPPs the different seismic peak ground acceleration values were determined.	

72.	Country **United Kingdom**	Article **12**	Ref. in National Report **4.3.3 (p. 85)**
Question		Section 4.3.3 on page 85 mentions actions plans for the improvement of safety culture, which are evaluated on a yearly basis against safety culture indicators. However no further details are provided. Please provide details of the typical contents of the safety culture action plans and the safety culture indicators used to evaluate them.	
Answer		According to the process model of SE, a.s., safety culture improvement is a part of the sustainable improvement process. Responsibilities and procedures of the safety culture improvement are described in details in relevant directive and guidelines. In accordance with this documentation, an action plan of safety culture improvement presents one the means for safety culture monitoring and evaluation. The action plan is a set of measures resulting from the regular safety culture reviews (such as safety culture assessment, interviews with workers, event analyses, independent reviews such as WANO peer reviews or IAEA OSART missions etc.). Based on the review findings which identify weaknesses of the safety culture, the corrective measures are proposed in form of tasks with deadline and clear responsibility. The measures can be as follows: workshop aimed at relevant safety culture attribute, safety culture oriented training for specific category of employees, benchmarking activities, changes of the safety culture improvement process etc. Actually, the action plans are approved by the plant managers. The action plans are evaluated on yearly basis and the results are submitted to plant manager meeting. The set of safety culture indicators are used to monitor and evaluate the safety culture improvement process. The indicators are evaluated quarterly and linked to the relevant attributes of the safety culture (WANO document PL 2013-1 Traits of healthy nuclear safety culture). Examples of currently valid indicators: number of employees awarded for exemplary safety behaviour, implementation of conservative approach in work management process, duration of cause analyses for selected events etc.	
73.	Country **United Kingdom**	Article **8**	Ref. in National Report **3.1.3.5 (p. 62)**
Question		In section 3.1.3.5 on page 62, discussing the regulatory body, the report refers to the "Implementation of Knowledge Management" project which is currently underway. However, it provides no details of the activities undertaken to pass on the knowledge between experienced and less-experienced staff. Please provide details of the main activities that facilitate the knowledge transfer.	
Answer		Knowledge domains map was developed on the base of the SARCoN methodology and the "Four Quadrant Model" presented in SRS No. 79, issued by IAEA. The same four groups	

		were used in the context of ÚJD SR knowledge management to divide the whole body of knowledge that a regulatory body deals with into four main groups: • Knowledge about the legal, regulatory and organizational basis, • Knowledge about technology, • Knowledge about regulatory body practices; and • Knowledge about personal and behavioural issues. Knowledge mapping and assessment tools have been developed to identify the knowledge needed to perform individual management system processes. As one part of the assessment, there is an assessment of the current and required level of knowledge at three levels - basic, standard and expert. This makes it possible to identify the gap between the current level of knowledge and the required level and to adapt the training plan of individual employees. Another part of the mapping process is a knowledge loss risk assessment and identification of employees with critical knowledge. As a risk assessment tool was used a risk matrix to define the level of risk by considering the category of probability or likelihood against the category of consequence severity. One criterion used was the importance of knowledge in the range if 1 to 5, where level 1 represents common knowledge and competences with low impact on the ÚJD SR's main tasks, knowledge is documented, little preparation and training is required, there is substitutability. Level 5 represents critical and unique knowledge that affect the performance of the ÚJD SR's core tasks, critical knowledge is not documented, 3-5 years of training and preparation is required, there is no immediate substitutability. Second criterion used was the risk of knowledge loss in the range if 1 to 5, where level 1 represents more than 6 years until change of job, leaving office or retirement. Level 5 represents less than 2 years to change work position, leaving ÚJD SR or retirement and no immediate substitutability available. As a result, there are three levels of knowledge loss risk – low, middle and high with a list of predefined activities and retention plans to prevent knowledge loss.
74.	Country **United Kingdom**	Article **8**	Ref. in National Report **3.1.3.3 (p. 58)**
Question		In section 3.1.3.3 on page 58, discussing the regulatory body, the report states “For those inspection activities, for which no inspection procedures exist, there are individual procedures for inspection being developed.” However, no further details are provided. Please describe how many inspection activities do not yet have developed procedures, what proportion of the total that	

