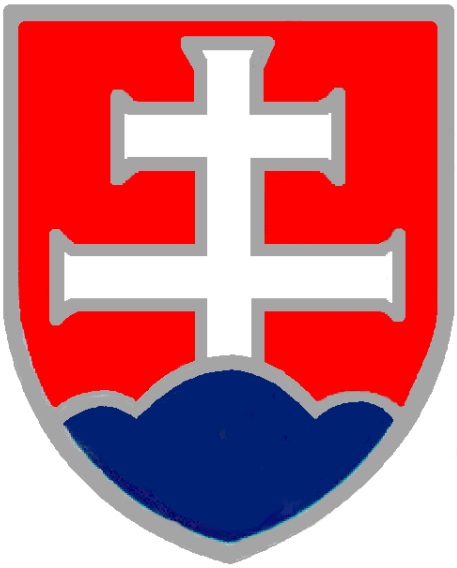
ANSWERS TO QUESTIONS

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
APRIL 2012

Joint Convention
Questions Posted To Slovakia in 2012

Q.No 1	Country South Africa	Article General	Ref. in National Report Annex II p 121

Question/ Comment: What are the requirements for environmental sampling and analysis of Sr90, and if detected what are typical levels and what what reporting arrangements are in place?

Answer: All nuclear facilities have approved plans for environmental monitoring, and the methodology (sampling, methods of determination, evaluation and interpretation of results). Measurements are performed by Laboratories of environmental control working at both of Slovak nuclear sites and, independently, by laboratories of the Public Health Authority.

^{90}Sr determination in the environmental samples

- ^{90}Sr is determined by yttrium precipitation method
- Measurement device: FHT 770 T6, alpha/beta low level gas flow proportional counter
- Chemical recovery: gravimetrical determination, tracer yttrium oxide used
- Calibration of the detectors: ^{90}Sr calibration standard used

Type of sample	Sampling	Detected levels mBq/l
Drinking water	monthly	3
Surface water	monthly	5 - 7
Dry and wet fallout	monthly	400
Fresh cow milk	quarterly	10 - 15
Mixed diet	quarterly	5-6 mBq/day/person
Cereals (barley, wheat)	yearly	24 - 30
Vegetables	yearly	20 - 35
Forage	yearly	75 - 120
Soil	yearly	200
Water plants and sediments	yearly	80 - 260

Q.No 2	Country Sweden	Article General	Ref. in National Report Annex IV, p.124

Question/ Comment: The text on top of Annex IV should be updated. It still refers to the storage capacity of MSVP after the reconstruction but as we understand it has now been carried out and the increase has occurred?

Answer: As mentioned in table, part “Current capacity MSVP”, storage capacity is gradually increased through the replacement of the old storage containers by the new ones with higher capacity. In this way, the current storage capacity is being continuously increased and the maximum project storage capacity (14112 fuel assemblies) will be reached in 2013.

Q.No 3	Country Sweden	Article Article 3	Ref. in National Report C. 1, page 15

Question/ Comment

In the text it is stated that reprocessing of spent fuel is not yet part of the concept of spent fuel management. On the other hand, as we understand, direct disposal is also not part of the "current" concept.
What are the preferred "main" option for management and disposal of SF/HLW in SR?

Answer

The document „Strategy for the back end of nuclear energy sector", which was approved by the Government Resolution No. 328/2008 of 21 May 2008, analyses three alternatives:

- disposal of SNF/HLW in the underground (deep) repository in the geological surroundings of suitable qualities,
- international solution, which involve:
  - export SNF to Russian Federation without bringing it back after reprocessing,
  - possibility of development, construction and operation of SNF/HLW international repository,
- safe SNF storage (for non-specified time period) until other solution will be chosen

„Strategy for the back end of nuclear energy sector" says, that none of these possibilities is in the level, that would eliminate the others.

Since year 2001 up today, in spite of the approved strategy, there was a very moderate progress. Currently, the updated strategy is before finishing and approving processes. This strategy considers dual-track strategy, i.e. development of national geological repository as a main option and participation on development of shared repositories as the second, taking also into account the recent infrastructural changes in area of radioactive waste and the spent fuel management.
The main purpose of the underground repository development works in next years is to provide sufficiency of relevant information for objective decision, what alternative will be definitely used – such decision we can anticipate within next 10 years.
The Government of the SR approved with its resolution No. 73/2012 the Concept for geological research and exploration of the territory of the Slovak Republic for the period 2012 – 2016 (with an outlook until 2020). This Concept also approved ensuring safe and permanent disposal of radioactive waste.
Currently there is a significant base of geological knowledge about the suitability of Slovakia for the implementation of deep geological repository (setting criteria for assessment, selection of survey areas, and determination of geological parameters of safety analyses.). This knowledge need to be followed up and to further develop the geological knowledge in line with the global trend. The competent national authorities and organizations (the Ministry of Economy of the Slovak Republic, the Ministry of Environment of the Slovak Republic, the National Nuclear Fund, the Nuclear and Decommissioning company, the Nuclear Regulatory Authority of the Slovak Republic) should provide for and guarantee a professional and safe solution of this issue. In terms of geological aspects of development of radioactive waste repositories in Slovakia, in the following period it is necessary to ensure the following:

- Continual long-term support for the methodological development and guarantee of professional solution of this issue,
- Characterization of geological properties of selected sites in the areas with granite and clay sediments on the basis of field and experimental information,
- Development of geological models for selected sites,
- Direction of geological work towards selection of suitable site,
- Ensuring significant geological information to address the safety analyses.

Q.No 4	Country Australia	Article Article 3.2	Ref. in National Report Page 13

Question/ Comment: Are there any industries generating or managing NORM wastes in the Slovak Republic, and if so, is NORM excluded from the scope of the National Report?

Answer: Governmental order No. 345/2006 Coll. on the basic safety requirements for protection of health of professionals and citizens against ionizing radiation in its Article 34, section (2), chapters (e) and (f) defines the NORM industries as following:

1. Management of solid coal combustion products on/from facilities with thermal power output higher than 5 MW – it occurs in Slovakia,
2. Production of construction materials from the coal combustion products – it occurs in Slovakia,
3. Crude oil and gas mining and transport by pipelines and the crude oil and gas processing – it occurs in Slovakia,
4. Processing of phosphate raw materials – it occurs in Slovakia,
5. Manufacturing of pigments on a basis of titanium minerals – it does not occurs,
6. Manufacturing of materials on a basis of zirconium minerals – it does not occur,
7. Processing of raw materials containing also the rare earths – it does not occur,
8. Metallurgy of metals – it occurs in Slovakia,
9. Manufacturing, processing and utilization of materials containing uranium and thorium – the last uranium mining activities (on the investigation mining level) were terminated in 80-ties; any other activities concerning the production of the “yellow cake” remained in the Czech part of former Czechoslovakia,
10. Management of slurries from the treatment of water from underground resources – it does not occur,
11. Processing of nature radioactive materials, where the content of natural radionuclides exceeds the exemption levels or increases the dose equivalent rate by over 0,5 μSv/h – it does not occur,
12. Other facilities performing activities leading to production of residues containing natural radionuclides and therefore can increase irradiation of citizens or professionals – not applicable.

The NORMs/TENORMs have been really excluded from the scope of National Report.

Q.No 5	Country Hungary	Article Article 6	Ref. in National Report G.2.2 p. 86

Question/ Comment: "Safety assessment of the facility and its safety-related environmental impacts has been performed according to the valid legislation at the end of the 90-ties."

Is there any plan to review the Safety Assessment of the Spent Fuel Storage Facilities, or is there any ongoing process of continuous updating?

Answer

According to national legislation the licence holder is obliged to perform "Periodic Safety Review" (PSR) every ten years. Last PSR has been performed in 2008-2009. The results PSR have been used in the licensing proces for the operational licence for next ten years. The findings from the PSR are part of the operational licence and the licence holder is obliged to remove all deficiencies and to realize all improvements indicated by the PSR.

In 2011 after Fukushima accident ÚJD SR ordered to perform "stress tests" on Interim Spent Fuel Storage Facility. Stress tests are focused on beyond design accidents such as loss of power supply, loss of coolant, environmental impacts (earthquake, flooding, strong wind, etc.). The complete results of the tests will be available by the end of 2012.

Q.No 6	Country Sweden	Article Article 6	Ref. in National Report p.85

Question/ Comment

Does the Environmental Impact Assessment process, described in G.2.1., include consultations with NGO:s, the public and the concerned municipality?

Answer

Yes, the EIA procedure according to the national Act on EIA (No. 24/2006 Coll.) transposed the European EIA Directive and therefore includes consultations with NGO´s, public and public concerned, as well as with affected municipality or municipalities.

Q.No 7	Country Sweden	Article Article 6	Ref. in National Report G.2.1, page 85

Question/ Comment

It is described that the obligation of the operator to continuously inform the public on nuclear safety is included in the legislation of SR since 1998.

How is this carried out in practice?
Is there any feed-back on how this information is received?

Answer

As it was mentioned in the National Report operators regularly organise meetings with residents around nuclear installations with the aim to inform them about their activities including nuclear safety issues.

Operators participate on special meetings of Civic Information Committees Bohunice and Mochovce (OIK) to answer all relevant questions about nuclear safety of installations which are operated by them. OIK organises discussions in TV which give public an opportunity to ask directly during the TV broadcasting. Similar round tables are organised during Open Plant Days.

Information about nuclear safety of nuclear installations are regularly published in special journals, in addition information materials on nuclear safety are distributed and on websites are published information on nuclear safety as well.

Annually there are prepared reports about activities of operators including information about safety of nuclear installations, which they operate.

Very important step had been taken during the last amendment of the Act no. 541/2004 Coll. on Peaceful use of nuclear energy (Atomic Act) and on amendment and alterations of several acts in which has been included obligation for operators to inform the public via its website, press or in another way accessible to the public always as at 30 April on the state of the nuclear safety of nuclear facilities for the past calendar year.

Feed-back :
Opinion polls are curried out on regular base, questionnaires are completed by visitors of information centers and during the Open Plant Days and personal discussions are held.
Members of Civic Information Committees Bohunice and Mochovce (OIK) are invited to discuss with management of ÚJD SR questions regarding nuclear safety of nuclear installations in Slovakia and level of information about this topic they have and they expect to have.

Q.No 8	Country Greece	Article Article 8	Ref. in National Report G.4, 89

Question/ Comment

It is stated that "The increase of requirements for safety is continuously reflected in the legislation". Can you please elaborate on that and in particular on how this is achieved in practice and on the role of the regulatory body in this process?

Answer

First, the operator has a significant role and a number of obligations as regards constant safety reviews such as:

a) to continuously fulfil and evaluate the requirements for nuclear safety on a regular basis in order to enhance nuclear safety to the highest reasonably achievable level,
b) to follow the pre-operating safety report and the respective safety documentation when evaluating the safety of the nuclear facility operation as well as when evaluating the changes to the nuclear facility,
c) to enhance nuclear safety to the highest reasonably achievable level and to carry out regular, complex, and systemic evaluation of nuclear safety (every 10 years) – Periodic safety review - with regard to the current state of knowledge in the field of nuclear safety evaluation and to take measures to eliminate any detected shortcomings and to eliminate their occurrence in the future during operation and during the decommissioning phase of the nuclear facility,
d) to issue and adhere to the operating instructions for the performance of activities in the nuclear facility, i.e. for operation, maintenance, control, and tests of the selected facilities, which shall be in compliance with the authorisation conditions; the operator is obliged to update the operating instructions according to the condition of the nuclear facility,
e) can implement changes in the nuclear facility after the issuance of the ÚJD's approval or only after the previous notice to the NRA and after assessment by the ÚJD SR,
f) to create a management system of temporary and permanent changes, etc.

Second, the operator itself is obliged to submit a safety report prior to authorization for a relevant nuclear installation (such as siting, construction, commissioning, operation, decommissioning), with complex safety assessment, as well as, the safety documentation necessary for issuance of the authorization for a relevant nuclear installation life stage that shall be reviewed on the basis of the safety assessment outcomes.

Finally, the ÚJD SR, when issuing the authorisation or other decision, may make any of its decisions subject to the fulfilment of conditions relating to nuclear safety, physical protection, quality assurance or emergency preparedness. The ÚJD SR may modify such conditions whenever conditions of nuclear safety, physical protection or emergency preparedness relevance, under which the original decision was issued, change, and/or based on new knowledge of science and technology, or upon justified written request of permission or authorisation holder.

In fact, it is the task for the ÚJD SR to reflect the increase of requirements for safety in the nuclear legislation continuously. The ÚJD SR, as the central State Administration authority performs the role of drafting nuclear legislation. In practice, ÚJD SR submits to the Government the draft nuclear legislation that is adopted by the Government as the Governmental draft proposal and submitted for adoption to the Parliament. The ÚJD SR reflects the increase of requirements for safety based on the regulatory practice and experiences as lessons learned from the licensing process, the inspection activities, the evaluation and assessment procedures as applied by ÚJD SR itself, or, by others regulatory bodies (bilateral cooperation with the neighbouring States with the similar type of nuclear installations), as well as, reflection to the international standards up-dating and praxis.

Q.No 9	Country South Africa	Article Article 9	Ref. in National Report G5.6 p94

Question/ Comment

Article 27 of the Act No. 541/2004 Coll. defines operational event categories (failures, incidents, accidents), notification obligations of the operator toward regulators, requirements for identification of causes of operational events and requirements for public information.

What does the occurrence reporting system contain and how are the INES levels considered in this classification scheme?

Answer

According to the Regulation No. 48/2006 Coll. on Details of Notification of Operational Events and Events During Shipment, as well as details of investigation of their reasons, the licensee shall to report to the Authority all events pursuant to Section 27(3) a) of the Act in aggregate for the respective calendar month by the 20th day of the subsequent calendar month by submitting a written report. Written report shall contain:

a) The report title,
b) The registration number,
c) The date of occurrence,
d) The nuclear facility identification,
e) A description of the event,

f) The causes of the occurrence,
g) The influence on nuclear safety,
h) A rating according to the International Nuclear Event Scale,
i) Measures adopted to eliminate its consequences and for prevention.

