# ANSWERS TO QUESTIONS

# ON

# NATIONAL REPORT

# OF THE SLOVAK REPUBLIC

## COMPILED ACCORDING TO THE TERMS OF THE JOINT CONVENTION ON THE SAFETY OF SPENT FUEL MANAGEMENT AND ON THE SAFETY OF RADIOACTIVE WASTE MANAGEMENT

**BRATISLAVA**
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| 1. | Country<br>Czech Republic | Article<br>General | Ref. in National Report<br>V.4, 158; V.5, 159 |
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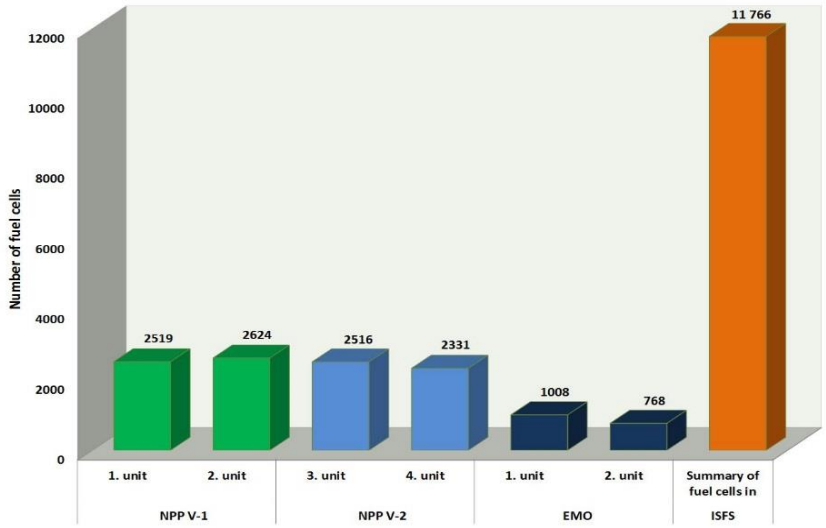
| Question/ Comment | Please check format of data published in Appendix V.4, V.5 | | |
| Answer | On page 154 NS in English version published on the website of the ÚJD SR, it is necessary to translate a description of the figure into English language and to correct an index at volume units in appendices.<br><br>Annex IV. Inventory of Stored Spent Nuclear Fuel (tŤK)<br>(as at 31 December 2016)<br><br>  <br> | | |
| 2. | Country<br>Japan | Article<br>General | Ref. in National Report<br>(@page7,8,34) |
| Question/ Comment | The report states that the National repository of low level radioactive waste (RU RAO) has been in operation since 1999 at the Mochovce site. (@page7)<br>But the report also says that the first module of repository for very low level waste for disposal of VNAO from the decommissioning of NPP A1 was commissioned in 06/2016.(@page 8)<br>On the other hand, at page 34, it states that the National Repository for Radioactive Waste (put into operation in 2001). These repositories seem two different facilities. Is this understanding correct? | | |
| Answer | National repository of RAW consists of the low level waste (LLW) repository and the very low level waste (VLLW) repository. Commissioning of the LLW repository was permitted since 1999 by a Decision of the ÚJD SR (double-row I). Subsequently, in 2001 the ÚJD SR permitted a permanent operation of the double-row I of the LLW repository. The erection of the VLLW repository – 1st stage – commenced at the end of 2014. The first module of the VLLW repository was put into operation in June 2016. It involves two storage structures within one nuclear facility. | | |

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| 3. | Country<br>Japan | Article<br>General | Ref. in National Report<br>page 12(B.1 No.5) |
| Question/ Comment | The report states development of national deep repository for direct disposal of spent nuclear fuel and radioactive waste at page 12(B.1 No.5). Please elaborate what technical evaluation and public acceptance activity did the Slovak Republic conduct for the candidate of the repository. | | |
| Answer | At present, the Slovak Republic is at initial stage in the process of selection of the location of the deep repository and thus it has not performed the full range of activities in relation to the repository location yet, neither the activities towards public in candidate locations. | | |
| 4. | Country<br>Japan | Article<br>General | Ref. in National Report<br>page 30(D.2.3) |
| Question/ Comment | The report states that the resultant product is also fibre-concrete container with conditioned RAW with cementation at page 30(D.2.3). Please elaborate the reason why the Slovak Republic does not adopt drum but "fibre-concrete container".<br>Please provide information for following questions: what is the benefit of fibre-concrete container comparing drum?; how long is the lifetime of fibre-concrete container?; is it verified by test?; are the strength enough for container for solid radwaste? | | |
| Answer | Decision to use the fibre-concrete container was based on safety assessment of storing the specific type of low level wastes, mainly from A1 NPP. The fibre-concrete container has got a guaranteed lifetime/integrity of at minimum 300 years, high stability and capability to prevent release of radioactive nuclides into environment. Lifetime and quality tests (falling-weight tests, etc.) were verified/performed in specialized and accredited workplaces. | | |
| 5. | Country<br>Japan | Article<br>General | Ref. in National Report<br>page30 (D.2.4) |
| Question/ Comment | The report states that the new IS RAW will be used exclusively for storage of Solid or solidified RAW prior to their further treatment at facilities within JAVYS (storage of liquid RAW or SNF will not be allowed in the proposed facility). That means IS RAW should treats relatively high activity waste. Please elaborate the design policy for the IS RAW such as protection of dispersion of radioactive particles, monitoring of the environment inside the building. | | |
| Answer | In IS RAW, monitoring of radioactive aerosols in storage working environment is provided, as well as monitoring of the equivalent dose rate in the premises of the storage. On the basis of the design and performance of the stated measurement system, decisions of regulatory authorities had been issued for operation. | | |
| 6. | Country<br>Japan | Article<br>General | Ref. in National Report<br>(p12B.1 No2) |
| Question/ Comment | The report starts that for SNF management it is not considered to export SNF for reprocessing to abroad and a subsequent return of products from reprocessing | | |