		represents, and when completion of the full suite of procedures is expected.	
Answer		The inspections are performed in compliance with the requirements from internal documentation regarding inspection activities. Based on this for every inspection the procedure has to be elaborated. For the inspections conducted regularly, there is a list of permanent procedures, which are updated regularly. If the first kind of inspection is conducted, the individual procedure will be elaborated. If there is an assumption to repeat the inspection, the individual procedure will be integrated among permanent procedures. There is no list of inspections which do not have procedures. As it is explained above, the individual procedure is elaborated only in case of the first kind of inspection. For example, in the year 2019 individual procedures for following inspection were developed: - Nuclear facilities cyber security - Nuclear security culture EBO site seismic monitoring and the operation of the local seismic net.	
75.	Country **United Kingdom**	Article **7**	Ref. in National Report **3.1.2.3 (p. 51) & 5.3.2 (p. 139)**
Question		In section 5.3.2 on page 139, the report states that limits and conditions are submitted to ÚJD for approval under the atomic act. In section 3.1.2.3 on page 51, the report states that a new atomic act is being drafted, with a view (inter alia) of reducing the number of issued decisions regarding modifications at Nuclear Installations. However, no details are given on the proposed system. Please provide details on the proposed system and also whether it will allow ÚJD to take a proportionate approach to all decisions made, or a smaller subset.	
Answer		The system of decisions is not yet finalised as the drafting phase of the new Atomic Act is still ongoing. The idea is to adjust the list of licenses in terms of reducing the number of issued decisions concerning the modifications at nuclear installations. Under the current legal order, a separate license is required for the radioactive waste management or nuclear materials management, as well as for the commissioning or operation of a nuclear installation. It is desired, that in the new Atomic Act the aforementioned licenses would be merged together. Furthermore, the new Atomic Act would change the current approval procedure for the changes at a nuclear installation. Under the current legal regime, all modifications at a nuclear installation must undergo an approval procedure. The new Atomic Act would introduce a new system that would not require an approval procedure for all modifications at a nuclear installation. Instead, an inspection of	

		whether the modifications are being conducted pursuant to the manual of managing changes would be introduced.	
76.	Country **Mexico**	Article **19**	Ref. in National Report **Operation**
Question		As a result of the analysis of events in Slovak nuclear installations; what have been the main root causes and what actions have been taken to avoid recurrences?	
Answer		The analysis is performed typically by using the TapRoot methodology, resp. the HPES methodology and the causes are typically the causes where these methodologies lead our analysts based on the identified facts. Typical distribution of the causes in the SE is 30% of them is related to equipment reliability (of which the most significant are project and maintenance) and 70% of them human performance related (the most significant contributors in order human engineering, management systems, procedures, and communication). Typical measures go to areas of training, procedures, processes, but commonly also to practical aspects of implementation of the processes etc.	
77.	Country **Mexico**	Article **18**	Ref. in National Report **Design and construction**
Question		What is the regulator and licensee policy to incorporate new technologies at the Slovak nuclear installations?	
Answer		Based on Atomic Act the licensee is obliged to ensure systemic analysis of the latest knowledge gained through research and development, and use these to improve the safety of its nuclear installation and its activities. The process of incorporation of the new technologies at the nuclear installations is subject to approval. The licensee has to submit an application containing all relevant information from nuclear safety point of view. The scope of submitted information is listed in ÚJD Decree No. 431/2011 Coll.	
78.	Country **Mexico**	Article **17**	Ref. in National Report **Siting**
Questio69n		What is the impact of the human, industrial and transportation activities in the Slovak nuclear installations and its emergency plans?	
Answer		In order to ensure the safety of the population due to the effects or consequences of emergencies, population protection (off site emergency) plans are developed at local, regional and national level, which contain measures to protect the population, health, property and environment depending on the type of emergency. The basis for the development of the population protection plan (off site emergency) is the document "Analysis of the Territory of the Slovak Republic in Terms of Possible Emergencies"	