According to the §6 of Regulation No. 55/2006 Coll. on Details in Emergency Planning in case of an Incident or an Accident the licensee shall notify the Authority of the occurrence of an incident or accident by telephone without delay. The authorization holder shall deliver an initial written information within 45 minutes of discovering the incident or accident. The authorization holder shall send subsequent written information on incident or accident development depending on its changes to the Authority, this being within one hour of delivery of the initial written information at least every two hours. The minimum contents of the initial and subsequent written information is described in Appendix 1, item A and B of Regulation No. 55/2006 Coll.

Shift supervisor is the first person, who defines INES level of the event. The shift supervisor submits to the Authority an initial written information and later on according to the submits development of the event. The Authority reevaluates this classification and send this information to the INES system of IAEA.

Q.No 10	Country Germany	Article Article 10	Ref. in National Report G.6., 95

Question/ Comment

It is reported that the project "Development of a deep repository for spent fuel and high-level RAW in SR" is being revived after a longer interruption since 2001. Little is said about the progress in this since the last report. It can be also concluded that reprocessing is regarded as an option to be followed up and that international cooperation on disposal in terms of shared repositories should also be followed up. Could you give some more information about the current Answer of the national repository development?
How do alternative options (reprocessing, shared repository) influence the process of searching for a disposal site in Slovakia?
When thinking about reprocessing, is it intended to license the use of MOX fuel in WWER-reactors in Slovakia?

Answer

Use of MOX fuel is not considered for the WWER reactors in construction or operation at the present time. In the case of future reactors this might be possible.

Since year 2001 up today, in spite of the approved strategy, there was a very moderate progress. Currently, the updated strategy is before finishing and approving processes. This strategy considers dual-track strategy, i.e. development of national geological repository as a main option and participation on development of shared repositories as the second, taking also into account the recent infrastructural changes in area of radioactive waste and the spent fuel management.
Slovakia started actively participate on international activities by participation of DECOM company – in the Consortium Leader position – on the project SAPIERR in 2004, continued by participation of DECOM on SAPIERR 2 and, recently, by participation of Slovak experts on activities of Working Group ERDO (European Repository Development Organization). WG ERDO represents the initiative of

some states regarding continuation of the SAPIERR 2 activities (for more info see: Viability of Sharing Facilities for the Disposal of Spent Fuel and Nuclear Waste. IAEA-TECDOC-1658. IAEA, Vienna, 2011).

Q.No 11	Country Greece	Article Article 10	Ref. in National Report G.6, 95-96

Question/ Comment

With respect to the "Development of a deep repository for spent fuel and high-level RAW in SR" and its continuation, can you please explain what additional information is expected to be gathered from the revived project? Are the former examined 5 sites still remaining as candidate sites? Are there indications so far as to the most feasible option for the development of a deep repository or in general for the management of spent fuel and high level radioactive waste in Slovak Republic?

Answer

Since year 2001 up today, in spite of the approved strategy, there was a very moderate progress. Currently, the updated strategy is before finishing and approving processes. This strategy considers dual-track strategy, i.e. development of national geological repository as a main option and participation on development of shared repositories as the second, taking also into account the recent infrastructural changes in area of radioactive waste and the spent fuel management.
Five candidate sites were selected mostly on a basis of archive data on the Slovak geological environment comparing them, together with other criteria, with a priori established siting criteria (consistently with the corresponding IAEA standard) and evaluating them by simple multicriterial analysis. Basic field research was performed on very limited extent (or at least: it should be clarified what the "basic field research" means in this context, e.g. without deep boreholes within the geological investigations in our case…).
Five candidate sites still remain for the program re-start. Of course: according to results of very limited activities of the Slovak Geological Survey between 2001-2012, including some investigations *in situ*, some of them are more preferred and the investigations could begin at these. Finally: it has not been decided up to now what is the most feasible option for the final step of spent fuel management in the Slovak Republic.

The main purpose of the underground repository development works in next years is to provide sufficiency of relevant information for objective decision, what alternative will be definitely used – such decision we can anticipate within next 10 years.

The Government of the SR approved with its resolution No. 73/2012 the Concept for geological research and exploration of the territory of the Slovak Republic for the period 2012 – 2016 (with an outlook until 2020). This Concept also approved ensuring safe and permanent disposal of radioactive waste.
Currently there is a significant base of geological knowledge about the suitability of Slovakia for the implementation of deep geological repository (setting criteria for assessment, selection of survey areas, and determination of geological parameters of safety analyses.). This knowledge need to be followed up and to further develop the geological knowledge in line with the global trend. The competent national authorities and organizations (the Ministry of Economy of the

Slovak Republic, the Ministry of Environment of the Slovak Republic, the National Nuclear Fund, the Nuclear and Decommissioning company, the Nuclear Regulatory Authority of the Slovak Republic) should provide for and guarantee a professional and safe solution of this issue. In terms of geological aspects of development of radioactive waste repositories in Slovakia, in the following period it is necessary to ensure the following:

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Q.No 12	Country Poland	Article Article 10	Ref. in National Report G.6, page 95-96

Question/ Comment: Is UJD involved in any way as regulatory supervisor at this stages of deep disposal program? If so, what is its role?

Answer: According to Act 575/2001 (Competence Act) ÚJD SR is a central state administration authority. It provides the execution of state regulatory activities in the field of nuclear safety of nuclear installations, including management of radioactive waste, spent fuel and other parts of the fuel cycle, as well as transport and management of nuclear materials including their control and record keeping system. It is responsible for the assessment of goals of nuclear energy program, etc.
According to Act No. 238/2006 (Action Nuclear Fund) §3 the Nuclear Fund submits to the Ministry of Economy the draft "Strategy of nuclear energy back-end" together with the position (opinion) of ÚJD SR. These two acts ensures the involvement of ÚJD SR in the decision making process.
ÚJD SR as a nuclear safety supervisor is not yet involved in any decision step regarding development of deep geological repository. ÚJD SR as an affected body in the process of EIA is providing statement from nuclear safety point of view at siting stage. In this case, ÚJD SR according to requirements from atomic act provides statement to Regional Civil Construction Authority. For further development stages of DGR, ÚJD SR is according to atomic act fully engaged in whole licensing process.

Q.No 13	Country Sweden	Article Article 10	Ref. in National Report G. 6, page 96

Question/ Comment: It is mentioned under G.6, that the work with systematic development of a deep geological repository in Slovakia for permanent disposal of spent nuclear fuel and high level radioactive waste, interrupted 2001, now will be resumed. It is understood that a development of a deep geological repository in Slovakia is the first alternative in the "Strategy for the back end of nuclear energy in SR". What is the Answer/progress of this work?
Will the previous five candidate sites be included in the coming work or will there be a renewed site selection process?
What organisation will be responsible for implementation of RD&D and implementation of spent fuel disposal (is it JAVYS)?

How will this work be led and financed?
What is the anticipated time for disposal to start?

Answer

Since year 2001 up today, in spite of the approved strategy, there was a very moderate progress. Currently, the updated strategy is before finishing and approving processes. This strategy considers dual-track strategy, i.e. development of national geological repository as a main option and participation on development of shared repositories as the second, taking also into account the recent infrastructural changes in area of radioactive waste and the spent fuel management.
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Q.No 14	Country Sweden	Article Article 10	Ref. in National Report G.6, page 95

Question/ Comment

What are the experiences from public involvement in the previous process of "systematic development of a deep geological repository" (1996 – 2001) concerning the selection of the five candidate sites?

Please expand on this.

Answer

There is no experiences from years 1996-2001. Periodical elaboration of the "Progress report for public" by the so-called coordination workplace of the project (DECOM, under the contract with the project implementer) represented only activity related to communication with public within the given area. At this stage it should be noted that in the period of 1996-2002, a few studies were prepared to establish the public involvement way. The project implementation was slowed down in 2001 and it is still not revivified.

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Q.No 15	Country United States of America	Article Article 10	Ref. in National Report G.6, 96

Question/ Comment

What is the current Answer of the program to develop a deep repository for spent fuel? What level of citizen involvement will be undertaken in the future?

Answer

Since year 2001 up today, in spite of the approved strategy, there was a very moderate progress. Currently, the updated strategy is before finishing and approving processes. This strategy considers the development of national geological repository as a main option and participation on development of shared

repositories as the second, taking also into account the recent infrastructural changes in area of radioactive waste and the spent fuel management.
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The proposal for the update the Strategy of the back-end of peaceful use of nuclear energy supposes an establishing, at first, the system of incentives for local communities. We intend maximally utilize experiences of Scandinavian countries, WIPP/Carlsbad, experiences from public involvement in implementation of other types of repositories, outputs of the OECD-NEA's Forum of Stakeholder Confidence as well as outputs and recommendations of relevant projects elaborated within the FPs-Euratom in past and recently.

Q.No 16	Country Czech Republic	Article Article 11	Ref. in National Report B.2

Question/ Comment: How is the disposal of institutional RAW financed?

Answer: The JAVYS, a. s. company was officially appointed to collect and consequently manage the institutional radioactive waste, i.e. for its treatment, conditioning, transportation, storage and disposal. There are individual contracts on collection of institutional radioactive waste between waste producers and JAVYS; waste producers pay to JAVYS, a. s. for this service. Management of orphaned nuclear and radioactive materials is financed from the corresponding sub-account of the National Nuclear Fund. That is Fund's only account where the financial tools are collected ad hoc, exclusively from the state budget (through the Ministry of Economy's budget category).
Regarding the disused sealed sources, their return to distributor or manufacturer after their term of use is preferred by legislation. For collection and consequent management of the sources which cannot be returned back from various reasons (mostly historical, e.g. ^{226}Ra sources stored for tens of years in hospitals), there is the same approach described above generally for institutional radioactive waste. Abnormal situations, e.g. bankruptcy, unexpected downfall of the sealed source user, etc., are solved as following: the applicant for approval of the sealed source use is obliged to pay the financial guarantee to the special account of the National Nuclear Fund. Financial guarantee shall cover all costs of the centralized management of sources after become disused. Its rate is assessed officially by the authorized organization (JAVYS, a. s.) who informs the National Nuclear Fund on that. When the user of sealed source redistributes it to another user or to original

distributor or manufacturer, the guarantee payments returns back.

Q.No 17	Country Czech Republic	Article Article 11	Ref. in National Report B.2

Question/ Comment: How is the long-term storage and consecutive disposal of RAW financed?

Answer: It should be distinguished between the NPP operational radioactive waste and waste arising at decommissioning of nuclear facilities. Management of the first group of waste is subject of individual contracts between the waste producers and JAVYS, a. s., including the financial agreements (that is a practice based on historical development. Management of the second group of waste, including its storage and disposal, is financed from the accounts of National Nuclear Fund.
Costs for management of radioactive waste, including investment costs, is theretofore divided into two groups. The basic budget estimate for the management of radioactive waste arising at decommissioning is elaborated by JAVYS, a. s. at the planning stage. The planned budget of management of radioactive waste arising from decommissioning is a part of the Technical-economical substantiation of application for financing the given activity by the National Nuclear Fund and as such it is annually approved by its Board of Governors. The planned budget reflects all eligible costs needed for the JAVYS, a. s. operation. Therefore, these estimations vary from year to year. Estimations of the costs of storage and disposal of decommissioning wastes are a part of these calculations. The estimations are based on the volume of radioactive waste, i.e. all aspects of budgeting are resulted in the unit prices (€/m^3 or €/metric t).
The real costs are verified by the National Nuclear Fund at the stage of invoicing/providing the financial tools to cover really performed activities.

Q.No 18	Country Czech Republic	Article Article 11	Ref. in National Report J/114

Question/ Comment: Is according to the national legal system JAVYS, a. s. responsible also for capturing of radioactive materials of unknown origin and orphan sources? Is it clarified that these wastes have to be disposed of at RÚ RAO or stored? Who is charged to cover the financial liabilities in these cases? Does any Ministry of SR Government provide the subsidy for these activities?

Answer: JAVYS, a. s. is responsible for that.
The second question: Not yet. It will depend on the content of particular radionuclides. Similarly to the institutional radioactive waste, it can be expected that wastes will be disposed in RU RAO in cases where the content of radionuclides meets the waste acceptance criteria. If not, they will be stored in special storage facility for institutional and orphan wastes being constructed beyond the fence of RU RAO. It is expected, that this facility will be put into operation in 2014.
The JAVYS, a. s. company was appointed to collect and consequently manage the institutional radioactive waste, i.e. for its treatment, conditioning, transportation, storage and disposal. There are individual contracts on collection of institutional radioactive waste between waste producers and JAVYS; waste producers pay to JAVYS, a. s. for this service. Management of orphaned nuclear and radioactive materials is financed from the corresponding sub-account of the National Nuclear

Fund. That is Fund's only account where the financial tools are collected ad hoc, exclusively from the state budget (through the Ministry of Economy's budget category).
Regarding the disused sealed sources, their return to distributor or manufacturer after their term of use is preferred by legislation. For collection and consequent management of the sources which cannot be returned back from various reasons (mostly historical, e.g. ^{226}Ra sources stored for tens of years in hospitals), there is the same approach described above generally for institutional radioactive waste. Abnormal situations, e.g. bankruptcy, unexpected downfall of the sealed source user, etc., are solved as following: the applicant for approval of the sealed source use is obliged to pay the financial guarantee to the special account of the National Nuclear Fund. Financial guarantee shall cover all costs of the centralized management of sources after become disused. Its rate is assessed officially by the authorized organization (JAVYS, a. s.) who informs the National Nuclear Fund on that. When the user of sealed source redistributes it to another user or to original distributor or manufacturer, the guarantee payments returns back.

Q.No 19	Country Ukraine	Article Article 11	Ref. in National Report Í.1.1, page 98

Question/ Comment: Which of the activities on RAW reduction completed during the review period were proved to be most efficient?

Answer: The most effective way for the RAW reduction was incineration of liquid and solid burnable RAW, then high pressure compaction of solid non-burnable RAW and thorough characterization and sorting of RAW.

Q.No 20	Country United States of America	Article Article 11	Ref. in National Report D 2.6, 25

Question/ Comment: The National Report states that releases to the environment from the National repository will be limited. What measures are or will be employed to ensure this?

Answer: In the National repository, only such RAW is disposed, that meet the Limits and Conditions (acceptance criteria), which come out from safety analyses. To avoid unacceptable releases of Ra-nuclides into environment, there are several barriers:

- natural geological formation,
- artificial barriers: fixation matrix, fibre-concrete container, disposal box, drain system, backfilling, clay foundation.