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| | (Pu,U,high level radwaste) back to SR. (p12B.1 No2) And it also says that the whole production of SNF from the NPP A1 was exported to the former USSR and then to the Russian Federation until 1999.Small portion of SNF from WWER-440 reactors was exported to the former USSR prior to 1987.<br>Did the product from reprocessing above SNF returned from Russia Federation? How did those product disposed? |
| Answer | Stated SNF was transported to former USSR and consequently to Russian Federation on the basis of relevant agreements without returning any products from the SNF reprocessing back to the Slovak Republic. |

| 7. | Country<br>Japan | Article<br>5 | Ref. in National Report<br>103 |
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| Question/ Comment | Please provide more information or examples how to increase safety of fuel management facilities in response to the recommendations by the SR regulators and IAEA. | | |
| Answer | The company JAVYS, a.s. performs all the activities of the SNF management in compliance with valid legal regulations of the SR and EU as well as recommendations from the Slovak regulatory authorities respecting the related IAEA documents. An example is given in Chapter D.1.2 which describes safety measures implemented at the ISFS. | | |

| 8. | Country<br>United States of America | Article<br>7 | Ref. in National Report<br>Section K.1 pg. 141 |
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| Question/ Comment | For the storage facility at Bohunice, there are plans to add dry storage capacity. What type of dry storage technology is planned for this facility? Will an environmental impact analysis be conducted to examine the effects of this new construction, allowing for public input? | | |
| Answer | To expand the SNF storage capacity in Jaslovské Bohunice, the technology of dry storage will be implemented by storing of SNF in hermetically sealed canisters stored in fibre-concrete underground boxes with natural cooling air ventilation.<br>The Environmental Impact Assessment was performed within an EIA process which commenced in June 2014. The process of environmental impact assessment continued by trans-boundary assessment. Public discussion on assessment of possible effects of the proposed activity was carried in Budapest in compliance with the Espoo Convention. Hungary and Austria actively participated in the process.<br>The assessment process has been finished by issuing the Final Statement of the Ministry of Environment of the SR No. 1604/2016 – 3.4/hp dated 11.2.2016.<br><br>Completion of SNF storage capacity shall serve for the long-term storage of SNF produced in all nuclear power plants in the Slovak Republic.<br><br>On the basis of the results on the environmental impact assessment, "Enlargement of the SNF storage capacity by dry storing with structural connection to the existing ISFS building using the storage containers (canisters) for the maximum of 85 pcs of SNF | | |

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| | assemblies placed into the fibre-concrete storage modules of SNF storage" was recommended for the purposes of storage capacity completion.<br><br>Description of the proposed SNF storage<br><br>The building of dry interim storage will be connected to the existing ISFS through connecting corridor to the operational part thus forming one closed building. Storing part of the wet storage will not be structurally affected. Technical solution of dry storage will be performed by structural interconnection with the existing civil building of the ISFS. By storing the SNF in the existing ISFS storage pools the active cooling necessary for high burn-up spent fuel will be provided. After necessary period of cooling it will be possible to efficiently secure its long-term storage by dry method by means of passive cooling system.<br><br>Dry storage system in building constructions („vault" system) is considered as an underground fibre-concrete construction of the cell type. Heat removal will be secured by natural convection of air through the entry and exit inner walls of the cells and the vent stack. Shielding will be secured by a construction of the storage cell itself. Each storage cell will contain several metal canisters where the spent nuclear fuel will be stored. Vertical metal canisters will be placed in concrete modules on beds adjusted for the cooling air circulation preventing the cumulation of potential condensed water. The upper part of these canisters will be equipped with massive stopper embedded in the upper vaulted construction designed to be resistant to loads when loading the canister to the cell as well as in case of heavy object fall into the storage area. Canister will be represented by metal storage cylinders with the inner structure consisting of absorption capsules of the same construction as in case of compact containers with defined number of fuel assemblies. Absorption capsules will ensure both fixation of placing the fuel assembly as well as undercriticality of the stored fuel. The fuel assemblies will be stored in dry inert atmosphere and canister shall ensure the following main fucntions:<br><br>• safe retention of radioactive substances;<br>• securing undercriticality of the stored fuel;<br>• securing fuel cooling and residual heat removal. |

| 9. | Country<br>Japan | Article<br>9.6 | Ref. in National Report<br>113 |
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| Question/ Comment | National Report states every operational event is recorded and systematically assessed. Result of such assessment seems to be an element of corrective measures. Considering corrective measures for operational event can be a good reference for other CPs which face similar event, we would like to ask to provide some examples of operational events and corrective measures that Slovakia's experience in this reporting period. In particular, it is appreciate if Slovakia provide examples which contributed to safety improvement significantly.<br>Please note that this question expects answer which provides candidate of good practice to CG session in 6RM. | | |
| Answer | During the reporting period, there were no operational events being recorded at the JAVYS, a.s. nuclear facilities, which should have been reported to the regulatory authorities. All events with minor safety significance were out of the INES scale. | | |