	(hereinafter referred to as "analysis") prepared in accordance with the Act of the National Council of the Slovak Republic no. 42/1994 Coll. on Civil Protection of the Population. The analysis is prepared by: • district offices at local level, • regional district offices at regional level, • Ministry of Interior of the Slovak Republic at national level. The analysis includes: (a) the geographical, demographic and economic characteristics of the territory; (b) the potential risks of emergencies due to: – extreme weather and climate phenomena, – slope deformations and seismic activity, – floods and floods in case of dam structural failure, – fires and explosions (forest fires, fires and explosions of industrial nature) – accidents in all modes of transport, – the release of a dangerous substances The state administration authorities responsible for establishment of population protection plans (the so-called off site emergency plans) in the regions concerned by emergency planning for accident at a nuclear facility in cooperation with licence holders. The cohesion of the off site emergency plans with the on site emergency plan of the nuclear facility is ensured by exchange of information on the contents of the respective protection plans (on ionizing radiation and its effects on human health and environmental impact, possible events at nuclear installations, their classification according to severity and possible consequences to residents and the environment, methods of protection in the event of radioactive releases, methods of notification and warning in the event of an accident or accident at a nuclear installation, contact details of state administration authorities, local state administration, mayors and mayors data of persons responsible for emergency response activation…). Selected parts of the protection plans related to the interaction of on site emergency plan and off site emergency plan shall be **examined** (exercised) every three years as part of the cooperation exercises. As chartered in ÚJD SR Decree (55/2006 Coll. On details concerning emergency planning in case of nuclear incident or accident, there is an obligation to consider description of other risks, that should include: a) their overview, b) the scope of their influence on nuclear safety, c) a proposed solution of consequences caused thereby and links to the respective parts of the on-site emergency plan.

		On site emergency plan defines and describes the following risks that may have a negative impact on nuclear safety: 1. violation of the physical protection of the plant, terrorist attack 2. fire 3. explosion 4. occurrence of toxic or flammable gases 5. ecological accidents 6. extreme external events such as earthquakes, storms, storms, floods, extreme cold, ... 7. nuclear or radiological event at multiple units or sites In the case of such event, the basic activities of emergency response organization shall be defined in the internal emergency plan. Specifically, the licensee has these events regulated in the regulations for dealing with abnormal and emergency situations, procedures of the physical protection units, fire regulations, environmental regulations, plans and emergency procedures.	
79.	Country **Mexico**	Article **16**	Ref. in National Report **Emergency preparedness**
Question		What is the level of paticipation of the population in the vecinity of the Slovak nuclear installations in the emergency drills?	
Answer		To great extent, participation of population within the Emergency planning zone territory is just simulated. However, it is usually a part of interoperability exercise (that takes place once in three years at each site) that schools or similar institution (e.g. retirement home) is being evacuated. A total of 1 138 persons were involved in the cooperation exercise in 2018 in the Nuclear Power Plant V2 in Jaslovské Bohunice within the emergency planning zone with 21 km radius around the NPP. The persons involved belonged to crisis management bodies and their crisis staffs from the Trnava region, including selected institutions, legal entities, units of Integrated Rescue System and emergency response units of the NPP operator. A total of 1519 persons were involved in the cooperation exercise “EMO 2018” in the territory of NPP Mochovce 1 and 2 and NPP Mochovce 3 and 4 (under construction) within the emergency planning zone 20 km radius around the NPP. The persons involved belonged to crisis management authorities and their crisis staffs at the District Offices of Nitra, Levice, Nové Zámky and Zlaté Moravce, including selected institutions, legal entities, units of Integrated Rescue System and emergency response units of the NPP operator employees of contractors working at the site. As part of the training practical activities were performed: evacuation, decontamination of persons, reception of evacuees, provision of emergency accommodation and supplies, evacuation of pupils from several primary schools and employees of NPP and contractors involved in EMO 3 and 4 NPP construction.	