The quality of particular barriers and impact of the National Repository on environment are regularly controlled and monitored in compliance with the Regulators´s requirements. Monitoring elements, measured parameters, taking samples (place and frequency), were defined on the basis of analyses of possible ways of ra-nuclides releases. The emphasis is on hydrosphere, because this way of exposition is potentially the most significant. Drain, underground and surface waters are monitored.
As the most important controls in operational phase are Σβ activity, and 3H activity. In accordance with Public Health Authority licence the following parameters are monitored for the discharged waters: 3H, 137Cs, 90Sr, 60Co, 239Pu.
Annex II (on page 122) provides a table with "Annual limit of liquid discharges

from the National Repository of Radioactive Waste RÚ RAO".
The gaseous discharges from the repository are not under consideration.

Q.No 21	Country Bulgaria	Article Article 16.5	Ref. in National Report B, H p.104

Question/ Comment: Could Slovakia provide some additional information regarding the practical application of the legally adopted categories of RAW at the RAW management facilities and activities? What approach has been adopted for the categorization criteria brakedown into further details, as well as for assessment of compliance of operational RAW with these criteria?

Answer: Waste are classified based on requirements defined under Art. 5 ÚJD's Decree No. 30/2012 Coll. from disposal option point of view www.ujd.gov.sk – laws and rules in the area of Nuclear Safety. Further radwaste are sorted according to specific criteria of individual waste processing technologies in order to prepare a final product that comply with WAC for disposal/long term storage.

As presented in the chapter H.6.5 *Procedures for Waste Characterization and Sorting"* in 2003 JAVYS, a. s. prepared operation manual „U-38 Catalogue of RAW categories for their processing in JAVYS, a.s." This manual initializes the RAW categorization system in term of practical requirements for RAW management in the technological facilities, which JAVYS operates. The document provides basic information for proper marking and categorisation of RAW, during packaging and transfers between processing facilities. The document also defines principles and conditions for receiving RAW for processing or conditioning to meet the requirements of final product, which satisfies the acceptance criteria for the disposal in the National repository without endangering transport, other RAW handlings and operation of processing facilities.
This operation manual is fully in compliance with the Slovak legislation, but it doesn´t solve the RAW dividing according to the classification described in chapter „B.3 Criteria Used to Define and Classify Waste" (Regulation of Nuclear regulatory Authority No. 30/2012).
Clasification in the chapter B.3 is mainly based on the ra-nuclide structure.

Q.No 22	Country Germany	Article Article 17	Ref. in National Report H.7.2, 105

Question/ Comment: It is reported that an institutional control over 300 years is assumed for the Mochovce repository after its closure, divided into an active and a passive phase. The duration of the active phase within this period is not specified. Could you add information on this?

Answer: Institutional control will be performed under conditions of the license for repository closure upon detailed review of safety case for closure. Details on institutional control including period of active and passive parts and scope of activities performed during active phase, as required by Art. 32 ÚJD's Decree 58/2006 Coll., are subject of review by regulator and specified as conditions of license for closure of repository.
Currently, institutional control is described in actual safety case for operation, including considerations of uncertainties. Detail time period of active phase is not

defined yet.

Q.No 23	Country Hungary	Article Article 19	Ref. in National Report E.1.2.2 p. 37

Question/ Comment

"Act No. 541/2004 Coll. l. on peaceful use of nuclear energy (the Atomic Act), in matters related to access of public to environmental information and public participation in the decision-making on licensing proposed activities."

What kind of influence is experienced due to the public participation in the decision-making on licensing process of proposed activities?

Answer

In general and according to the actual legislation, the public has a wide range of possibilities to participate in the decision-making procedure in the nuclear area. But and it must be underlined, on the experience, the public shall be necessarily divided into two groups.

The first group, not very numerous but very active, is a group of non-governmental organizations (NGOs) that are introducing themselves as the public representatives, but it is difficult to identify who they represent. Pursuant to their web sites and the Articles of Associations, they specify themselves as a foundation-type and non-profit entities in charge of the environment protection, with very rigid attitudes towards the peaceful use of nuclear energy.
This group of public uses all available legal means to disable any licensing procedure and request access to the licensing documentation in much detail. By our experience from the licensing of the construction changes prior to the completion of the NPP Mochovce 3-4, we may sum up that NGOs have been using all means available to challenge the whole licensing procedure like

a) to lodge the objections/complains at the Compliance Committee of the Aarhus Convention,
b) to lodge a series of actions against ÚJD SR at the Bratislava Regional Court, and, against Ministry of the Environment at the Supreme Court,
c) to initiate EC procedure against Slovak Republic through the EU Pilot system,

As regards their a priori rigid attitude to the peaceful use of nuclear energy, it is impossible to conduct a meaningful discussion on the safety issues topic with abovementioned NGOs as they are of their nature philosophically oriented against nuclear power.

Second group of public, very numerous and legitimate, is a wide public of communes mostly within the vicinity of the nuclear installations. By experience, we may state that this wide group of concerned public do not either intervene into the licensing procedures at all, or, the communal representatives usually participate in available proceedings with neutral attitudes towards the nuclear installation operation. By experience from the licensing of the Mochovce 3-4 themselves, the communal representatives had been participating with neutral attitude or with some few questions and requirements, but without any supportive position or consensus with the attitude of the NGOs representing the first group of public.
What is more of this part of the public, there has not been initiated any legal dispute concerning the licensing activities since the licensing commenced.

Q.No 24	Country Sweden	Article Article 19	Ref. in National Report E.1, page 33

Question/ Comment

Information is given on the structure and mandate of the Nuclear Regulatory Authority of the Slovak Republic (ÚJD SR). It is stated that ÚJD SR is responsible for the assessment of goals of the nuclear energy program and of quality of the classified equipment, as well as for commitments of the SR under international agreements and treaties in the said field.

What impact does ÚJD SR have on the goals of the SSR nuclear energy program?

Answer

According to Act 575/2001 (Competence Act) ÚJD SR is a central state administration authority. It is responsible inter alia for the assessment of goals of nuclear energy program, etc.
According to Act No. 238/2006 (Action Nuclear Fund) §3 the Nuclear Fund submits to the Ministry of Economy the draft "Strategy of nuclear energy back-end" together with the position (opinion) of ÚJD SR. These two acts ensures in the area of waste management the involvement of ÚJD SR in the decision making process of strategic documents.
ÚJD SR as a nuclear safety supervisor is not yet involved in any decision step regarding development of deep geological repository. ÚJD SR as an affected body in the process of EIA is providing statement from nuclear safety point of view at siting stage. In this case, ÚJD SR according to requirements from atomic act provides statement to Regional Civil Construction Authority.

Q.No 25	Country Sweden	Article Article 19	Ref. in National Report E.1, page 35

Question/ Comment

It is explained that the Ministry of Labour, Social Affairs and Family is a central state administration authority for, among others, safety and health protection at work and labour inspection.

Is there an overlap between the National Labour Inspectorate and the ÚJD SR regarding occupational exposure and radiation protection at nuclear facilities? Please explain the division of responsibilities between the National Labour Inspectorate and the ÚJD SR in this regard.

Answer

The Labour Inspectorate executes labour inspection within the scope as stipulated in the Act No. 125/2006 Coll. l. and an oversight according to special regulation, in particular it supervises whether the requirements for OH&S are satisfied with respect to, for example:

- selection, location, layout, use, maintenance and control of the workplace, working environment, means of work;
- work procedures, working time, organization of labour protection and system of its management;
- investigates causes of occurrence of a severe industrial accident;
- through a binding opinion it applies requirements for ensuring occupational health and safety in permitting and granting final permission for use of structures and their changes;
- revokes license or certificate issued to a natural person or to a legal person to perform activities according to special regulations;

- discusses offenses, takes decisions about imposing fines for offenses and on prohibiting activity according to special regulations.

Besides a standard activity the Labour Inspectorate Nitra executes also labour inspection regarding the status of occupational health and safety, including the safety condition of technical equipment (including NI): pressurized equipment, lifting equipment, electrical equipment and gas equipment pursuant to the decree No. 508/2009 Coll. l, specifying the technical equipment considered to be classified technical equipment. It also executes labour inspection on technical equipment, which is a designated product after being introduced to the market or after their putting into operation.

Q.No 26	Country Sweden	Article Article 19	Ref. in National Report E.1.2, pages 33, 35

Question/ Comment: It is described on p.33 that ÚJD SR is a central state administration authority.

Please explain whether this means that ÚJD SR can issue binding regulations about radiation protection and nuclear safety in the sense described under item 4 at the bottom of the page 35?

Answer: In accordance with the Act No. 575/2001 Coll. l. (the Competence Act), ÚJD SR inter alia ensures execution of state regulation of nuclear safety of nuclear installations, including regulation of radioactive waste and spent fuel management and other phases of the fuel cycle, as well as of nuclear materials, including their control and record keeping and is not responsible for radiation protection.
Regulation in the field of radiation protection is provided by the Ministry of Health (see chapter E.2.2.1).

Q.No 27	Country Sweden	Article Article 19	Ref. in National Report E.1.2, page 37

Question/ Comment: Act No. 656/2004 Coll. On Energy and Act No. 276/2001 Coll. On Regulation in Network Industries are included in the description under E.1.2.2 Acts in the field of State Regulation.

Do these acts have any safety significance for management of SNF or radioactive waste (or are they stated here in order for the description to be complete)?

Answer: Your assumption is correct: they are stated in order to complete the Picture. In this special case the Office on Network Industries regulates the electricity prices.

Q.No 28	Country Sweden	Article Article 19	Ref. in National Report E.1.2, page 39

Question/ Comment: It is stated that by amending the Act No. 50/1976 Coll. On land use and building code (the Building Code) amending the Atomic Act No. 541/2004 Coll. I. ÚJD SR became a building authority for constructions of nuclear installations...etc. However the text goes on to say: Prior to issuing decision on siting of a structure relating to a structure, part of which is a nuclear installation, the building authority is obliged to request a binding opinion from ÚJD SR, which may condition its consent by fulfilment of conditions.

Could you please clarify the situation – we assume that ÚJD SR does not ask for its own opinion? The text on page 41, bottom half describes it as ÚJD SR base its decision on its own partial approval of the safety documentation but we assume there is no formal process where ÚJD SR asks the opinion from itself?

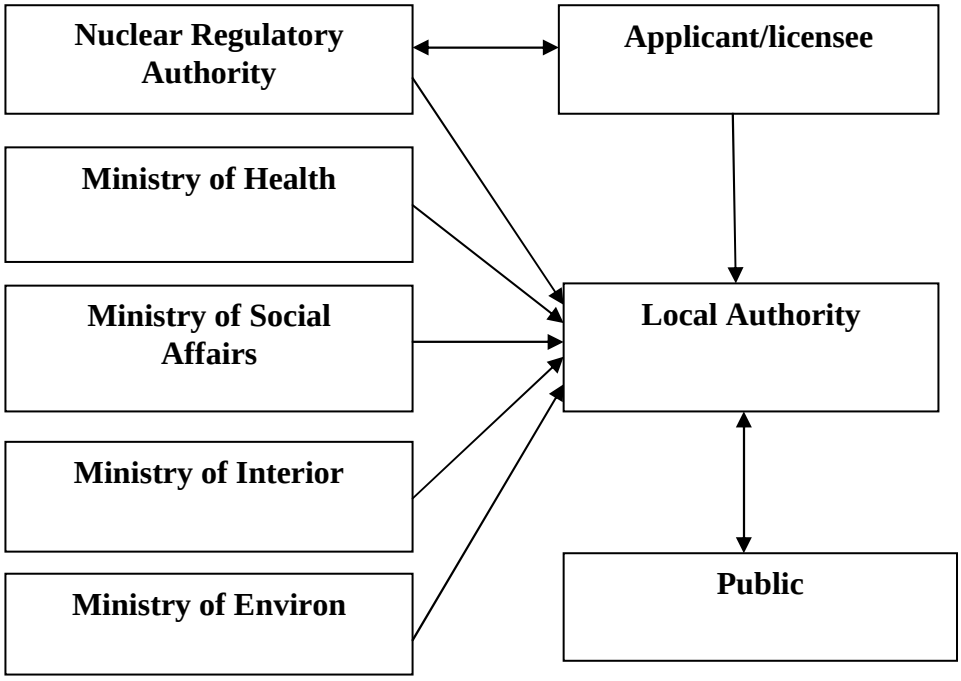
Answer

In order to clarify the situation, the most important fact is that building procedure as laid down by the Building Code (Act. 50/1976 as amended) consists of two partial and independent proceedings:

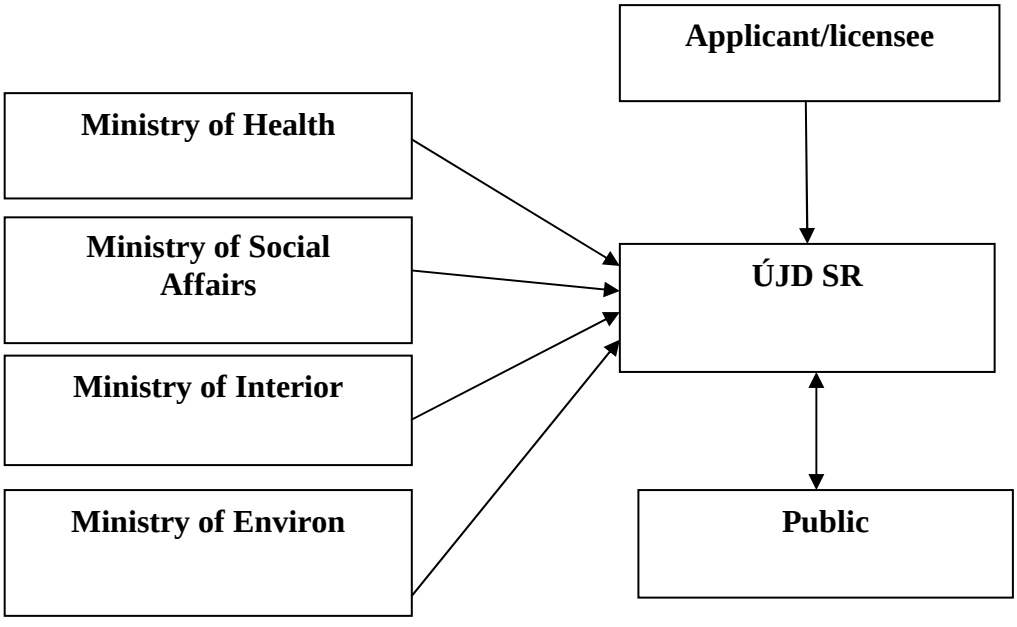
1. Siting proceedings, which is performed by the regional construction authority. ÚJD SR is only one of more authorities requested to provide the regional building office with a binding consent (during this stage the ÚJD SR is not yet the building authority, only one of more affected authorities involved into the siting proceedings), which may be conditioned by fulfilment of specific conditions; the regional construction authority issues the siting licence based on the consent for siting of nuclear installation issued by the ÚJD SR.
2. Building proceedings, which is performed by ÚJD SR, as the special construction authority that issues the building authorisation for nuclear installation and a structure relating to a structure, part of which is a nuclear installation.