| 10. | Country<br>France | Article<br>10 | Ref. in National Report<br>Section G - page 115 |
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| Question/ Comment | Regarding the disposal of spent nuclear fuel, Slovakia follows a "dual track approach", that may lead either to a direct disposal of the spent fuel in Slovakia, or to its disposal in an international repository. Slovakia specifies that a decision will be made by 2020 to continue or to abandon the possibility of an international repository. Could Slovakia provide elements concerning the process that will lead to this decision (milestones, countries involved in the discussion and form of this discussion (such as commission...), regulatory bodies involved in the decision)? | | |
| Answer | The decision on continuation or abandonment of the possibility of international repository depends both on confirmation of suitability of at minimum one location in the Slovak Republic for building the deep repository, as well as on cooperation with surrounding/affected states, where it would be possible to build such repository. So far the preliminary discussions were carried out with the Czech Republic and the possibilities of cooperation in the field of deep repository development are investigated. | | |
| 11. | Country<br>Hungary | Article<br>10 | Ref. in National Report<br>G6, page 116 |
| Question/ Comment | Section G6 of the report explains that there are two types strategies for the disposal of spent nuclear fuel. One of them is a national deep repository for direct disposal of spent fuel and radioactive waste. Another possibility is an international deep repository, jointly owned and operated by several countries under relevant international treaties, to evaluate in complexity the idea of joint international deep repository. It is stated in the report that "The National Program for the development of international repositories proposes [...] by 2020 to evaluate the developments in the given area and based on this development to make a decision". Could you inform us about the necessary conditions for Slovakia to continue the investigation of an international deep geological repository site? | | |
| Answer | The decision on continuation or abandonment of the possibility of international repository depends both on confirmation of suitability of at minimum one location in the Slovak Republic for building the deep repository, as well as on cooperation with surrounding/affected states, where it would be possible to build such repository. So far the preliminary discussions were carried out with the Czech Republic and the possibilities of cooperation in the field of deep repository development are investigated. | | |
| 12. | Country<br>Ukraine | Article<br>10 | Ref. in National Report<br>G 6, p.114-115 |
| Question/ Comment | Which organization and institutions were involved in development and agreement of National policy and National program for RW and SF management in Slovak Republic according to Directive 2011/70 EURATOM? How the public involvement was organized and the public contribution was taken into account? | | |
| Answer | Transposition of the Directive No. 2011/70/EURATOM was carried out through the both Atomic Act and the Act on National Nuclear Fund. Pursuant to Act on National | | |

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| | Nuclear Fund, the Board of Governors, as the highest executive body of the fund, is responsible for drawing up the National Policy and the National Program in cooperation with all relevant license holders.<br><br>The Slovak Republic had a National strategy for the back end of nuclear energy since 2006, it means 5 years before the Directive No. 2011/70/EURATOM was issued and 9 years before the obligation to have this kind of document introduced by the directive.<br><br>National Programme (historical overview)<br>The Slovak Government approved the "Strategy for the back-end of the nuclear energy in SR" by its Resolution No. 328 at its session held on 21 May 2008.<br>Provisions of Section 3 par. 2 sub-par. D) of the Act No. 238 on the NNF requires the Board of Trustees of NNF to submit a draft Strategy update to the Ministry of Economy every five years.<br>The updated document was made public on the web pages of the MŽP SR, MH SR and the NNF (including in mass media) in late 2012. The above mentioned web sites published the entire updated "Strategy for the back-end of peaceful uses of nuclear energy in the Slovak Republic."<br>During the screening procedure no comments have been delivered. The public did not comment during the screening procedure specifically. A public hearing was held on 22 January 2013.<br>The Strategy for the back-end of peaceful uses of nuclear energy in the Slovak Republic was approved by the Government by its Resolution No. 26/2014.<br>Following the publication of the Council Directive 2011/70/Euratom establishing a Community framework for the responsible and safe management of spent fuel and radioactive waste and its transposition by the Act No. 143/2013 Coll. The Board of Trustees of NNF decided to prepare an update of the document "Strategy for the back-end of peaceful uses of nuclear energy in the Slovak Republic".<br>The Ministry of Economy, in cooperation with the Ministry of Environment according to the Act No. 24/2006 Coll. And after the completion of the screening procedure issued a decision that the update of the "Strategy for the back-end of peaceful uses of nuclear energy in the Slovak Republic" shall no longer be reviewed according to the Act No. 24/2006 Coll. On environmental impact assessment.<br>The updated "Strategy for the back-end of peaceful uses of nuclear energy in the Slovak Republic" according to the Act No. 143/2013 Coll. (transposing Directive No. 2011/70/Euratom) was approved by the Government Resolution No. 387/2015 entitled "National Policy and the National Programme" which replaced the previously valid "Strategy for the back-end of peaceful uses of nuclear energy in the Slovak Republic". |

| 13. | Country<br>United States of America | Article<br>10 | Ref. in National Report<br>Section G.6 pg. 115 |
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| Question/ Comment | What are the key assumptions regarding activities that allow for the milestone schedules to be met for disposal of spent fuel, and how will completion of schedule milestones be monitored? | | |
| Answer | One of the key assumptions related to the activities enabling the fulfilment of the planned milestones for the management of the spent nuclear fuel is the completion of the storage capacity for SNF in Jaslovské Bohunice (see Chapter 1.2 of the NR on | | |

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| | "Increasing storage capacity for SNF") and confirmation of the suitability of the locality for placing of deep repository and its acceptance by public. Monitoring of milestones fulfilment will be performed within the regular evaluation of the tasks of the „National policy for spent fuel management and radioactive waste management" in line with EU requirements stated in the Council Directive 2011/EURATOM from 19th July 2011, establishing a community framework for responsible and safe management of spent fuel and radioactive waste. | | |
| 14. | Country<br>France | Article<br>13 | Ref. in National Report<br>Section A - page 9 |
| Question/ Comment | Slovakia mentions documents that have been produced regarding the public involvement strategy in the site selection process for a deep repository.<br>Could Slovakia present the main outcomes of these documents? In particular, could Slovakia detail how the public will practically be involved in the decision process? | | |
| Answer | The following outputs/documents have been developed for the public involvement strategy purposes in respect of the deep repository site selection process within the project "Deep Repository" – site selection – 1st stage:<br>• public relations strategy for the field of deep repository development in the SR and the analysis of possibilities of economic as well as non-economic tools in order to support the deep repository execution,<br>• information and promotional materials on deep repository development,<br>• organization of meetings with affected municipalities,<br>• draft of legislation for encouraging of concerned municipalities during the performance of survey works and after the deep repository locating.<br>Public will be involved in the process of the deep repository site selection in compliance with the above-mentioned documents. | | |
| 15. | Country<br>Slovenia | Article<br>16 | Ref. in National Report<br>H, p. 123 |
| Question/ Comment | Did you set the authorized limits of radioactive gaseous releases during the operational period of the Mochovce repository, if so, what are they? | | |
| Answer | In respect to the fact that only solid or solidified RAW in fibre concrete containers (FCC) are being stored in National Radwaste Repository. Whereas the FCC with waste do not contain substances creating conditions for microbiological decomposition and development of gases it is not necessary to set the limits for radioactive gases releases. | | |
| 16. | Country<br>Ukraine | Article<br>16 | Ref. in National Report<br>H 6.5, p.125 |
| Question/ Comment | Please describe more in detail the approaches for RW characterization in Slovak Republic (characterization stages and procedures, characterization parameters, etc.). | | |
| Answer | In JAVYS, a.s. the RAW characterisation system is being implemented consisting of the following steps: | | |