80.	Country **Mexico**	Article **14**	Ref. in National Report **Assessment and verification of safety**

Question

Page 100 says that nuclear safety is verified by ÚJD SR by inspection activity and approval, or assessing the documentation of license holders. Which are the main results arisen from these regulatory inspection activities?

Answer

Statistics concerning the number of the inspections performed per sites:

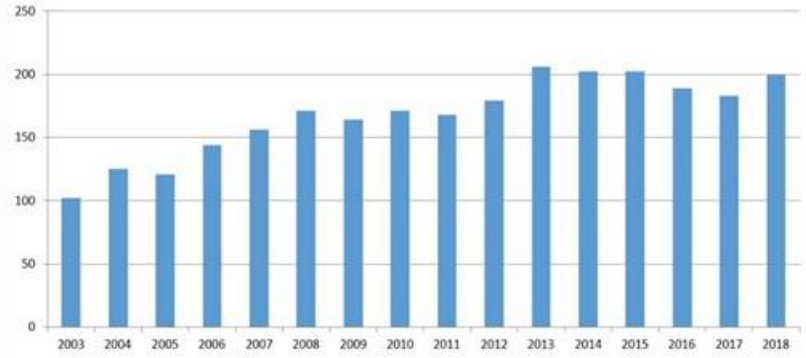
Nuclear facility	**Planned**			**Unplanned**	**Summarry**
	Routine	**Special**	**Team**		
JAVYS (V1)	4	8	2	2	**16**
SE – EBO (V2)	4	16	13	5	**38**
SE – EMO 1,2	5	18	13	2	**38**
SE – MO 34	4	6	2	15	**27**
JAVYS – VYZ	4	15	3	0	**22**
VUJE	0	2	0	0	**2**
Nuclear materials & RW transport	0	5	0	6	**11**
NM Record Keeping and Checking	0	27	0	15	**42**
Others inspections	0	4	0	1	**5**
Summary	**21**	**101**	**33**	**46**	**201**

Topics of the inspections:

- Decommissioning and RAW management
- Aircraft special operations permitting (in the scope of Physical protection) – airspace LZ P1, check compliance with the directive on the operation of the drones
- personal training and qualification
- physical protection
- Coordination for emergency response in the whole area for emergency exercise
- Operation and Fire safety
- Safety systems surveillance test
- Fresh fuel/spent fuel storage
- Modification documentation control
- Emergency planning – monitoring systems performance inspection
- Technical Specifications/Limits and Conditions of operation: recording
- Post-Refuelling inspection
- Maintenance, testing, calibration and revisions of I&C selected equipment
- Fulfilment of the action plan for LTO

- on-line transfer of technological, radiation and meteorological data
- earthquake resistance upraising
- PSA study
- Containment integrity test, regular overhaul
- Inspection of the processes of elaborating, assessment, approval, verification and validation, update and review of Emergency Operating Procedures (EOP)
- QA system control
- Coordination for emergency response in the whole area for emergency exercise
- Preparedness for commissioning
- safety culture
- integrated management system
- cyber security
- RAW transport
- spent fuel storage
- Fresh fuel transport
- nuclear materials

Number of inspections of ÚJD SR from 2013 to 2017



Number of findings / year

2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
94	71	56	57	44	68	26	26	34	32	47

The increase in 2018 are in areas of operational documentation & quality assurance at EBO 3&4 and EMO 3&4 (under construction)