Yes, it is true that during the building proceedings (the second stage of building procedure, as mentioned above) ÚJD SR exercises its competence as an building authority and State administration authority for nuclear safety at the same time in one and the same proceedings (in which its decisions are based on its own partial decision/decisions (partial approvals of the safety documentation), as well as based on opinions from the relevant regulatory bodies – the Public Health Authority (radiation protection), the National Labour Inspectorate (labour inspection and occupational health and safety) and other bodies and organizations of State administration (fire protection, civil protection).
As regards ÚJD SR´s partial decisions, there are only the ÚJD SR internal rules on how to manage the applications delivered. The responsible ÚJD SR division shall inform all other divisions about application and request for partial approvals as needed within a set time framework. If necessary and it is quite often, whole procedure is consulted continuously with other divisions, as well as, with the applicant itself to support effective decision proceedings. Simplified structure for siting vis a vis construction, commissioning, decommissioning.

Authorisation of Siting



Authorisation of construction, operation, modifications, decommissioning



Q.No 29	Country Poland	Article Article 19.2.4	Ref. in National Report E.2.1.3, page 42

Question/ Comment

It is understood that different modes of inspections given in the report, are based on the level of the manual? Could be a brief information given on the existing inspection procedures (manuals), i.e. what kind of inspections do they cover? An example would be appreciated.

Answer

Yes, various modes of inspections are described in the Inspection Manual. Within this Inspection Manual there is a special inspection procedure for inspections for radwaste management and decommissioning (P 340 024:08).

For example, following are typical inspection areas for inspections focused on decommissioning:

- compliance between documentation and current status of facility,
- compliance between decommissioning plan and performed activities,
- minimization of radioactive waste generated during decommissioning,
- optimization of decommissioning radioactive waste management,
- fulfilment of internal documentation such as programmes, procedures, instructions by all staff,
- fulfilment of licence conditions and inspection measures,
- record-keeping system,
- status of buildings and equipment of decommissioned facility along with associated areas including housekeeping,
- corrective measures implementation resulting from events.

Q.No 30	Country Poland	Article Article 19.2.6	Ref. in National Report E.2.3, page 45

Question/ Comment

It is interesting how do UJD and Labour Inspectorate cooperate. As said on page 44, there do special legal provisions exist upon ensuring occupational health and safety at the workplaces of a nuclear installation. It is understood that from the Labour Inspectorate perspective, it does include only technical/technological matters of working environment, whereas nuclear and radiation aspects are left to UJD. Though it would be interesting to know, what special provisions regarding labour issues are implemented for the nuclear industry? Are there joint inspections held?

Answer

The Labour Inspectorate executes labour inspection within the scope as stipulated in the Act No. 125/2006 Coll. l. and an oversight according to special regulation, in particular it supervises whether the requirements for OH&S are satisfied with respect to, for example:

- Selection, location, layout, use, maintenance and control of the workplace, working environment, means of work;
- Work procedures, working time, organization of labour protection and system of its management;
- Investigates causes of occurrence of a severe industrial accident;
- Through a binding opinion it applies requirements for ensuring occupational health and safety in permitting and granting final permission for use of structures and their changes;
- Revokes license or certificate issued to a natural person or to a legal person to perform activities according to special regulations;
- Discusses offenses, takes decisions about imposing fines for offenses and on prohibiting activity according to special regulations.

Besides a standard activity the Labour Inspectorate Nitra executes also labour inspection regarding the status of occupational health and safety, including the safety condition of technical equipment (including NI): pressurized equipment, lifting equipment, electrical equipment and gas equipment pursuant to the decree

No. 508/2009 Coll. l, specifying the technical equipment considered to be classified technical equipment. It also executes labour inspection on technical equipment, which is a designated product after being introduced to the market or after their putting into operation.

Q.No 31	Country South Africa	Article Article 20	Ref. in National Report E.2.1.3 p 43

Question/ Comment: Under title “Sanction”, it is stated that in case of non-observance of requirements and violation of legal provisions, regulatory body is entitled to impose sanctions including financial fine. What is the nature of sanctions that have been imposed by the regulatory body?

Answer: Fines may be imposed directly upon the Art. 34 of the Atomic Act. ÚJD SR imposes fines for violation of the Atomic Act provisions as described in details by the Atomic Act. Depending on the seriousness of the offence committed, the general and basic gradation of the fines amounts is set in Art. 34 (1) to (6). However, such gradation is based upon setting the highest amount of the fine that might be imposed for the specific sort of offence. The seriousness of the offence is the only criterion used in the act for the gradation of the fine amount, and, at the moment, there does not exist any further internal directive of ÚJD SR for this purpose.

In each case, Authority shall consider all circumstances of the case individually and follow upon the basis of the ÚJD SR administrative consideration, guidance for which is outlined by Art 34 (9): “… an account shall be taken of mainly the seriousness, manner, duration and potential consequences of the violation of responsibilities, of co-operation and attitude of the entities subject of supervision or natural persons or legal persons concerned upon elimination of the consequences and to measures taken.”

Procedurally, ÚJD SR imposes fine in accordance with the Atomic Act, as the first instance body, by issuance of a formal written decision that shall meet formal requirements and to be issued in due process of law pursuant to the Act No. 71/1967 Coll. on Administrative Proceedings as amended. Person or entity may appeal against fine imposed (file an appeal). Afterwards, ÚJD SR chairperson itself, as a second instance, has to take decision on an appeal upon the proposal of the ad hoc advisory committee basis, but they are not bound by their resolution. In a case of the person is not satisfied with the final affirmative decision of the ÚJD SR chairperson, they may lodge an action at the court asking for revision of legality of the ÚJD SR decision.

During the 2011, the ÚJD SR had imposed the financial sanctions only twice, however, both of them do not relate to the management of radioactive waste and spent fuel:

- For violation of the provisions on the professional competence requirements (fire fighters),
- For performance of important changes to the nuclear installation without prior approval by ÚJD SR.

In fact, the ÚJD SR firstly requires elimination or voidance of deficiencies prior to imposition of fine, and, it also depends on the attitudes of licensee to the deficiencies found, as well as, the seriousness of such violations.

Q.No 32	Country Sweden	Article Article 20	Ref. in National Report E.2.1, page 42

Question/ Comment

It is stated that the inspection plan is a tool for continuous and systematic evaluation of inspection activities at nuclear installations and during transports and controls of nuclear materials. As a rule, such plans are developed for the period of one year.

What input are used to develop such inspection plans? Are there processes in place for collection of feedback of experience to be used?

Answer

Yes, the whole process of inspection activity is described by an external procedure. This includes also establishment of the annual inspection plan based on the suggestions of all relevant ÚJD SR divisions. Every half a year the inspection results are analysed and evaluated. In case the results show a neccessity to modify/broaden the planned inspection activity, it is done so. Booth materials (annual inspection programme as well as the inspection results analysis) are approved by the board of directors of the ÚJD SR.
Based on assessment of all inspections performed in a previous year, a new inspection plan is submitted for approval at managerial meeting, taking into account also expected activities to be performed at inspected facilities.

Q.No 33	Country Sweden	Article Article 20	Ref. in National Report E.2.1, page 43

Question/ Comment

Under “Sanction” it is described that the regulatory body may impose fines to the operator, as well as to the employees, when nuclear safety is violated. In case of non-observance of requirements and violation of legal provisions, regulatory body is entitled to impose sanctions including financial fine to the authorization holder.

Are there any legal processes where operations at a facility can be suspended or a license can be revoked?

Answer

There are special provisions regarding the suspension of operation of nuclear installation as stated in Article 32 of the Atomic Act. If there is a risk in delay of or upon a serious occurrence of nuclear safety, physical protection or emergency preparedness relevance, the ÚJD SR may decide to restrict the scope or the validity of authorisation; or order the licensee to take the necessary measures; or order to suspend the operation of nuclear installation. Procedurally, the ÚJD SR issues decision on suspension/restriction in administrative proceedings pursuant to the Act No. 71/1967 Coll. on Administrative Proceedings as amended, as the first instance body. Those decisions might be appealed against (at the ÚJD SR chairperson as a second instance body) and revised by the court by lodging an action at the court asking for revision of legality of the ÚJD SR decision.

Another case is when other authority has made the decision to suspend the operation of a nuclear installation due to reasons other than threat to safety, such body shall be liable to reimburse the licensee for the costs needed to assure nuclear safety, and the State Fund of Decommissioning of Nuclear Installations and Management of Spent Fuel and Radioactive Waste for the corresponding portion of the costs incurred as the result of such a decision.

Up to now, we have not been dealing with such a case of legal process.

Q.No 34	Country Sweden	Article Article 20	Ref. in National Report E.2.2, page 46

Question/ Comment

It is described that the types of technical equipments are divided into group A, group B or group C According to the degree of threat. “Group A” contains technical equipments with high degree of threat, “Group B” are technical equipments with higher degree of threat and “Group C” are technical equipments with lower degree of threat.

Could you please elaborate on this and explain whether group B threats signify a higher degree of threat (than A?) and C? and whether the group C degree threats is lower than the threat for those of group A, B or both?

Answer

Equipment in category “A” are equipment with the “highest” risk level. “B” means “medium” and “C” means “lower” risk rate

Q.No 35	Country Germany	Article Article 22	Ref. in National Report F.2.1, 51

Question/ Comment

Regarding human resources: What kinds of provisions have been taken to manage personnel succession (knowledge transfer between retiring personnel and their successors)? Do you apply any knowledge management tools?

Answer

To manage personnel succession JAVYS, a. s. apply SAT (Systematic Approach to Training). At first analysis of the workposition and the analysis of the background and knowledge of the successor who is applying for the workposition is done.
There are three alternatives:

- If the successor is qualified, it is adequate to realize the on-the-job training (minimum 2 weeks),
- If the successor is not competent for the certain position it is important to take the training for the changed job position – 2 weeks (theoretical part) and the on-the-job training - min. 2 weeks (practical part),
- If the successor is a newcomer, he must take part in the basic training according to the legislation, and The Personnel Training System. In accordance with the responsibilities related to the particular job position it takes up to 95 days.

The retiring person is usually appointed as a trainer of the successor.
The successor is usually chosen from the same unit/department/nuclear installation having sufficiency of knowledge and information on the workplace and workposition.
In the case of managerial position the successor has usually been working as a representative of the retiring person for some time.
After the adequate training the manager evaluates if the successor is competent to carry out the work position.

Q.No 36	Country Germany	Article Article 22	Ref. in National Report F.2.2, 53

Question/ Comment

How is the option of regional or shared repositories taken into account when estimating the financial resources for waste and spent fuel management? How are further developments of safety requirements and more sophisticated technical solutions that may lead to higher expenses in waste and spent fuel management considered in defining the financial resources and the contributions by the waste producer?

Answer

Act No. 238/2006 Coll. l. on the National Nuclear Fund for decommissioning of nuclear installations and for spent nuclear fuel and radioactive waste management (the Act on the Nuclear Fund) considers the use of Nuclear Fund financial resources for all phases of underground repository development, including research.

The shared/regional repository option has not been taken into account when estimating the waste and spent fuel management funding. It could not to be, indeed: the outputs of the working group, where the Slovak experts are actively present, provide so far the methodological framework for situations, when potentially interesting states become to really interesting by decision on conclusion of corresponding international agreements. Such situations have not become anywhere up to now.

The 2nd: The national strategy of the back-end of peaceful use of nuclear energy shall be updated once per five years, at least. It should contain also proposals reflecting the mentioned development.

Q.No 37	Country Sweden	Article Article 22	Ref. in National Report F.2.2, page 53-54

Question/ Comment

The Fund resources are collected in several ways. Under item h) it is stated "revenues from financial operations".

What kind of operations are these?

Are there any legal SR restrictions on how the fund revenues/holdings can be invested?

Answer

Regarding the mentioned Fund resource, Act No. 238/2006 Coll. as amended, precisely states in § 7, section (1), letter i) (not h) after the last act amendment) the following:

i) revenues from financial operations pursuant to § 9, section 2, letter b),

And, § 9, section 2 of the Act says:

The Nuclear Fund's resources cannot be used for:

...

b) financial operations on the financial market, including purchase of securities, except investing the Fund's financial resources as decided by the Ministry of Finance;

In practice, there has not been any such investing/decision of the Ministry of Finance yet. Significant part of the Fund's financial resources is put out on the treasury fixed account to interest.

Q.No 38	Country Sweden	Article Article 22	Ref. in National Report F.2.2, page 55

Question/ Comment

It is described that financial resources from the Fund can only be granted upon compliance with conditions defined by the Nuclear Fund and after the approval of the Board of Trustees of the Fund.

How are the members of this Board of Trustees of the Fund selected and appointed (who are eligible)?

Answer

To clarify the relations between the Board of Governors and the Board of Trustees (better: The Supervisory Board).

According to Art. 11, Sect. 5 of the Act No. 238/2006 Coll., as amended:

(5) The Board of Governors shall review the application, namely its compliance with approved strategy and approved budget, while also considering contribution of provided financial means to increasing the nuclear and radiation safety of the Slovak Republic and particularly to increasing protection of health and life of the Slovak Republic citizens and to permanently sustainable development of the environment.

Article 3 of the Act No. 238/2006 Coll. as amended says:

(3) The Chairman of the Board of Governors and other four members of the Board of Governors are appointed and withdrawn by the Government at suit of the Minister of Economy of the Slovak Republic. One Vice-chairman of the Board of Governors is appointed and withdrawn by the Government at suit of the Minister of Finance of the Slovak Republic; another Vice-chairman of the Board of Governors is appointed and withdrawn by the Government at suit of the Chairman of Nuclear Regulatory Authority.