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| | **A. Establishing the RAW radiological parameters**<br>**1. Destructive analytical methods for definition of radionuclide vectors for given type of RAW consisting of:**<br>- representative sampling of given RAW<br>- modification to appropriate form<br>- radiochemical analysis of sample (gamma spectrometry, alpha spectrometry, liquid scintillation spectrometry)<br>- evaluation of the analysis results<br>- calculation of conversion factors for setting the radionuclides difficult to measure in relation to reference radionuclides<br><br>**2. Non-destructive analytical methods for definition of RAW activity in the approved packaging form consisting of:**<br>- defining the activity of reference RAW radionuclides in the approved packaging form by measurement on gamma scanner<br>- calculation of activity of the radionuclides difficult to measure on the basis of the known activity of reference radionuclides and conversion factors for the selected hard-to-measure radionuclides<br>- defining the activity of selected RAW alpha nuclides in the approved packaging form using a method of passive neutron measurement (alpha scanner) for RAW containing transuranium elements<br><br>**B. Establishing chemical and physic-chemical RAW parameters**<br>- direct measurement of chemical parameters in samples (e.g. pH, conductivity)<br>- defining the concentration of selected anions in samples (titration, UV-VIS spectrophotometry)<br>- defining the concentration of selected kations in samples (atomic absorption spectrometry)<br>- defining the extractability index of solidified RAW<br>- defining the compressive strength of solidified RAW |

| 17. | Country<br>Czech Republic | Article<br>17 | Ref. in National Report<br>H.7.2, 127-128 |
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| Question/ Comment | What activities will be performed during passive institutional control period and how are they defined in Slovak legal framework? | | |
| Answer | The performance of activities during the institutional control is conditional upon the issuance of a permit for the closure of the repository and the institutional control pursuant to § 22 of the Atomic Act. Slovak legislation distinguishes the active and passive part of the implementation of institutional control measures. The active part of the period of the institutional control of the repository is characterized by checking the functionality of the barriers, their maintenance, or the implementation of corrective interventions in case of unplanned leakage of radioactive substances. In the passive part, this includes, in particular, measures to prevent access to repository and to archive and transfer records for a long period of time. Part of the documentation required to issue a permit for the closure of the repository and its institutional control is also the monitoring program during the institutional control. | | |

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| | Decree No. 30/2012 Coll. requests that a reasonable period of institutional control after the disposal facility closure is necessary to ensure the continued safety of its functions is considered when developing safety analyses. Legislation defines the possibility of dividing it into an active and passive part. Furthermore, it is established that characteristics of the repository such as water intrusion and release of radioactive materials into the environment are monitored throughout the duration of the institutional control. The tracking system must not reduce the tightness of repository structures. The specific scope of activities performed during the active and passive part of the institutional control period is, in accordance with Decree no. 58/2006 Coll. as amended, included in the plan for the closure of the repository. This document is also submitted in the course of an administrative procedure for the issuance of a license for closure.<br><br>In the case of Mochovce repository, the 300 year period of its institutional control is considered after closure. Preoperational safety analyses report splits this period into a 100-year period of exercise of the active part measures and the subsequent 200-year period of the passive part of the institutional control.<br><br>The real closure and institutional control of the Mochovce repository will be addressed prospectively over a period of about 20 years. The requirements are continuously updated for the period of institutional control of the repository, its active and passive part. |

| 18. | Country<br>Japan | Article<br>20.1 | Ref. in National Report<br>54 |
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| Question/ Comment | In E.2.1.4, bullet 6 states regulatory authority has a role to order elimination of deficiencies having impact on nuclear safety. Can you provide some examples of such orders that regulatory authority made in this reporting period?<br><br>Please note that this question expects answer to know potential of good practice. Providing examples significantly contribute to safety is appreciated. | | |
| Answer | This requirement is based on a provision of the Atomic act which specifies the competencies of ÚJD SR. The implementation of these requirements is ensured in particular by regulatory oversight.<br>The enforcement of this requirement can be done in practice by so called protocol, if the deficiency results from an inspection activity.<br>During the period under review, it was not necessary to implement these provisions in practice within installations falling under Joint Convention. | | |

| 19. | Country<br>Japan | Article<br>20.1 | Ref. in National Report<br>56 |
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| Question/ Comment | Regarding the Analysis of Inspection Activity, please provide examples of inspection modification process which contribute to safety improvement. Analysis of inspection itself may widely applied but if particular practices significantly enhance effectiveness of inspection is found, such practice has value to discuss in CG session as a candidate of good practice. | | |

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| Answer | The data for the preliminary inspection activity analysis are processed by the individual divisions of ÚJD SR performing the inspection activities. The results are sent to the department of nuclear safety, which, based on the documents, draws up a preliminary and later final analysis of the ÚJD SR inspection activities. The analysis evaluates the numbers and trends of negative findings for the past period according to the different categories of findings. In duly justified cases, the Inspection directive allows for an example of good practice. In the past, good practice was given to the operator, for example, as a way of pre-informing the ÚJD SR of potential violation of requirements. ÚJD SR appreciated the initiative approach and the early indication of possible problems, when it was not possible to verify in real time, because of the scanner's reconstruction, whether or not the product resulting from the RAW processing complies with the acceptance criteria.<br><br>The inspection plan shall take into account the results of the previous year's analysis, if necessary, unannounced inspections are carried out in the appropriate year. The inspection plan also takes into consideration the proposals made by the general directorates of departments, the source materials of the organizational units of ÚJD SR and the events at the nuclear facilities in the Slovak Republic and abroad. The inspection plan is drawn up for a period of one calendar year and is based on a preliminary inspection plan, which is drawn up for a period of three years. |