Types of findings

Type of finding	Description / Significance	Amount in Number	Amount in %
Training and activity of personnel (TP)	Deficiencies in documentation, Compliance with qualification requirements, Errors and mistakes of personnel	6	12,8
Nuclear safety (NS)	Finding of new significant risk, other deficiencies	5	10,6
Operational documentation (OD)	Other deficiencies, Uncompleted rules	13	27,7
Quality assurance (QA)	Deficiencies in: management process, evidence Violations of quality regulations	19	40,4
Safety culture (SC)	Deficiencies in cooperation with state authority, Other deficiencies in safety culture	3	6,4
Equipment status (ES)	Other deficiencies	1	2,1
TOTAL		47	100

		Safety significance of inspection findings: • **Category 1**: findings may be or they are with a low impact on nuclear safety, or they have indirect effect to nuclear safety. Findings doesn´t jeopardize the barriers of defence in depth. • **Category 2:** findings may be or they are with a middle impact on nuclear safety, or repeatedly occurred Category 1. Findings doesn´t jeopardize the barriers of defence in depth, but the barrier has been compromised. • **Category 3:** findings with a high impact on nuclear safety or repeatedly occurred Category 2. Incidence of these findings led to the damage one of the barriers of defence of depth. The level of vigilance of licensee is low.	
81.	Country **Mexico**	Article **13**	Ref. in National Report **Quality assurance**
Question		Page 92 says that "The activities and the roles of ÚJD SR in exercising state regulation over nuclear safety in the field of quality assurance, are given by the Atomic Act". How often these regulatory audits or inspections are performed? Which are the main results of these regulatory activities?	
Answer		Quality assurance inspections of license holders are generally carried out at three-year intervals to verify the established quality management system of the license holder. The result of the inspection shall be either a record or a protocol drawn up on the basis of the inspection results. The protocol shall be drawn up where inspections have revealed discrepancy by the ÚJD SR inspectors and corrective measures need to be established to ensure that the approved documentation is in conformity with the relevant legislation and related management documentation (e. g. Integrated Management System).	
82.	Country **Mexico**	Article **13**	Ref. in National Report **Quality assurance**
Question		Page 91 says that license holders carry out audits of quality management systems of selected suppliers affecting nuclear safety of nuclear installations. What is the periodicity or how often these audits are performed?	
Answer		These are the responsibility of the licensee in accordance to the established ISO 9001 system. This obligation also results from Annex no. 1 (ac) of Decree no. 431/2011 Coll.which states that "the quality management system of the applicant and the license holder must include inspections of suppliers and inspections of activities performed by suppliers, including the possibility of participation of the inspectors of the regulatory body in these inspections".	

		It depends on requirements of valid contracts with particular supllier and results of previous audits. It is defined in IMS procedures that the audit has to be performed before the signing of contract (in time pressure in exceptional cases, the audit has to be performed up to 30 days (at least 60 days) after the closing of contract). The validity of audit is max. 3 years (2 years for contractors of MO34 completion project). After the 3 years period, the supplier follow-up audit is performed only in case if the supplier has been again included into the Annual plan, or there is still valid contract with supplier. If some deficiences are identified during the audit, the contractor has the obligation to take corrective/preventive measures. Their fulfillment is checked during the follow-up audit (after 1 or 3 years). Information is saved in the Database of audited/potential suppliers of SE (in case of deficiences with the evaluation of "included with comments or conditionally included" depending on significancy of deficiences) and the result is also provided to procurement department and included into the Vendor rating system.	
83.	Country **Mexico**	Article **12**	Ref. in National Report **Human Factors**
Question		Page 86 says that the regulatory activity resulting from the Atomic Act is carried out in the field of qualification and training of staff of the licensee through regular inspections. Which are the main results arisen from these inspections? Which are the weak points and improvement areas?	
Answer		Inspection activities in the field of training and qualifications are revealing deficiencies in the maintenance of the full-scope simulator or in the training activities finishing. Weaknesses are in inadequate planning of organizational changes by non-professional attitude of top managers. Statistics concerning the number of the inspections performed per sites:	