(4) Selection of candidates for membership in the Board of Governors shall be performed by the Ministry of Economy in form of a selection process pursuant to special regulation (§5 and 6 of the act No. 552/2003 Coll. on execution of work in the public interest, as amended by act No. 365/2004 Coll.).; the Ministry cooperates here with university centers and research institutes acting in nuclear power area. Only a natural person with permanent residence on the territory of the Slovak Republic who meets with the following requirements can be appointed for the Board of Governors membership:

a) has finished the 2nd degree of the university education

b) has a minimal 10-year professional experience

1. in the field of nuclear power or nuclear research,
2. in development of economic or financial concepts and analyses in nuclear power area,
3. in designing and execution of constructions of nuclear facilities, **or**
4. in a field of law application in the nuclear power area.

c) has a competence to acting in law,

d) is blameless; for the purposes of this act, the “blameless” shall mean a person who has not been lawfully convicted for crime against property or other deliberate crime; the blamelessness shall be proved by the excerpt from the Register of criminal records not older than three

months.

Regarding the role of Supervisory Board, the Act in its Art. 4, sect. 2 says:

The Supervisory Board

e) discusses proposals of contracts on the Nuclear Fund means provision for purposes as given in § 9

Regarding the Supervisory Board composition, the Act in sect. 3 of the same Art. states:

The Supervisory Board has five members. The Chairman of the Supervisory Board is the State Secretary of the Ministry of Finance appointed by the Minister of Finance; other members of the Supervisory Board are: the State Secretary of the Ministry of Economy appointed by the Minister, Vice-chairman of the Nuclear Regulatory Authority, representative of the Ministry of Environment appointed by the Minister of Environment and representative of the Ministry of Health appointed by the Minister of Health.

Q.No 39	Country Sweden	Article Article 23	Ref. in National Report F.3, Page 58

Question/ Comment: It is listed what the labour inspectorate controls when verifying the professional competence.

What is meant by "Certificate of incorporation"?

Answer: All companies should be registered in the registry of commerce. The certificate means a copy (document) of the registry. The aim is that only registered companies can make business.

Q.No 40	Country Poland	Article Article 24	Ref. in National Report tables: F.4.3a; F.4.3b; page 63

Question/ Comment: Regarding given tables, it would be appreciated if the unit for the presented discharge data could be clarified.

Answer

A-1	Aerosols beta / gamma		Sr 89, 90		Aerosols alpha	
Year	discharge [MBq]	% of limit	discharge [kBq]	% of limit	discharge [kBq]	% of limit
1994	2,20	0,23	33,20	0,12	155,00	1,76
1995	4,11	0,44	289,00	1,03	418,00	4,75
1996	7,16	0,76	770,00	2,77	781,00	8,88
1997	10,42	1,11	680,00	2,44	1710,00	19,43
1998	16,87	1,79	1180,00	4,20	730,00	8,30
1999	21,50	2,29	540,00	1,93	809,00	9,19
2000	21,62	2,30	158,10	0,56	973,57	11,06
2001	20,70	2,20	207,51	0,74	997,12	11,33
2002	75,75	8,05	1683,21	6,01	78,32	0,89
2003	25,38	2,7	921,42	3,29	24,84	0,83
2004	15,47	1,65	409,87	1,46	28,41	0,32
2005	25,24	2,68	355,44	1,27	20,03	0,22

2006	10,46	1,09	443,13	1,58	41,99	0,48
2007	4,05	0,42	151,92	0,54	9,81	0,11
2008	*18,56*	*1,97*	*81,70*	*0,29*	*6,11*	*0,07*
2009	*3,92*	*0,42*	*149,00*	*0,53*	*16,84*	*0,19*
2010	*3,37*	*0,36*	*292,26*	*1,04*	*20,33*	*0,23*

Table F. 4.3a) Gaseous discharges from NPP A-1 and conditioning technology of TSÚ RAO

Váh river	Tritium		Corrosion and fission products	
Year	discharge [GBq]	% of limit	discharge [MBq]	% of limit
Recipient Vah river				
1994	840	1,92	24,47	0,064
1995	1958,48	3,1	50,631	0,13
1996	505,08	1,16	33,8	0,09
1997	11850	27,12	29,665	0,08
1998	249,87	0,57178	130,7	0,34395
1999	1120	2,56293	169,3	0,44553
2000	740,8	1,69519	87,68	0,23074
2001	3023	6,91762	67,874	0,17862
2002	589,009	1,34785	90,566	0,23833
2003	2258,26	5,16763	86,867	0,2286
2004	2411,095	5,5174	85,296	0,22446
2005	2141,8	4,90114	70,511	0,18556
2006	1000,4	8,93	76,01	0,48
2007	237,827	2,59	89,21	0,74
2008	*212,30*	*2,12*	*135,10*	*1,13*
2009	*186,64*	*1,87*	*114,85*	*0,96*
2010	*225,72*	*2,26*	*116,81*	*0,97*
Recipient Dudváh river				
1994	211,2	48,33	36	9,5
1995	0,213	0,05	3,905	1,03
1996	0,13	0,03	1,69	0,44
1997	0,048	0,01	0,495	0,13
1998	0,004	0,00092	1,016	0,27
1999	0,002	0,00048	0,532	0,14
2000	0,00027	0,000063	0,223	0,06
2001	0,00021	0,000047	0,046	0,01211
2002	0,0014	0,00032	0,463	0,12184
2003	0,0005	0,00011	0,013	0,00342
2004	0	0	0	0
2005	0	0	0	0
2006	0	0	0	0
2007	20,38	55,08	13,17	10,98
2008	*0*	*0*	*0*	*0*
2009	*0*	*0*	*0*	*0*
2010	*0*	*0*	*0*	*0*

Table F. 4.3b) Liquid discharges from NPP A-1 and the conditioning technology of TSÚ RAO

Q.No 41	Country Poland	Article Article 24	Ref. in National Report table F.4.3f, page 65

Question/ Comment: Regarding given table, it would be appreciated if the unit for collective doses could be clarified.

Answer: The unit on the vertical axle is unit of the collective dose – manmSv. The illegility of the unit was procured by incorrect formatting of the graph.

Q.No 42	Country Poland	Article Article 24	Ref. in National Report F.4.5, page 66

Question/ Comment: Regarding values being monitored, it would be interesting to know what agricultural products and what radionuclides are monitored on regular basis?

Answer: The values in stated table (F.4.5) are calculated based on model programs coming from real measurements of releases (to the atmosphere and hydrosphere) and from the meteorological situation in existing year in the vicinity of nuclear facility. One of the basic database for stated calculation are statistical values on agricultural products in aggrieved region and this database is yearly updated under authority of statistical data from Bureau of Statistics SR.
Furthermore the samples of agricultural crops are taken regularly (yearly) on the farms in the vicinity of NPP Bohunice and radioactivity of artificial radionuclides is measured in the samples. Measured values are either regularly below MDA or significantly below the level of natural radionuclides and deposited from the accidents of NPP and of nuclear weapons and these results are applied for impact assessment of NPP to the surroundings.

Radioactivity monitoring of agricultural products on regular basis
Radiochemistry laboratory, The Public Health Authority of the Slovak Republic

Type of agricultural product	Sampling	Radionuclides
Vegetable and fruit	yearly in season	^{137}Cs, ^{90}Sr, ^{40}K
Feed	yearly in season	
Cereals (barley, wheat)	yearly in season	

Q.No 43	Country Sweden	Article Article 24	Ref. in National Report F.4.2, page 60

Question/ Comment: The monitoring plan is stated to have several purposes, one of which is formulated as "to demonstrate that the radiation protection is optimised".

How is this done in practice as it could certainly be difficult since it involves value judgments?
Is the evaluation using radiological performance indicators?

Answer: Optimization of radiological performance is evaluated by “operating indicators” which are given by relevant authority for operation of relevant nuclear installation.

Q.No 44	Country Sweden	Article Article 24	Ref. in National Report F.4.2, page 60

Question/ Comment: The text describes the impact evaluation of intakes of radionuclides.
What whole-body measurement equipment is available? For work in areas with air contamination, what policy is used for personal protective equipment? Is the first principle to completely avoid intakes or are the intakes optimised in the same way as for direct exposures?

Answer

a) FASTSCAN with plastic scintillators (Canberra Packard) - all staff which is working in controled area is monitored (minimum yearly) and in case of exceeding investigative level staff is monitored on the whole-body measurement equipment with Ge (Li) detector (Canberra Packard).
b) Basic practise is to completely avoid internal contamination (using respirator/overall).

Q.No 45	Country Sweden	Article Article 24	Ref. in National Report F.4.3, page 61

Question/ Comment

It is stated that samples are taken in the samplers with a view to ascertain radionuclide composition and balancing. Requirements for balancing individual radionuclides are defined in the relevant decisions of the state regulator for individual nuclear installations.

What is meant by: Requirements for balancing individual radionuclides are defined in relevant decisions of the state regulator etc…Balancing in what way and to what end?

Answer

"balancing" in this case means „balance, account balance, bilan". Operator of nuclear facility must not to exceed quantity of released radionuclide which is determined by State authority (standard conditions of operation nuclear facility), i.e. operator is obliged continuously to monitor quantity of released radionuclide and to do balance of released quantity in defined interval of corresponding radionuclide or mixture of radionuclides.

Q.No 46	Country Sweden	Article Article 24	Ref. in National Report F.4.3, page 62

Question/ Comment

It is described, based on a suggestion from ÚJD SR, a proposal for the "distribution of limits" between NPP A-1 chimneys (+ bituminization plant) and the chimney of BSC RAO obj. 808.

What was then decided and by whom?

Answer

ÚJD SR initiated discussion on discharges from Bohunice site, because due to historical development there were discrepancies between values of discharges from NPP A-1 and radwaste treatment facilities, co-located at Bohunice site, and in Technical Specifications of these facilities.
ÚVZ SR, as a competent authority for radiation protection, suggested distribution of these limits for discharges as is described in F 4.3, p. 62.
ÚVZ SR is responsible for setting all radiological related limits and reference levels related to the effluents from e.g. chimneys of JAVYS company who is the owner of A-1 a BSC RAO. The basic limit set by ÚVZ SR is 12 microSv/year for reference person from all pathways (atmosphere, hydrosphere) from all facilities described in the license (A-1, BSC RAO etc.). The reference values of effluents are also set in the license and are described in the form of Bq/year for each facility separately.

Q.No 47	Country Sweden	Article Article 24	Ref. in National Report F.4.3, page 63

Question/ Comment: No units are given for the discharges presented in Table F.4.3 a) (Gaseous discharges from NPP A-1 and conditioning technology of TSÚ RAO).

Answer

A-1	Aerosols beta / gamma		Sr 89, 90		Aerosols alpha	
Year	discharge [MBq]	% of limit	discharge [kBq]	% of limit	discharge [kBq]	% of limit
1994	2,20	0,23	33,20	0,12	155,00	1,76
1995	4,11	0,44	289,00	1,03	418,00	4,75
1996	7,16	0,76	770,00	2,77	781,00	8,88
1997	10,42	1,11	680,00	2,44	1710,00	19,43
1998	16,87	1,79	1180,00	4,20	730,00	8,30
1999	21,50	2,29	540,00	1,93	809,00	9,19
2000	21,62	2,30	158,10	0,56	973,57	11,06
2001	20,70	2,20	207,51	0,74	997,12	11,33
2002	75,75	8,05	1683,21	6,01	78,32	0,89
2003	25,38	2,7	921,42	3,29	24,84	0,83
2004	15,47	1,65	409,87	1,46	28,41	0,32
2005	25,24	2,68	355,44	1,27	20,03	0,22
2006	10,46	1,09	443,13	1,58	41,99	0,48
2007	4,05	0,42	151,92	0,54	9,81	0,11
2008	*18,56*	*1,97*	*81,70*	*0,29*	*6,11*	*0,07*
2009	*3,92*	*0,42*	*149,00*	*0,53*	*16,84*	*0,19*
2010	*3,37*	*0,36*	*292,26*	*1,04*	*20,33*	*0,23*

Table F. 4.3a) Gaseous discharges from NPP A-1 and conditioning technology of TSÚ RAO

Váh river	Tritium		Corrosion and fission products	
Year	discharge [GBq]	% of limit	discharge [MBq]	% of limit
Recipient Vah river				
1994	840	1,92	24,47	0,064
1995	1958,48	3,1	50,631	0,13
1996	505,08	1,16	33,8	0,09
1997	11850	27,12	29,665	0,08
1998	249,87	0,57178	130,7	0,34395
1999	1120	2,56293	169,3	0,44553
2000	740,8	1,69519	87,68	0,23074
2001	3023	6,91762	67,874	0,17862
2002	589,009	1,34785	90,566	0,23833
2003	2258,26	5,16763	86,867	0,2286
2004	2411,095	5,5174	85,296	0,22446
2005	2141,8	4,90114	70,511	0,18556
2006	1000,4	8,93	76,01	0,48
2007	237,827	2,59	89,21	0,74
2008	*212,30*	*2,12*	*135,10*	*1,13*
2009	*186,64*	*1,87*	*114,85*	*0,96*
2010	*225,72*	*2,26*	*116,81*	*0,97*
Recipient Dudváh river				
1994	211,2	48,33	36	9,5
1995	0,213	0,05	3,905	1,03
1996	0,13	0,03	1,69	0,44
1997	0,048	0,01	0,495	0,13
1998	0,004	0,00092	1,016	0,27
1999	0,002	0,00048	0,532	0,14
2000	0,00027	0,000063	0,223	0,06
2001	0,00021	0,000047	0,046	0,01211
2002	0,0014	0,00032	0,463	0,12184

2003	0,0005	0,00011	0,013	0,00342
2004	0	0	0	0
2005	0	0	0	0
2006	0	0	0	0
2007	20,38	55,08	13,17	10,98
2008	*0*	*0*	*0*	*0*
2009	*0*	*0*	*0*	*0*
2010	*0*	*0*	*0*	*0*

Table F. 4.3b) Liquid discharges from NPP A-1 and the conditioning technology of TSÚ RAO

Q.No 48	Country Sweden	Article Article 24	Ref. in National Report F.4.3, page 64

Question/ Comment: What does “KP + ŠP” stand for under Type of discharge in Table F4.3d)?