| 20. | Country<br>Japan | Article<br>20.1 | Ref. in National Report<br>53 |
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| Question/ Comment | Based on the description of E.2.1.3, it can be understood that regulatory activities are now managed under internal quality management system. Does it include activity on review and improve regulatory requirements? If so, please provide the process of incorporating new knowledge into regulatory requirements. It is appreciate if Slovakia provides example that you consider it is significantly contribute to safety improvement. | | |
| Answer | ÚJD SR has implemented the integrated quality management system (IMS). The system is based on STN EN ISO 9001:2016 and IAEA GSR Part 2 requirements, and partially requirements of EN ISO 31000 and STN EN ISO 9004. The IMS has incorporated relevant provisions of national generally binding legal documents in regard to the occupational health and safety (OHS), fire protection, public procurements, public information, financing and accounting, etc. General requirements for review and improvements of regulatory requirements are provided in the Quality Policy and Management System Manual, elaborated in more details in IMS procedures. Particularly, the internal IMS procedure on the development of ÚJD SR decrees (regulations) and internal IMS procedure on the development of ÚJD SR guides include provisions to update the decrees/ regulatory guides and transpose into the decrees/ regulatory guides the IAEA requirements/ recommendations, experience from the use of nuclear energy, lessons learnt from the events, etc.<br>An example could be – incorporation into the national regulatory framework the requirements for the managements of severe accidents or the requirements for implementation of safety culture principles and their regular evaluation. | | |

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| 21. | Country<br>Japan | Article<br>21 | Ref. in National Report<br>69 |
| Question/ Comment | As the bottom of this page says, licensee have to compare at least two waste treatment system for the justification. How the regulator evaluates whether the alternative system is enough valid or not? If the alternative shown in the application is quite bad, so the comparison would give significant advantage to applicant, how the regulator points out the comparison is not appropriate? (In other words, what is the technical basis of the regulator's opposition?) | | |
| Answer | The licensee shall designate, in accordance with the Decree No. 30/2012 Coll., Section 7, paragraph 4, at least 2 options of radioactive waste processing and on the basis of a multi-criteria analysis will decide for one of them (determine the most effective one). This proposal will be submitted to the Regulator for assessment or approval. The Regulator focuses in particular on the safety assessment of the proposed option (nuclear, radiation and fire protection etc.). It also monitors compliance with the principle of minimization of RAW and the fact that the final product of the treatment can be safely disposed in the National Repository at Mochovce site or it can be released into the environment. If the Regulator does not agree with the choice of option, it has the possibility to develop an independent analysis in accordance with Section 4, paragraph 4 of the Atomic Act. | | |
| 22. | Country<br>Poland | Article<br>23 | Ref. in National Report<br>Section F, F.3 |
| Question/ Comment | Are licensee going to implement the requirements of the new IAEA standard-GSR part 2? | | |
| Answer | The licensee has already implemented the requirements of the IAEA standard GSR Part2 within the Integrated management system. | | |
| 23. | Country<br>Poland | Article<br>22 | Ref. in National Report<br>Section F, F.3 |
| Question/ Comment | Do licensee develop a time schedule for implementation of changes coming from the new IAEA standards? | | |
| Answer | The relevant IAEA Safety Standards and their update are implemented throughout e. g. Atomic Act, relevant decrees, ordinances and UJD safety guides. After their entry into force the licensees are developing their internal procedures. | | |
| 24. | Country<br>Poland | Article<br>23 | Ref. in National Report<br>Section F, F.3 |
| Question/ Comment | What are the acceptance criteria for the QMS controls used by UJD SR? Is GSR part 2 an element of acceptance criteria? | | |
| Answer | The requirements and criteria are specified in the ÚJD SR legislative and respective internal documents and are continuously improved, e. g. ÚJD SR Decree No. 431/2011 Coll. on quality management system. | | |

| 25. | Country<br>Poland | Article<br>23 | Ref. in National Report<br>Section F, F.3 |
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| Question/ Comment | Integrated Management System Policy, Safety Policy, Professional staff training policy-Are they one or three different documents? | | |
| Answer | Integrated Management System Policy, Safety Policy and Professional staff training policy are appendixes of one document that is called Integrated Management System Manual. | | |
| 26. | Country<br>Poland | Article<br>23 | Ref. in National Report<br>Section F, F.3 |
| Question/ Comment | Is there one or several quality policies? Are they part of the IMS policy? Please explain in more detail this issue. | | |
| Answer | JAVYS, a.s. has established **3 different policies**, that are described as an appendices of the Integrated Management System Manual:<br>1. Appendix A - ***Integrated management system policy***, that includes:<br>• Quality policy (as a requirement of the ISO 9001:2015 and ÚJD SR Decree No. 431/2011 Coll. about the quality management system as amended),<br>• Environment policy (as a requirement of the ISO 14001:2015),<br>• Occupational health and safety policy (as a requirement of OHSAS 18001:2007) ,<br>• Information technology policy (as a requirement of ISO/IEC 20000-1:2011),<br>• Risk management policy (as a requirement of ISO 31000:2009),<br>2. Appendix B – ***Safety policy*** (as a requirement of the ÚJD SR Decree No. 431/2011 Coll. about the quality management system as amended),<br>Appendix C – ***Professional staff training policy*** (as a requirement of the ÚJD SR Decree. 431/2011 Coll. about the quality management system as amended). | | |
| 27. | Country<br>Japan | Article<br>26 | Ref. in National Report<br>101 |
| Question/ Comment | The bottom of this page mentions about unrestricted/restricted release of remediated land. It looks like only ALARA approach is needed for the owner. If the remediated nuclear site does not meet the site-release criteria, who will own the restricted site? Is the "legacy" site going to be managed by the SR government? | | |
| Answer | Conditions for the procedure for site release for further restricted or unrestricted use are set by the Public Health Authority of the SR. In case of restricted use, the specific conditions and procedures (scope of monitoring and impacts assessment) are set on the basis of a decision, under which it is possible to use the given site for intended purpose. | | |