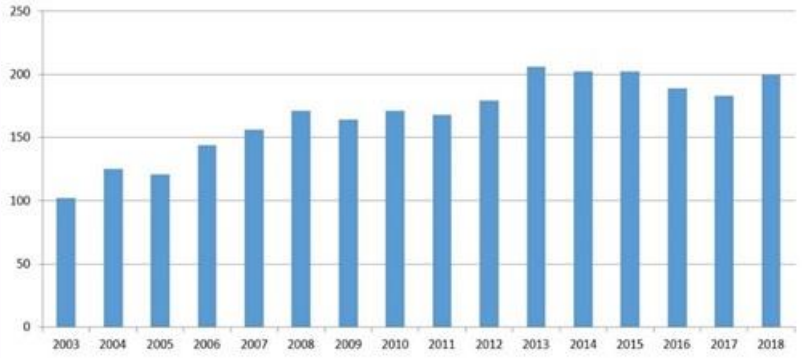
Nuclear facility	Planned			Unplanned	Summarry
	Routine	Special	Team		
JAVYS (V1)	4	8	2	2	**16**
SE – EBO (V2)	4	16	13	5	**38**
SE – EMO 1,2	5	18	13	2	**38**
SE – MO 34	4	6	2	15	**27**
JAVYS – VYZ	4	15	3	0	**22**
VUJE	0	2	0	0	**2**
Nuclear materials & RW transport	0	5	0	6	**11**
NM Record Keeping and Checking	0	27	0	15	**42**
Others inspections	0	4	0	1	**5**
Summary	**21**	**101**	**33**	**46**	**201**

Topics of the inspections:

- Decommissioning and RAW management
- Aircraft special operations permitting (in the scope of Physical protection) – airspace LZ P1, check compliance with the directive on the operation of the drones
- personal training and qualification
- physical protection
- Coordination for emergency response in the whole area for emergency exercise
- Operation and Fire safety
- Safety systems surveillance test
- Fresh fuel/spent fuel storage
- Modification documentation control
- Emergency planning – monitoring systems performance inspection
- Technical Specifications/Limits and Conditions of operation: recording
- Post-Refuelling inspection
- Maintenance, testing, calibration and revisions of I&C selected equipment
- Fulfilment of the action plan for LTO
- on-line transfer of technological, radiation and meteorological data
- earthquake resistance upraising
- PSA study
- Containment integrity test, regular overhaul

- Inspection of the processes of elaborating, assessment, approval, verification and validation, update and review of Emergency Operating Procedures (EOP)
- QA system control
- Coordination for emergency response in the whole area for emergency exercise
- Preparedness for commissioning
- safety culture
- integrated management system
- cyber security
- RAW transport
- spent fuel storage
- Fresh fuel transport
- nuclear materials

Number of inspections of ÚJD SR from 2013 to 2017



Number of findings / year

2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
94	71	56	57	44	68	26	26	34	32	47

The increase in 2018 are in areas of operational documentation & quality assurance at EBO 3&4 and EMO 3&4 (under construction)

Types of findings

Type of finding	Description / Significance	Amount in Number	Amount in %
Training and activity of personnel (TP)	Deficiencies in documentation, Compliance with qualification requirements, Errors and mistakes of personnel	6	12,8
Nuclear safety (NS)	Finding of new significant risk, other deficiencies	5	10,6
Operational documentation (OD)	Other deficiencies, Uncompleted rules	13	27,7
Quality assurance (QA)	Deficiencies in: management process, evidence Violations of quality regulations	19	40,4
Safety culture (SC)	Deficiencies in cooperation with state authority, Other deficiencies in safety culture	3	6,4
Equipment status (ES)	Other deficiencies	1	2,1
TOTAL		47	100

Safety significance of inspection findings:

- **<u>Category 1</u>**: findings may be or they are with a low impact on nuclear safety, or they have indirect effect to nuclear safety. Findings doesn´t jeopardize the barriers of defence in depth.