Answer: corrosive products (KP) + fission products (ŠP)

Q.No 49	Country Sweden	Article Article 24	Ref. in National Report F.4.3, page 64

Question/ Comment: What is meant by the statement that “In the liquid discharges from RÚ RAO during the whole period of operation no such activity has been identified, which would exceed the normal levels of rain and surface water”. Surely several of the nuclides Co-60, Sr-90 do not occur naturally in rain and surface water?

Please explain further the meaning of this text.

Answer: This text should be understood as follows: liquid discharges from RÚ RAO in reality consist of rain water only (captured from the roofs and roads in the Repository area). From the radioactivity point of view, the discharged waters have the same parameters as rain waters.
Most radionuclides activity in discharges is under the detection limit of used measuring instrumentation. By monitoring of volume activity, there are measured only Σβ activity, eventually 3H and 90Sr when using selective methods. Yearly released activity levels, which are stated in the table F.4.3e, were obtained as a MDA value (minimal detectable activity) multiplied by volume of water released per year. This procedure is in accordance with a conservative approach within assessment of radiation releases impact.

Q.No 50	Country Sweden	Article Article 24	Ref. in National Report F.4.4, p.65

Question/ Comment: KED as given in the text (kolektívnej eektívnej dávky) is erroneously translated as International Commission for Radiation Protection!

Answer: Many thanks for the warning.

Q.No 51	Country Sweden	Article Article 24	Ref. in National Report F.4.5, page 66

Question/ Comment: Impact of nuclear installations at the Bohunice site is evaluated by e.g. analytical method and that yearly values of discharged radioactive materials are entered as input values for the calculation program.
The program (computer?), using analytical methods, which is used to calculate the

impact of a nuclear installation on the surroundings is approved by the state regulator – ÚVZ SR.
How is such an approval done? Does it include benchmarking with other programmes or calculation of results from standard scenarios etc.?

Answer

Formal approval of the computer program used for public doses calculations is a part of the licence for discharges.
Models of dispersion, exposure pathways, transfer coefficients and conversion factors are presented to the authority in the application or during licensing proces. Except these the results of comparison of dose calculations with other internationally recognized computer programs are required and are condition for approval and any documents on approval or validation of relevant computer program by authority in other country or by international organisation.

Q.No 52	Country Ukraine	Article Article 24	Ref. in National Report F.4, page 58

Question/ Comment

Are there any assessments of equivalent dose to eye lens for category A personnel? Does Slovakia plan to review the annual equivalent dose limit for external exposure of eye lens pursuant to the requirements of reviewed International Basic Safety Standards for Protection against Ionizing Radiation and for the Safety of Radiation Sources- BSS?

Answer

The special assessments of lens of eye equivalent dose are usually made only in special situations where there the dose of lens of eye could be reasonable higher than the personal dose equivalent. The assessment is usually done on a base of special dosimeters.
The Basic Safety Standards of EU will be biding for the Slovak legislation. It is expected that new dose limits for lens of eye will be a part of the EU BSS.

Q.No 53	Country South Africa	Article Article 25	Ref. in National Report F 5.2.5 p76

Question/ Comment

Are Spent Fuel Pools and other waste management facilities included in emergency exercises?

Answer

All nuclear installations including waste management facilities, spent fuel pool and interim spent fuel storage facility are subject to emergency exercises twice a year. Scenarios are prepared taking into account particularities of the given facility.

Q.No 54	Country South Africa	Article Article 25	Ref. in National Report F 5.2.3 p72

Question/ Comment

Which organisation acts as National coordinating Committee in Slovakia, and what is the frequency of threat assessment?

Answer

In Slovakia the Central Crisis Headquarters is the highest body concerning emergency preparedness. It is headed by the minister of interior. It consists of representatives of individual ministries. Ministry of Interior evaluates and lists all potential threats related to industrial facilities in Slovakia as well as potential threats of natural disasters.

Q.No 55	Country South Africa	Article Article 25	Ref. in National Report F5.2.3.2 p73

Question/ Comment: What are the plans in Slovakia with respect of the implementation of the ICRP/IAEA protection strategy for emergency exposure situations?

Answer: The Basic Safety Standards of EU will be biding for the Slovak legislation.
It is expected that the ICRP/IAEA protection strategy will be implemented also for the emergency exposure situations.

Q.No 56	Country Sweden	Article Article 25	Ref. in National Report F.5.2.1, page 69

Question/ Comment: It is described that the national organization of emergency preparedness (fig. F.5.1) is structured in three levels with distribution of responsibilities on local, regional and central level.
How is this “modified”/applied in case of transport accidents or accidents with ionising radiation sources in the non-nuclear area?

Answer: Every carrier or transport operator has to prepare an emergency transport order which is reviewed and approved by the Ministry of Transport, Post and Telecommunications. In case of transport of fresh and spent nuclear fuel, radioactive materials or radioactive waste this emergency transport order has to be reviewed also by the Nuclear Regulatory Authority. Without positive standpoint of the regulatory body this emergency transport order cannot be approved. During the transport through Slovakia an emergency communication system is ready to call for any kind of expert and logistic support and assistance.

Q.No 57	Country Sweden	Article Article 25	Ref. in National Report F.5.2.2, page 71

Question/ Comment: The description of the Slovak Centre of Radiation Monitring Network (SÚRMS) is interesting. It seems to have access to several monitoring systems from several offices of public health care as well as other mobile and laboratory components.

Could you give more information on the number of staff in the SÚRMS work? Are laboratories and mobile components contracted? In the case of an accident, is the measurement strategy decided by the SÚRMS (where to deploy units, what to measure etc)?

Answer: Slovak Centre of Radiation Monitoring Network serves as the coordination and organisation center for the network. It means that activities which are proposed to do are performed by different ministries and their institutions with the joint leadership under SURMS based at Public Health Authority (PHA). SURMS has one manager and two other experts dealing with the organisational matters. The other PHA is involved in direct monitoring activities.

Q.No 58	Country Sweden	Article Article 25	Ref. in National Report F.5.2.3.2, page 73

Question/ Comment: It is stated that protective measures are part of the public protection plans, which are developed by territorially competent state authorities and municipalities located

in the area of threat of nuclear installation defined by a distance within 11 km in case of NPP V-1 Bohunice, 21 km in case of NPP V-2 Bohunice and 20 km in case of NPP Mochovce.

Are emergency measures planned /could emergency measures be performed outside of the 11 km (NPP V-1 Bohunice), 20 km (NPP Mochovce), 21 km (NPP V-2 Bohunice) zones (compare also with text on top of page 74)? Are iodine tablets pre-distributed to the people living in these areas? Is the 3 km exclusion zone (mentioned on page 86) for permanent settlement upheld/controlled also for the existing operating power plants? On what assumptions is this 3-kilometer criteria based?

Answer

Based on assessment of radiological situation and forecast of its development countermeasures can be applied also beyond the EPZ of individual NPPs. Decision would be made by the National Crisis Headquarters based on information and recommendation coming from ÚJD´s ERC.
Iodine tablets are pre-distributed for all people living in EPZ as follow:
NPP Bohunice: approx 310 900 pills are distributed beforehand, plus reserve for non-residential, transient, passing persons, etc.
NPP Mochovce: approx 190.000, pills are distributed beforehand, plus reserve for non-residential, transient, passing persons, etc.
Exlusion zone with radius 3 km was set up in the design phase of both NPPs - NPP Bohunice and NPP Mochovce as a precautionary measure by the former Soviet NPP designer. Exact boundaries were demarcated and approved by the County Hygienist in Chief in early seventies and is still valid.

Q.No 59	Country Sweden	Article Article 25	Ref. in National Report F.5.2.3.2, page 72-73

Question/ Comment

It seems that ERO is used as acronym both for the national Emergency Response Organisation within SR, as well as for the local Emergency Response Organisation of the local site (page 72 bottom)?

Answer

ERO – emergency response organization - is a denomination generally used in Slovak technical language used in the area of emergency preparedness.

Q.No 60	Country Sweden	Article Article 25	Ref. in National Report F.5.2.3.2, page 73

Question/ Comment

It is described that the holder of authorization in case of occurrence of the 2nd level event shall notify the relevant authorities and organizations in the area under threat and in case of occurrence of the 3rd level event warning the public without any delay.

Could you give more information on the meaning of 2nd level event and 3rd level event as referred to at the bottom of page 73?

Answer

Classification of levels are described in the regulation No. 55/2006 Coll. on Details in Emergency Planning in case of an Event Incident or an Accident (§ 5)
Classification levels for incident or accident severity are:
a) level 1 – “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) level 2 – "state of emergency within the nuclear facility area" – 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) level 3 – "state of emergency within the nuclear facility surroundings" – for a condition that may lead or leads to a severe release of radioactive substances to the nuclear facility surroundings.

Provided that individual severity levels are announced, the following activities shall be performed in particular:

a) For the first level, all competent units of the emergency response organisation within the nuclear facility area shall be notified, and if necessary, also persons responsible for population protection as per the population protection plan; this level is equivalent to the period of the threat,
b) For the second level, the emergency response organisation shall be alerted and persóna responsible for population protection as per the population protection plan shall be notified and a population warning shall be prepared; measures are performed as per the population protection plan,
c) For the third level, measures shall be introduced and executed following from the internal emergency plan and population protection plans.

Q.No 61	Country Sweden	Article Article 25	Ref. in National Report F.5.2.3.2, page 74

Question/ Comment

In the last section it is described which level of authority which is managing the rescue workers, etc. depending on affected area (from municipality and major, up to Government of SR and the Prime Minister, if the event exceeds the territory of a region). This would mean an increasing complexity (several levels) of decision-making and discharging of responsibilities the larger the affected area/region.

How is this performed in practice when for instance a decision to distribute iodine tablets or to optimise the use of regional/local monitoring units in the affected areas should be decided?

Answer

In the emergency situation the county office with its county emergency headquarters is the first to decide on countermeasures to protect public. In case when situation starts to be more degraded and exceeds possibility and means available for county level then it is turn of the Central Crisis Headquarters. The Central Crisis Headquarters (headed by the Minister of Interior) would take over decision making and would take decisions on relevant countermeasures and intervention actions.

Iodine pills are pre-distributed in EPZ with sufficient reserve for un-anticipated situations. Their use in the affected areas would be decided based on results of radiological situation assessment. For emergency and intervention workers particular guidance is developed. It is based on Governmental Order No. 345/2006 Coll.:

- actions for the purpose of saving human lives - effective dose 500 mSv and cumulative equivalent dose in skin 5 000 mSv,
- actions to avert large collective dose as localisation works or prevention of catastrophic conditions - effective dose 100 mSv and cumulative equivalent doses should not exceed double of the pertinent yearly limit stipulated for exposed workers.

Q.No 62	Country Sweden	Article Article 25	Ref. in National Report F.5.2.4, page 75

Question/ Comment

It is described that the warning system for the Bohunice site, covering a territory with a radius of 25 km, will be reduced to 21 km.

What is the safety rationale behind decreasing the area from 25 to 21 km?

Answer

Up to 2004 there were four WWER 440 MW units in operation on Bohunice site. As required during negotiations concerning entry of the Slovak Republic to EU two units NPP V-1 were shut down. As only two NPP units of V-2 with many new safety elements remained in operation the operator of NPP Bohunice, based on the Atomic Act § 28 par. (5) applied for diminishing the EPZ. The application was accompanied with all documents required for an administrative approval proceedings, which are specified in regulatory body Regulation No. 55/2006 Coll. § 18 and relevant appendix No. 5.

Details of documents required to determine the threatened area size

1. The documents for the application for approval of the threatened area size or changes thereof include:
   a) An analysis of the source element and radiological consequences of selected severe accidents and comparison of calculated results with the determined values pursuant to special regulations,
   b) A description of analysis methodology and calculation software,
   c) Justification of selection of the analyzed scenarios of development of selected severe accidents
   d) The modeling assumptions used,
   e) The envisaged initial and boundary conditions and requirements for functionality of systems and components,
   f) The envisaged corrective measures to mitigate the consequences of selected severe accidents,
   g) Quality assurance,
   h) The results of analyses and their conclusions with specification of the threatened area size,
   i) A graphic representation with indication of placement of the nuclear facility and with indication of the threatened area.
2. Analyses of the source element and radiological consequences of selected severe accidents are documented so that the Authority can verify the calculated results and conclusions.
3. The applicant shall submit the documents pursuant to paragraph 1 in two copies.

Nuclear regulatory Authority reviewed this documentation and issued decision on new smaller size of EPZ.

Q.No 63	Country Sweden	Article Article 25	Ref. in National Report Section F, page 75-76

Question/ Comment: It is not clear what is meant by abbreviations VYR-VAR and CP (the abbreviation OHO can be deduced from the text).

Answer: VYR VAR - it is Slovak acronym for “NOTIFICATION” - “VYRozumenie” and “WARNING” – “VARovanie”.
CP – Civil Protection,
OHO – Slovak acronym for emergency response organization (ERO).

Q.No 64	Country Sweden	Article Article 25	Ref. in National Report Section F, p. 78

Question/ Comment: ConvEx-2c exercise.”

If exercises were carried out according to plans, the outcome should have been accounted for in the report. What is the Answer in this regard?

Answer: The sentence was not updated. The correct wording should be: In 2010 two international exercises were planned (ConvEx–1 and ConvEx– 2c) on which Slovakia does not participated actively.

Q.No 65	Country Sweden	Article Article 26	Ref. in National Report F.6, page 79

Question/ Comment: It is described that the dose loads are regularly evaluated by the Nuclear Safety Committee. Is the concept of ALARA Committees used at any of the Slovak nuclear installations?

Answer: Nuclear Safety Committee is officially established by operator independently from ALARA concept. The main purpose of the Committee is to discuss and evaluate nuclear safety indicators and other nuclear and radiation safety issues of the operator. Evaluation reports are quarterly submitted to the management of the operator and to Nuclear Regulatory Authority.

Q.No 66	Country Ukraine	Article Article 26	Ref. in National Report D.3, p.27

Question/ Comment: Please provide brief information on the decay time and technologies planned for utilization of the high-activity equipment of the shutdown NPP A-1.

Answer: I. phase of NPP A-1 decommissioning defined the end status with incorporation of priority task – removal and/or treatment of historical liquid RA waste from storages located in external buildings as well as former „long-term storage space” of spent fuel of A-1 NPP. For removal and treatment of specific RA wastes including bottom sediments it was necessary to prepare technical equipment for this specific task. Mentioned fact and the application of variant for maximizing RA waste treatment volume in waste package form acceptable for national LILW repository - RÚ RAO Mochovce caused delays in the planned terms in some activities of the I. phase of NPP A-1 decommissioning. These tasks are continually solving in frame of II. phase of NPP A-1 decommissioning.