| 28. | Country<br>Belarus | Article<br>28 | Ref. in National Report<br>Section J |
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| Question/ Comment | Does the country have a practice of life extension of sealed radionuclide sources after the end of their assigned lifespan? | | |
| Answer | Protocol on test of long-term stability is necessary to prolong validity of sealed source certificate until the date determined for performance of the next test on long-term stability. | | |
| 29. | Country<br>Czech Republic | Article<br>32 | Ref. in National Report<br>D.2, 28-41 |
| Question/ Comment | The National Report lists a number of new facilities and technologies associated with nuclear activities at Jaslovské Bohunice facilities (RAW warehouses, metallurgy, decommissioning, waste processing and foreign organizations).<br>We are interested in how these activities are accepted by the local population? | | |
| Answer | During licensing of activities the process of environmental impact assessment is been performed pursuant to the Act No. 24/2006 Coll. In case nuclear power plants A1 and V1 decommissioning, the population of the affected municipalities had no comments; in case of the storage facilities (Interim storage of RAW, Facility for management of IRAW and CRAM, they required compensatory measures in the form of fees for storage of RAW. Only in case of facility for melting of metallic RAW, the requirement of affected municipalities to limit the processing of metallic RAW only from producers from the Slovak Republic was submitted and accepted. | | |
| 30. | Country<br>Czech Republic | Article<br>32 | Ref. in National Report<br>D.2, 28-41 |
| Question/ Comment | The National Report states in Chapter K planned preparation for the introduction of "DTS / Avantech technology" technology for the treatment of radioactive liquid concentrates.<br>Is this a full scope operational proved technology? (Please provide a reference and results achieved in real conditions?) | | |
| Answer | DTS/Avantech technology was tested on real radioactive concentrate during years 2009-2010 and in 2013 on small bench scale unit at Jaslovske Bohunice.<br>Treatment technology is unique for treatment borated radioactive concentrate produced by Slovenske elektrárne. This technology fulfill new criteria for solid material released to environment according to law nr. 87/2018 about radiation protection.<br>In 20016 technology was tested in Knoxville (before transport to the Slovak Republic) – non-active FAT test. For referencies of each parts of this technology please visit AVANTECH website : http://www.avantechinc.com/<br>Avantech/DTS technology has not been put in operation yet in Slovenske Elektrarne. Avantech technology is scheduled to put in operation by the end of 2018. Equipment | | |

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| | with such a composition is a prototype and has not been in operation anywhere in the world. | | |
| 31. | Country<br>Czech Republic | Article<br>32 | Ref. in National Report<br>A, 10; D.3.1, 37; D.3.2, 39 |
| Question/ Comment | Why is the decommissioning of NPP V1 regulated by ÚJD (licenses for stage I and II) and of NPP A1 by ÚVZ (licenses for stage III and IV)? Provide explanation and details of cooperation between these two regulators. | | |
| Answer | Decommissioning of NPP V1 and NPP A1 is regulated by both Authorities – ÚJD SR and ÚVZ SR.<br>State regulation over nuclear safety over management of radioactive waste and spent nuclear fuel is performed by the Nuclear Regulatory Authority of SR (ÚJD SR) in compliance with the Atomic Act.<br>ÚVZ execute:<br>- supervision of radiation protection,<br>- supervision of shipment of radioactive sources, the authorization for imports of radioactive sources, licensing of work with ionizing radiation stipulates limits for radiation exposure and the terms for disposal and storage of radioactive waste from the view of potential influence on health.<br>State health regulation over radiation protection is provided by the Public Health Authority of the SR (ÚVZ SR) in accordance with the provisions of Act No. 355/2007 Coll. on protection, promotion and development of public health and on amendments to certain laws.<br><br>Act No. 575/2001 Coll. on Organization of Governmental Activities and of Central State Administration stipulates that the ministries and other central state administration bodies work closely together in fulfilling their tasks. They exchange the necessary information and background and discuss with other ministries the measures that concern them. | | |
| 32. | Country<br>Czech Republic | Article<br>32 | Ref. in National Report<br>D.2.7, 35 |
| Question/ Comment | Which corrective actions have been performed as a result of periodic safety review of RÚ RAO Mochovce? | | |
| Answer | Corrective measures for NF RÚ RAO stated in „Action plan of corrective measures“ within the report on periodic assessment of nuclear safety:<br>1. In repository, there are 30 pcs of FCCs, the mass activity of which 231Am is not in compliance with point 2.2.2.B (limit condition) of the operational procedure A02/RÚ RAO, 3rd edition.<br>**Corrective measure:** Implementation of new safety analyses and deriving new acceptance criteria on the basis of which the Limits and Conditions (LaP) of RÚ RAO will be revised. | | |

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| | 2. Detailed process using available information from the results of the science and research.<br>**Corrective measure:** Introduce a system for using the information from the science and research results.<br>3. Pre-operational safety report for RÚ RAO Mochovce refers to already invalid legislation and IAEA recommendations.<br>**Corrective measure:** Update the Pre-operational safety report for RÚ RAO Mochovce in line with valid legislation.<br>4. In safety analyses of the Pre-operational safety report for RÚ RAO Mochovce, the human failure is not listed as a possible cause of release and fall of the container when being transported by a crane.<br>**Corrective measure:** Supplement the Pre-operational safety report for RÚ RAO Mochovce with a human failure as a possible cause of release and fall of the container when being transported by a crane.<br>5. During the actual operation of RÚ RAO, there were no works carried out in order to specify the radiation background of selected radionuclides in selected samples from the environment on the site of RÚ RAO. Such works were recommended in the Pre-operational monitoring programme and they were also considered in Pre-operational safety report (PpBS), since the monitoring of the radionuclides occurrence in the area of RAW repository should be from the long-term perspective aimed at defining the least possible deviations from radiation background. This is very important also from the viewpoint of gradual decrease of activity of the artificial radionuclides in radiation background.<br>**Corrective measures:**<br>1. Including the measurement of joint samples during the longer time period into the Monitoring plan.<br>2. Activities aimed at specification of the background radioactivity of selected artificial radionuclides in selected samples from the surroundings of the RÚ RAO Mochovce into the Monitoring Plan in the next years. |