		• **Category 2:** findings may be or they are with a middle impact on nuclear safety, or repeatedly occurred Category 1. Findings doesn´t jeopardize the barriers of defence in depth, but the barrier has been compromised. • **Category 3:** findings with a high impact on nuclear safety or repeatedly occurred Category 2. Incidence of these findings led to the damage one of the barriers of defence of depth. The level of vigilance of licensee is low.	
84.	Country **Mexico**	Article **General**	Ref. in National Report **Summary**
Question		Which are the lessons learned arisen from the emergency drills? Which are the areas to be improved?	
Answer		There are many lessons identified in emergency drills and exercises. From the point of view of regulatory body, there are three areas, which fall under our responsibility: 1) Emergency response center of regulator (NRA SR). Main lesson learned of recent years was to improve closeness to reality of the exercises (e.g. using the same data at NPP and at regulator) and to improve understanding of calculation outcomes of decision support systems and of differences between systems used by NPPs and regulator. With this in mind, NPP operator and regulator currently run a program of comparisons of decision support systems outcomes. As of February 2020, three such comparisons took place with different scenarios. 2) Emergency response of nuclear installations others than NPPs. Main lessons learnt were that there is a necessity to improve ability of their emergency response to timely notify off-site authorities and to deal with legislative requirement to exercise response of each nuclear installation. This is mainly due to lower number of personnel and higher number of different installations. Nuclear installations currently updated their On-site emergency plans and they will perform trainings with these new plans. 3) Emergency response of nuclear power plants. Main lessons identified were connected with a need to improve communication between NPPs and regulator and lack of resources of some off-site response organizations charged with dealing with emergency situations. Improvements on communicating major changes during an emergency at NPP were included in internal procedures. Lack of resources is being dealt with as described in an answer to question 15. 4) Communication with international community. Main issue was non-functioning connection between WebECURIE and	

		USIE services. Also, Slovakia takes part in discussions concerning improvement of communication during emergencies, based on EU BSS Directive. Slovakia communicated with both European Commission and the IAEA to support their restarting of Connect functionality between WebECURIE and USIE. Slovakia takes part in HERCA WGE group debates and also took part in regional meeting with aim to discuss necessary improvements of communication during emergencies in July 2019 in Budapest. 5) Selected parts of the protection plans related to the interaction of on site emergency plan and off site emergency plan shall be **examined** (exercised) every three years as part of the cooperation exercises.	
85.	Country **Hungary**	Article **19**	Ref. in National Report **Page 139**
Question		"Compliance with L&Cs by the license holder, as well as demonstrable familiarization of employees with the impact of L&Cs on nuclear safety is subject to inspections by ÚJD SR." What is the scope of the mentioned inspections? Please provide more detailed information regarding what kind of inspections ÚJD SR plans to perform. Especially what kind of inspections will ÚJD SR perform after the licensee implemented the new L&Cs?	
Answer		Observance of L&Cs as well as demonstrable familiarization of employees with L&Cs are subject of the planned inspections (inspection`s period is 1/year). There are special inspections focused on the checking of the L&Cs expenditure statistics, L&Cs changes, checking of the L&Cs and checking of the records from the familiarization of employees with L&Cs. All L&Cs changes are subject to the approval by ÚJD SR. Application for approval submitted to ÚJD has to fulfill all legislative requirements as they set in the ÚJD decree No. 431/2011 Coll. (the decree is accessible on the ÚJD web site: www.ujd.gov.sk also in English language). Except special inspections, the checking of the L&Cs is also the part of team inspections focused on after outage and the routine inspections conducted by site inspectors.	
86.	Country **Hungary**	Article **11**	Ref. in National Report **Page 78**
Question		"The validation of the multi-unit scenario of SAMG guides has been completed, and work is under way to prepare additional support documentation for the decision-making of the operators." Can you please provide more detailed information regarding what the support documentation is based on and what it will mostly focus on?	

Answer	The support documentation is based on the variant analysis of the radiation consequences. Analysis scenarios predict different personal interventions during SA solving in compliance with SAMG strategy.