The decommissioning of the highly activated NPP A-1 equipment is planned in the next phases, mainly in the last one – in phase V. For the decommissioning of primary loops and reactor pressure vessel delivery of specialized decontamination and fragmentation workplaces and equipment in the IV. phase of NPP A-1 decommissioning is expected.
During the I. and II. phases of NPP A-1 decommissioning the use of remotely operated manipulators for decontamination as well as RA waste treatment in spaces with high doses is maximized - following the ALARA principles.
Decommissioning of higher active and activated NPP A1 facilities is planned for the last 5th stage of the NPP A1 decommissioning (2025-2033). The delivery of specialized decontaminating and fragmenting technical equipment for the primary circuit decommissioning, including the reactor pressure vessel, is planned within the 4th stage of decommissioning (2021-2024).

Q.No 67	Country Ukraine	Article Article 26	Ref. in National Report D.3.3, page 31

Question/ Comment: What is the procedure for release of radioactively contaminated materials from the regulatory control after decommissioning?

Answer: Exemption levels of various radionuclides are listed in the Governmental Order (Regulation) No. 345/2006 Coll. consistently with the IAEA Basic Safety Standards.
Regarding the clearance, the Gov. Order defines following ways of the "clearance of radioactively contaminated materials from the institutional control":

a) clearance of materials:
   - unlimited next use
   - targeted and limited use
   - recycling
   - disposal on the landfill dumps
   - incineration
   - underground disposal or disposal in the special dumps
b) clearance of areas, rooms, objects, soil or lands formerly being a part of controlled areas or contaminated by former activities.

10 μSv individual or 1 manSv collective annual effective doses are the principal radiological limits; compliance with these shall be demonstrated in application for the clearance approval. In extraordinary cases, the limit could be 50 μSv (if the ALARA optimization leads to value higher than 10 μSv). Only exception from this requirement to demonstrate the compliance with 10 μSv *de minimis* dose constrain is represented by materials with mass activities and surface contaminations below the limits for "introducing the radioactive substances into environment" (divided on 5 classes according to the radiotoxicity of particular radionuclides – each class has its own list of radionuclides), i.e. compliance with *de minimis* constrain is allowed to be proven. Except this, the limitations of mass or surface of materials cleared by the one campaign can be introduced in the regulatory approval of this process.
Next detailed limitations are established for recycling (based on above-mentioned limits for "introducing of radioactive materials into environment"), for disposal in landfill dumps (based on conversion factors for ingestion) and for incineration (based on conversion factors for inhalation plus above-mentioned "introducing"

limits or limits for landfill dump disposal for the incinerator ashes).
The above-mentioned exception from *de minimis* rule is predominantly used for the clearance of radioactive materials arising in decommissioning of the Slovak NPPs. Corresponding processes are performed by campaigns, and are based on verification that the content of radionuclides meets the clearance limits: by measurement of easy-to-measure radionuclides and by declaration of content of difficult-to-measure radionuclides using heretofore established correlation/scaling coefficients. According to the metrological legislation, the measurement devices and methodologies used for these purposes are considered as so-called "designated measuring tools", the measurements are considered as "official measurements" resulting into collection and interpretation of results in *acte authentique* . The clearance procedures are a subject of particular operational manuals used during the decommissioning.

Q.No 68	Country Bulgaria	Article Article 26.1	Ref. in National Report F p.80

Question/ Comment: Could Slovakia provide some additional information on the updated estimation of decommissioning cost and the sufficiency of available national funds?

Answer: At 01.01.2012, the following financial tools were on the particular sub-accounts of the National Nuclear Fund

Name of the sub-account	**The sub-account identification**	**Status at 01.01.2012 [€]**
NPP A1	A/A1	66 343 939,17
NPP V1	A/V1	186 232 885,45
NPP V2	A/V2	360 432 270,22
NPP EMO 1,2	B	207 777 936,20
NPPs put into operation after 01.07.2006	C	0,000
Management of the orphan sources	D	0,000
Disposal of RAW and SNF	E	1 836 100,00
Institutional control of repositories	F	0,000
SNF storage away-from-reactor	G	1 172 423,00
Administration of the National Nuclear Fund	H	2 094 904,60
Total		**825 890 458,64**

The total costs of the back-end of peaceful use of nuclear energy, in the cost level of 2010, are listed in the following table

Cost items [mil. €]	**In costs of 2010 [thousands of €]**
Decommissioning of NPP A1, including disposal of its wastes (not disposable in existing near surface repository) in deep geological repository	649,859
Disposal of radioactive waste from decommissioned NPP A1 in the Mochovce repository	161,132
Decommissioning of NPP V1	490,776
Disposal of decommissioning waste from NPP V1	44,857
Storage of SNF from NPP V1	108,439
Contribution of NPP V1 to the geological disposal cost (19,02 % of total geological disposal cost)	665,416
Decommissioning of NPP V2	682,945
Disposal of decommissioning waste from NPP V2	32,968
Storage of SNF from NPP V2	148,405
Contribution of NPP V2 to the geological disposal cost (29,31 % of total geological disposal cost)	1 025,413
Decommissioning of EMO 1,2	626,415
Disposal of decommissioning waste from NPP EMO 1,2	32,968
Storage of SNF from NPP EMO 1,2	41,000
Contribution of NPP EMO 1,2 to the geological disposal cost (25,85 % of total geological disposal cost)	904,364
Decommissioning of NPP MO34	688,176
Disposal of decommissioning waste from NPP MO34	32,968
Storage of SNF from NPP MO34	41,000
Contribution of NPP MO34 to the geological disposal cost (25,82 % of total geological disposal cost)	903,315
Estimated management of orphan sources and materials	42,739
Institutional control of disposal facilities	9,458
National Nuclear Fund administration costs	81,008
Costs total	**7 413,622**

The balance between the fund resources and withdrawal of the fund financial tools is based on the actual conditions and assumptions regarding the scope of the nuclear facilities decommissioning activities, assumptions regarding amounts and

types of radioactive wastes and technologies of their treatment and conditioning, on the legislative framework for ensuring all of these activities, on actual estimations of the costs of commodities, services and the human labour. On the basis of such information and data, it has been created a model supposing that solution of all consequences of actual peaceful use of nuclear energy in the Slovak Republic, excepting institutional control of repositories, will take 130 years and the balance of financial tools will be finally aligned.

Q.No 69	Country Lithuania	Article Article 28	Ref. in National Report J

Question/ Comment: As it is stated in Report, "currently the database of radioactive sources contains approx. 850 sealed radioactive sources. This number does not include radioactive sources, for the use of which it is not necessary to have an authorization from the relevant public health authority". Does it mean that sealed sources which activity is less than exemption levels are not included in database of sealed sources in Slovak Republic?

Answer: Yes, they are not included in the database of sealed sources.

Q.No 70	Country South Africa	Article Article 28	Ref. in National Report J p113

Question/ Comment: What plans are being developed to address the situation of disposal of radio needles?

Answer: The storage facility for institutional radioactive waste, including disused sealed sources, will be put into operation in 2014. JAVYS, a. s. is appointed to collect the needles of ^{226}Ra from hospitals, where these are still safely stored at the workplace of their use. Such sources will not be disposed in adjacent near-surface Mochovce repository because the repository waste acceptance criteria do not allow that. The sources will be appropriately stored until implementing a new disposal option for radioactive wastes (together with spent fuel, optionally) not disposable in the Mochovce repository, i.e. for tens of years.

Q.No 71	Country United States of America	Article Article 28	Ref. in National Report J, 112

Question/ Comment: Section J states that the many uses of radioactive sources within the Slovak Republic fall under the competencies of many different Ministries (Economy, Health, Education, Science, Research and Sports, Transport, Interior and Defense). Please explain the relationship of the users, the Ministries and the NRA in the regulation of these sources.

Answer: The legislation in the field of radiation protection is valid for all Ministries – for all government departments.
The Public Health Authority of the Slovak Republic is responsible for the development of radiation protection legislation, radiation monitoring network, and other basic tasks including licensing of nuclear installations (radiation protection licence) and other important practices on national level and their inspections. The Regional Public Health Authorities are responsible for licensing and control of

"less" important practices.
According to Atomic Act, supervision of activities associated with institutional waste belongs to ÚJD SR in case, if such activities are performed at nuclear installations.

Q.No 72	Country United States of America	Article Article 28	Ref. in National Report J, 114

Question/ Comment: Section J states that there have been a number of capture events involving radioactive material. Please explain the process used to identify and detect sources for capture.

Answer: Slovakia has set up monitoring equipment at all crossing points at the border of the Schengen area with Ukraine to detect illicit or inadvertent trafficking of undeclared radioactive materials before they enter the country.

However most of the events recorded were not reported from the borders but from iron and steel producing companies. There are two step procedures for monitoring radioactive contamination in place. Before entering the recycling site scrap shipments are monitored by sensitive portal radiation detectors to reject contaminated scrap metal (often with preliminary and follow-up control by hand-held detectors). Because monitoring of wagons or trucks does not guarantee detection of radioactive material, which may be shielded by the scrap metal or in the case of sources by their own casings, at the end of the process steel samples from each melting are measured in own quality control laboratories

In addition, the last strengthening of contractual requirements on the acquisition of scrap metal require radiation monitoring prior to sale led at the suppliers of *US Steel Slovakia* to increased monitoring activities. About 10 % of scrap-yards are actually equipped with hand-held radiation detectors to check the incoming scrap and out coming shipments. The key scrap metal dealers are considering the installation of portal radiation detectors. All these measures are aimed to increase the probability of detecting orphan radioactive source or radioactive material before entering the supply chain of metal recycling process.

The national response system for radiological events covers many types of radiological emergencies. If an unusual event is registered at the scrap yard and the contact point is notified, skilled staff from the Public Health Authority is alerted. The mobile group is able to evaluate the situation, provide radiological assistance, dose rate and nuclide specific measurements make decisions on future steps of handling the material and take all necessary measures and protective actions. Other authorities and responsible institutions are immediately informed. If suspicion of criminal activities can be excluded, the authorized company for dealing with radioactive materials of unknown origin is asked to recovery the found material and transport it for analyzes.

The mechanisms for effectively dealing and disposition of discovered items are laid down in the valid legislation. According to the Public Health Protection Act "dealing with orphan sources, radioactive waste of unknown origin and spent sealed sources is allowed only to a legal person authorized by the Ministry of

Health. The costs in such cases are paid by the state. At present one legal person is authorized to deal with the radioactive materials of unknown origin.

In 2006 the governmental order on high activity sources and orphan sources laid down new duties for companies where the occurrence of an orphan source is discovered or probable. It requires that "undertakings where orphan sources are most frequently found (large scrap yards, metal scrap recycling companies, customs stocking areas) ensure that measuring equipment for identification of orphan sources is available."

Q.No 73	Country Germany	Article Article 32	Ref. in National Report D.1.2, 19

Question/ Comment: It is reported that the spent fuel storage facility MSVP at the Bohunice site consists of four interconnected storage pools. Did you take any measures to assess the performance of the pool storage against accident conditions similar to the accident at Fukushima Dai-ichi I reactor no. 4 (e. g. loss of coolant in storage pools, station black-out)? Have you achieved any results from this so far?

Answer: Within tests, which took place in MSVP after the Fukushima Dai-Ichi accident, the system of emergency water supply into the storage pools and the back-up emergency electric power supply system (dieselgenerator) were verified with acceptable results. Furthermore, according to ÚJD SR (Regulatory Authority) requirements, a programme on MSVP response on accidents similar to accident in Fukushima was elaborated. This programme is in the implementation phase now.

Q.No 74	Country Germany	Article Article 32	Ref. in National Report D.1.2, 19

Question/ Comment: Regarding the cooling and purification station at the spent fuel storage facility MSVP it is reported that "Operation of the cooling station is periodical according to the need for cooling of pool water and maintaining its temperature within the required values." Is this an automatic process? What is the range of temperature values observed in the storage pools when applying this discontinuous cooling process?

Answer: Maintaining the temperature of storage pool waters is an automatic process, the water temperature is controlled in interval of $31\ ^{o}C - 40\ ^{o}C$.

Q.No 75	Country Greece	Article Article 32	Ref. in National Report D.1.2, 18

Question/ Comment: It is reported that one of the changes and modifications made to MSVP was the modification of the decontamination system. Can you please provide more information about this modification?

Answer: Original decontamination point of MSVP was dismantled within the MSVP reconstruction. Piping lines were blinded and this system was replaced by a new decontamination ultrasonic pool supplemented by a high-pressured mobile decontaminating facility.

Q.No 76	Country Greece	Article Article 32	Ref. in National Report D.2.6, 26

Question/ Comment: What is the design storage period for the RURAW? Can you please describe some of the criteria the medium level waste shall meet for disposal in RURAW?

Answer: RU RAO is licensed as a disposal facility, considering permanent placement of radwaste without intention of its retrieval. No storage period for radwaste is assumed.
First double row is expected to be full around 2014.
As of 1st March 2012, 2824 fibre reinforced concrete containers were disposed of.
Medium level waste as defined in Art. 5 ÚJD's Decree No. 30/2012 Coll. shall not be disposed of in RU RAO repository.
ÚJD's Decree 30/2012 Coll.

Radioactive waste classes
Based on activity, radioactive wastes are classified as follows:

a) transient radioactive wastes whose activity falls below the limit value for their introduction to the environment1) during storage
b) very low-activity radioactive waste, whose activity is slightly higher than the limit value for their introduction to the environment,1) contain mainly radionuclides with a short half-life, or also a low concentration of radionuclides with a long half-life, and which during storagerequire a lower degree of isolation from the environment through a system of engineered barriers, as in the case of surface-type radioactive waste repositories;
c) low-activity radioactive waste, whose average specific activity of radionuclides with a long half-life, especially radionuclides emitting alpha radiation, is less than 400 Bq/g, maximum specific activity of radionuclides with a long half-life, especially radionuclides emitting alpha radiation, is locally less than 4000 Bq/g, does not produce residual heat, and following treatment meet safe operating limits and conditions for surface-type radioactive waste repositories;
d) medium-activity radioactive waste, whose average specific activity of radionuclides with a long half-life, especially radionuclides emitting alpha radiation, is equal to or over 400 Bq/g, may produce residual heat and measures for its removal are less than in the case of highlyactive radioactive waste, and which following treatment do not meet safe operating limits and conditions for surface-type radioactive waste repositories;
e) highly-active radioactive waste, whose average specific activity of radionuclides with a long half-life, especially radionuclides emitting alpha radiation, exceeds values specified for low-activity radioactive waste requiring measures for the removal of residual heat and can be deposited only in an underground-type radioactive waste repository.