| 33. | Country<br>Czech Republic | Article<br>32 | Ref. in National Report<br>D.2.7, 36 |
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| Question/ Comment | Translation error: "For the disposal of very low level radioactive waste…separate storage facilities have been built…" | | |
| Answer | For the disposal of very low level radioactive waste, i.e. waste, the activity of which is only slightly above the limits for their release into the environment (contaminated soil, crushed concrete from decommissioning) separate disposal have been built within the existing National RAW disposal at Mochovce site. In the years 2015 and 2016, the first stage of repository for VNAO was completed with a capacity of 20,000 m3 VNAO from the decommissioning of NPP A1. On 04 July 2016 ÚJD SR by Decision No. 338/2016 authorized the operation of this part of VNAO repository. | | |

| 34. | Country<br>France | Article<br>32 | Ref. in National Report<br>Section B - page 13 |
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| Question/ Comment | Slovakia indicates that a vitrification technology is provided for treatment of intermediate level radwaste with high trans-uranium content. | | |

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| | Could Slovakia specify the facility in which this treatment is processed and indicate its main steps? |
| Answer | Vitrification facility at NPP A1 was designed and installed in order to process the special cooling medium „chrompik“, used when storing the spent nuclear fuel in storage claddings for a long-term storage. Radioactive contamination of this cooling medium is proportional to time the fuel assemblies stay in it. Due to this fact it is possible to divide it to two categories „chrompik I“ with the level of radioactive contamination in an order of $10^8$-$10^9$ Bq/dm3 and „chrompik III“ with the level of radioactive contamination of 10E10-10E11 Bq/dm3. The process of the chrompik processing is based on its concentration in the evaporating unit and subsequently remelting of the mixture of concentrated concentrate and glass in melting tank at the temperature of 1000°C. The final product with fixed salts of chrompik meets the conditions for long-term stability, mechanical resistance and low leachability and it is stored in particular facility built for this purpose. Processing of chrompik I was successfully carried out in the period of 1996 – 2001. At present, since 2017 the processing of chrompik III is in the process and so far as much as 2,5$m^3$ of this medium has been successfully processed.<br>(Comment: chrompik II was in the past incorporated into category chrompik III). |

| 35. | Country<br>Ukraine | Article<br>32 | Ref. in National Report<br>D 3.2, p.39 |
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| Question/ Comment | The report indicates that the original, non-working storage tanks that represented the greatest potential environmental risk were decontaminated and removed. What was the mentioned risk? | | |
| Answer | Historical storage tanks which are not operated anymore were not designed as double-shell with doubled safety barrier and safety monitoring systems. Due to this fact these tanks ceased to be used; and it was decided to decommission them. | | |

| 36. | Country<br>Ukraine | Article<br>32 | Ref. in National Report<br>D 1.2 |
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| Question/ Comment | What defines maximum temperature of pool water to be equal 50 °C? Why this value is 50 °C? | | |
| Answer | The maximum temperature of the water in storage pools was defined on the basis of safety calculations which are specified in the Pre-operational safety report for NF ISFS. The maximum water temperature is important in order to ensure the operational reliability of the pumps of the pools water cooling system, pumps of the pool water purification system as well as resin filters used in the system of pool water purification system. | | |

| 37. | Country<br>Ukraine | Article<br>32 | Ref. in National Report<br>D 1.2 |
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| Question/ Comment | Is it possible to store spent nuclear fuel in a reserve pool of the ISFS during normal operation? | | |

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| Answer | During the normal operation it is not possible to store spent nuclear fuel in the ISFS reserve pool. The function of the reserve pool can be fulfilled by any of the four ISFS storage pools, which must be free in time when it is set apart as a reserve one. During the normal operation it is a pool No. 117; the pools no. 116/1, 116/2 and 116/3 are operational during the normal operation. | | |
| 38. | Country<br>Ukraine | Article<br>32 | Ref. in National Report<br>D 1.2 |
| Question/ Comment | Do you take water samples from containers with spent nuclear fuel and perform gamma-spectrometric measurements of these water to assess the state of the SNF cladding? | | |
| Answer | During each SNF import, a water sample is taken and assessed by means of gamma spectrometry prior to the opening of the transport container C-30. After the water analysis, if the result of the analysis is satisfactory, the transport container is unsealed and the SNF is transferred to the ISFS storage pool.<br>The status of the stored SNF coverage is regularly monitored by a device Sipping in pool in the scope defined in the Programme of operational inspections of the ISFS facilities. | | |
| 39. | Country<br>Ukraine | Article<br>32 | Ref. in National Report<br>B 2, p.15 |
| Question/ Comment | What is the type of the facilities in Jaslovské Bohunice and Mochovce – storage or disposal facilities? | | |
| Answer | At Jaslovské Bohunice site there are: Interim Spent Fuel Storage and Integral Storage Fafility for RAW.<br>At Mochovce site there are: National Repository for low level RAW – Disposal, Storage Facility for Institutional Waste, Disposal for contaminated soil and building material. | | |
| 40. | Country<br>Ukraine | Article<br>32 | Ref. in National Report<br>D 2.5, p.33 |
| Question/ Comment | What does it mean "captured contaminated radioactive materials"? | | |
| Answer | Materials coming from different past activities (besides nuclear energetics) originating from the whole territory of the Slovak Republic, but from unknown owner or coming from illegal activity. Their occurrence is mainly in waste disposal sites, ironworks, at border crossings, etc. | | |
| 41. | Country<br>United States of America | Article<br>32 | Ref. in National Report<br>Section D.1.2 pg. 23 |
| Question/ Comment | Please provide information on the seismic standards for the interim spent fuel storage facility and what magnitude earthquake that the facility is designed to withstand? Is Slovakia in an active seismic zone? What emergency response capabilities are planned in the event of an earthquake to ensure safety functions are in place? | | |

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| Answer | The ISFS is situated in the location with the probability of the seismic event occurrence once in every 10 000 years. For such location the following requirements are defined:<br>- resistance to earthquake with magnitude 8° of the MSK-64 scale,<br>- resistance to max. horizontal ground acceleration is 0,344 g,<br>- resistance to max. vertical ground acceleration is 0,214 g.<br><br>Pursuant to the Safety Guide No. NS-G-1.6, the SNF interim storage is listed in seismic category 3 and therefore the systems, constructions and components having impact on nuclear safety must have undergone the seismic retrofitting. During 1997 - 1999 reconstruction was performed including the project of seismic retrofitting of ISFS, the objective of which was to increase the resistance of structural and technological constructions to the level of international regulations and requirements in compliance with performed geological and seismic surveys on site. By implementing the above-mentioned project, it was achieved that even after possible seismic event, all safety functions of the ISFS are secured to the level defined for the locality of Jaslovské Bohunice ($8^0$ MSK 64 on open terrain).<br><br>"Tools to maintain safety functions of Interim Spent Fuel Storage in case of seismic event are described in operation documentation (more specifically "Solving Operation Events"). They aim at restoring power and at restoring active cooling of spent fuel. In case safety functions are not maintained, On-site Emergency Plan envisages that On-site Emergency response is activated in due time and protection of JAVYS workers is maintained." |

| 42. | Country<br>United States of America | Article<br>32 | Ref. in National Report<br>Section K.4 pg. 147 |
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| Question/ Comment | The report notes Slovakia's efforts on public outreach and communications with stakeholders. Please describe the resources used in these activities. Does the public actively engage in meetings with the authorities, in the preparation of summary reports, attend open houses and access the web site? Please describe examples of success and challenges in stakeholder outreach efforts. | | |
| Answer | In respect of the proposed activities of the JAVYS, a.s., the communication with public proceeds in line with the requirements of the Act on environmental impact assessment, i.e. the documentation – intent, report on assessment is available to public by means of EIA/SEA information system under the responsibility of the Ministry of Environment of the SR, by means of the municipal offices of the affected municipalities (official notice boards, websites). In concerned municipalities, there are public discussions to the assessment report being held. JAVYS, a.s. informs public on projects under preparation by means of a magazine entitled „JAVYS u nás“, which is being distributed to the surrounding concerned municipalities, as well as on its website and information centres. In case of some of the activities, there were also consultation days being organized during the time of publishing of intent and report on assessment. Public did not attend these activities beyond the framework of the Act No. 24/2006 Coll., except for the mayors of the concerned municipalities. On the regular basis, the information on nuclear facilities operation, NPP decommissioning and new project are being provided by means of Civil information committee (Občianska informačná komisia). On the JAVYS, a.s. Company website, there is a | | |

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| | form „Request for information“, which may be used by citizens when acquiring information on the Company´s activities. Comments from the concerned parties are considered during the entire process of the environmental impact assessment and are stated in Final statements of the Ministry of Environment of the SR and subsequently they are communicated to the authorizing decisions of the ÚJD SR. the public concerned is also participant of the proceeding of issuance of authorizing decisions.<br>National report on safety of the spent fuel management and on the safety of radwaste management is not a strategic document pursuant to the Act No. 24/2006 Coll., it is not subject to the environmental impact assessment and the public does not comment on it.<br>JAVYS, a.s. activities are, as a part of the National policy and National program for RW and SF management in the Slovak Republic, presented to stakeholders and communicated with public during presentations in company´s Information Centres and on the web site. Number of JAVYS ICs visitors was 2 636 in year 2016 and 2 673 in 2017. Number of JAVYS web site visitors was 61 147 in 2016 and 61 937 in 2017. |

| 43. | Country<br>Croatia | Article<br>32.2.1 | Ref. in National Report<br>D, 25 |
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| Question/ Comment | Were there any safety upgrade modifications implemented in the ISFSF as the result of performed Stress Tests required by ÚJD? | | |
| Answer | Within the increasing of safety functions of the ISFS after the stress tests, a change of manual start of back-up source of electrical energy (diesel generator) has been performed to the automatic start. Also the process “Seismic event” has been developed which was subsequently incorporated into operational procedure „Solution of fault conditions in ISFS“ (see Chapter 1.2 of the NR). | | |

| 44. | Country<br>Germany | Article<br>32.2.1 | Ref. in National Report<br>pp. 30-31, Section D.2.4 |
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| Question/ Comment | Integral Storage Facility for RAW – Interim storage of radioactive wastes:<br>The new Integral Storage Facility for Radioactive Waste (IS RAW) at Jaslovské Bohunice site will be used only for interim storage of solid and solidified radioactive waste, originating from decommissioning of nuclear power plants. The completion of construction of the facility was scheduled for November 2017.<br>Has construction meanwhile been completed? If not, what is the new schedule for completion of construction of the facility? | | |
| Answer | On 07.02.2018 the Decision of the ÚJD SR No. 444/2017 entered into force, by which permission to use the building of nuclear facility IS RAW has been issued. | | |

| 45. | Country<br>Croatia | Article<br>32.2.3 | Ref. in National Report<br>D, 30 |
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| Question/ Comment | What is going to be storage capacity of the IS RAW which is still under construction? What is the total amount of activity which can be accepted in the facility? | | |
| Answer | New interim storage (IS RAW) in Jaslovské Bohunice site is already in operation and it will be used for a temporary storage of solid and solidified radioactive waste coming from the nuclear power plants decommissioning. | | |

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| | At present, it is possible to store within the NF IS RAW the RAW with the total activity of $8{,}41 \times 10^{14}$ Bq. At the same time, by completing the EIA process in future it will be possible to increase the total stored activity to the level of $1 \times 10^{18}$ Bq. |