Q.No 77	Country Sweden	Article Article 32	Ref. in National Report B. 1, page 9

Question/ Comment: The basic features of the current concept for spent nuclear fuel management in SR is not clear: on the one hand it is stated (2) that for SNF management it is not considered to export SNF for reprocessing to abroad with the subsequent return of products from reprocessing, on the other hand (6) possibilities are verified to export SNF for permanent storage abroad, or for reprocessing abroad, without returning

products from reprocessing back to SR.

We presume the common feature is to not have to store high level (long-lived) waste in Slovakia?
Should one then read (7) Possibilities are verified for international or regional solution for final disposal of SNF", in such a way that the disposal facility should not be located in SR?

Answer

The document „ Strategy for the back end of nuclear energy sector ", which was approved by the Government Resolution No. 328/2008 of 21 May 2008, analyses three alternatives:

- disposal of SNF/HLW in the underground (deep) repository in the geological surroundings of suitable qualities,
- international solution, which involve:
  - export SNF to Russian Federation without bringing it back after reprocessing,
  - possibility of development, construction and operation of SNF/HLW international repository,
- safe SNF storage (for non-specified time period) until other solution will be chosen

„Strategy for the back end of nuclear energy sector" says, that none of these possibilities is in the level, that would eliminate the others.
The main purpose of the underground repository development works in next years is to provide sufficiency of relevant information for objective decision, what alternative will be definitely used – such decision we can anticipate in next 10 years.
Since year 2001 up today, in spite of the approved strategy, there was a very moderate progress. Currently, the updated strategy is before finishing and approving processes. This strategy considers dual-track strategy, i.e. development of national geological repository as a main option and participation on development of shared repositories as the second, taking also into account the recent infrastructural changes in area of radioactive waste and the spent fuel management.

Q.No 78	Country Sweden	Article Article 32	Ref. in National Report B. 2, page 10

Question/ Comment

Item 6 in the list states that very low-level radioactive waste will be disposed at a repository designed for waste of this type which will be built on the Mochovce site.

When is this planned to be operational?
How is such wastes managed today?

Answer

Design and installation of the VLLW repository is primarily financed via national resources and co-financed also through BIDSF fund (Bohunice International Decommissioning Support Fund) as well. After elaboration of the feasibility study which will set the design and execute the licensing process. The construction of the VLLW repository will be carried out by a contractor chosen through international tender according to EBRD procurement rules. According to all foreseen listed activities, operation of the VLLW repository is planned for the year 2019.

VLLW is presently stored in the on-site licensed areas designed for intermediate storage waste located directly in the A1 NPP premises or is being disposed into the fibre-concrete containers which are then transported and disposed of in the LILW Repository at Mochovce site (e.g. contaminated soils and debris – see annex V. of the Report). Missing storage and disposal capacities for RAW represents the bottleneck of the V1 NPP decommissioning, which started in 2011 with the Decommissioning Stage I. Decommissioning Stage II is foreseen to begin from January 2015.
The costs for disposal of VLLW in a special VLLW disposal facility module would be about one third of the cost of disposing of such waste as LILW. In addition, disposing of VLLW in the same manner as currently done would require a significant enlargement of the present design of the national repository.

Q.No 79	Country Sweden	Article Article 32	Ref. in National Report B. 3, page 11

Question/ Comment

Transitional radioactive waste is defined as waste having such an activity level that after decay during storage it would fall below the limits enabling to treat the material as non-radioactive waste.

How long may radioactive waste be transitional, e.g. how long time periods may it be stored for decay so as to reach the levels under which it can be released (becomes non-radioactive waste)?

Answer

According to the valid legislation, the transitional RAW are defined as RAW, whose activity during storage period decreases under the limited value for their releasing to the environment, considering their very short decay period. Therefore their storage period depends on their radionuclide structure.
Decay period for transitional waste is not specifically determined in ÚJD's Decree No. 30/2012 Coll.

Q.No 80	Country Sweden	Article Article 32	Ref. in National Report D.1.1, page 16-17

Question/ Comment

There are some unexplained abbreviations RH is that Reactor Hall´(RS in list of abbreviations)?
What is VÈR (third bullet statement on page 17 on the most significant TTÈ equipment for spent fuel handling)?

Answer

RH=RS=Reactor Hall;
VČR – vnútorné časti reaktora = internal parts of reactor

Q.No 81	Country Sweden	Article Article 32	Ref. in National Report D.1.2, page 18

Question/ Comment

It is stated that the spent fuel from NPP Dukovany, after the construction of a storage facility in the Czech Republic, was gradually transported back during 1995-1997. The interim spent fuel storage was then reconstructed during 1997-1999 for the purpose of increasing its storage capacity.

What was assumed when the present storage capacity was designed about the

operational lifetime of the reactors?
Have the start of new reactors been taken into account?
What has been assumed for the expected storage time at the interim storage?

Answer

The reconstruction of previous MSVP came out of the assumptions, that increasing of storage capacity will be realized within original MSVP groundplan dimensions. Increasing of storage capacity from former 5040 pieces of fuel assemblies (FA) to 14112 pieces of FA were achieved by:

- a change of storage containers' shape, when the number of FA in one container increased from previous 30 to actual 48 FA,
- a change of system of placing the storage containers in the pool.

The range of reconstruction and of increasing maximum project capacity wasn´t influenced by assumed total production of SNF from Slovak NPPs, but by dimensional limits of original MSVP. Operational lifetime of MSVP is assumed to minimum of 50 years and more from the reconstruction end.

Q.No 82	Country Sweden	Article Article 32	Ref. in National Report D.1.2, page 18

Question/ Comment

It is stated that by "implementing this project the achieved Answer is that even after a seismic event all safety functions of MSVP will be secured up to the level set for the Jaslovské Bohunice site (80 MSK 64) and its life was extended by minimum 50 years". By searching available literature we think that MSK 64 stands for Medvedev-Sponheuer-Karnik (MSK) Scale from 1964 which uses 12 intensity steps?

However what does the number 80 stand for? Could you explain what this would mean in peak ground acceleration (g-forces) in horizontal and vertical scale or what intensity it would correspond to on the modified Mercalli scale (MMI)?

Answer

The correct text is (8^{o} MSK 64).
After realization of the MSVP reconstruction project it is assured, that even after a seismic event of 8 degrees of MSK 64 all safety functions of MSVP will be satisfied.
Com.: Horizontal and vertical spectrum by U.S Nuclear regulatory Commission Regulatory Guide 1.60 for peek ground acceleration (PGA) is 0,25 g for frequencies lower than 9 Hz, with increasing acceleration to 0,3 g for the frequency 33 Hz.

Q.No 83	Country Sweden	Article Article 32	Ref. in National Report D.2.1, page 22

Question/ Comment

On the middle of the page it is stated that the exhausted ion exchange resins are stored in stainless steel tanks with a capacity from 150 up to 450 m3, which are located in leak proof concrete shafts capable of capturing the entire volume of the tank in the event of failure.

What is the next step of treatment in the management? Bituminization or other process? May different ion exchange resins be mixed before conditioning? Are there any acceptance criteria (for storage or disposal) for conditioning of ion exchange resins?

Answer

Exhausted ion exchange resins from the operation of V1 NPP are currently incinerated in the Bohunice Treatment Centre (in amount of approx. 20 m^3 in the year 2012) and major part will be processed by the supplier of the international BIDSF sponsored Project C7-B "Treatment of Historical Waste – Sludges and Sorbents". At present, resins and sludges are stored in tanks – it is planned to treat both wastes jointly. Most volume of sorbents and sludges will be managed by the future contractor – they will be bituminized/fixed to the SiAl matrix into drums, and drums will be placed into the fibre-concrete containers meeting the acceptance criteria for disposal at the Mochovce LILW repository. Beginning of the treatment activities is planned next year.

Q.No 84	Country Sweden	Article Article 32	Ref. in National Report D.2.3, page 23

Question/ Comment

It is stated that "The resulting product is VBK complying with the L&C for storage, transportation and disposal at RÚ RAW … "

What does L&C mean? Acceptance criteria? License conditions? What are the most important ones for "the resulting VBK product"?

Answer

To the most important L&C for the resulting VBK product belongs following: limits on maximal activity concentration, configuration of emplacement of VBK into the RU RAO, content of unfavourable substances – such as free liquid, biodegradable materials, hazardous wastes, explosive materials, chelating substances,...mechanical strength, mass, leachability, etc. In particular L&C are limits and conditions for storage, transportation and deposition. L&C for final product - fibre-concrete containers with RAW consist of two parts:

1. safety limits which determine requirements of fibre-concrete containers with RAW in order to not endangering health and environment (in operation and after expiration of operation) above the level which is licensed by valid legislation. It is:
   a. maximal radioisotope inventory of radioisotope activities in stored waste
   b. maximal concentration limited radioisotopes in container with waste
   c. configuration of stowage to the container with waste to RU RAW
   d. form of the received waste
   e. contens of unwanted components
   f. hardness of cementation products
   g. quality of container with waste, for example
      - compression strenght > 71,5 N/mm2 (MPa)
      - hardness in transverse pull > 5,0 N/mm2 (MPa)
      - shrinking ≤ 350µm.
      - waterproofness of fibre-concrete container´s body
   h. weight of container with waste
   i. leachability
2. L&C of safety operation which determine conditions for safety operation. It is:
   a. crane track subsidence
   b. monitoring of water presence in storage boxes
   c. monitoring of water level in balancing tanks of draining system
   d. liquid releases(waters) from RU RAW

Q.No 85	Country Sweden	Article Article 32	Ref. in National Report D.3.1, page 28

Question/ Comment

At the top of the page is listed in four bullets (removal of spent fuel, conditioning of wastes enabling safe disposal, essential decontamination etc.)The second item is formulated as: Majority of liquid operational RAW is conditioned in a form enabling safe disposal.

What fraction, types of liquid waste have to be stored and further conditioned later on?
Does this involve development of new techniques?

Answer

The liquid RA wastes located in external storage tanks are solutions and bottom sediments. The solutions are concentrated in evaporation facility; the final concentrated liquids are fixed (solidified) in cement matrix. The bottom sediments are fixed in-situ into the cement matrix by special technological facility called ZFK.
Bottom sediments in the former spent fuel pool are removed to the special double wall storage tanks located inside of the reactor hall. Its treatment to the form acceptable for final LILW disposal (RÚ RAO Mochovce) is planned during the year 2013.
The medium for aftercooling of spent fuel of A-1 NPP (CHROMPIK – the solution phase and also the sediments) is drained and vitrified.
The liquid RA wastes from the former operation of A-1 NPP as well as from the decommissioning are treated by the existing approved waste treatment technologies. For the treatment of special RA waste kinds (not-standard) are implemented modifications of certified methods of solidification.

Q.No 86	Country Sweden	Article Article 32	Ref. in National Report D.3.2, page 30

Question/ Comment

It is mentioned that a reconstruction of the vitrification plant VICHR was performed during 2002-2004 with the aim to use the plant for vitrification of chrompik with special radioactivity 1011 Bg/kg.

What did this reconstruction encompass?
Has such vitrification taken place?

Answer

The facility was supplemented during the reconstruction with the:

1) wet gas washer/cleaner equipment in the aim to increase efficiency of gas cleaning in the gas exhausting system;
2) modification of the glass matrix dosing system with the new closer assembly protect penetration of gases from glass melting vessel;
3) modernization of I&C and electric power systems, camera monitoring system, and radiation protection measurement system and
4) modification of system for minimization of the emergency case for melting vessel rupture including glass break through.

The set-up of gas exhausting system, the melting vessel and the heating inductor was modified and was moved to the closed box space with special streamed air sucking for the protection of the gas blow out from the melting vessel (specific activity of treated RA waste is 0,1 TBq/dm3) .
Liquid RA waste was treated in volume 18 m3 during 1995 – 2001 with specific

activity of 10 GBq/dm3. During this period the long term reliability of facility equipment was tested.
Following the analysis of the operational experiences the reconstruction of the facility with the aim of treatment ability for the RA wastes with specific activity of 0,1 TBq/dm3 was designed and implemented.
The results showed the necessity of the modification of the exhaust gas treatment system - for ensuring the safe and reliable operation and mainly ensuring the minimization of its environmental impact. The modifications include from changes in filtration systems for higher efficiency of filtration, sucking direction control around the melting vessel, multiple filtering system and increasing of the tightness of the boxes where is the facility installed - decreasing the possible intersection of the air from non-service areas toward to service areas.

Q.No 87	Country Ukraine	Article Article 32	Ref. in National Report D.2.3, page 23

Question/ Comment: The paragraph describes the use of bituminization technologies for liquid RAW. Please provide some information (if available) on its efficiency from the standpoint of acceptability of the conditioned product for disposal.

Answer: Bituminization technology is the basic process of fixation liquid RAW, radioactive sludges and exhausted ionex resins to a product for final storage.
Liquid RAW are solidificated by bituminization in 200 l drums and adjusting to the fibre-concrete containers – in this container they are fixed by active or non active cementation filler.

Q.No 88	Country Ukraine	Article Article 32	Ref. in National Report D.2.6, page 26

Question/ Comment: The paragraph describes the use of VBK fibered concrete containers. Please provide more detailed information on this type of containers (designer, supplier, technical specifications).

Answer: VBK containers are stored in RU RAW, made by JAVYS, a.s. in factory VBK Trnava.
VBK container has cube shape, dimensions 1,7x1,7x1,7m, internal volume 3,0m^3.
VBK is made from glass-concrete with high compression. It is consist from blended cement, scabbling, sand, filler, silica light ash (microsilicide), superplastificator, dispel metal fibre (Fibraflex – fibre made from non corroding material, i.e. metal glass).
Basic technical properties:

- water leakines after 7 days — none exfiltration
- lifetime — min. 300 years
- gas-tightness — 1,1 atm cm^3s^{-1}
- compression strenght after 28 days — > 71,5 N/mm2 (MPa)
- difussive index of tritium water (2cm) — > 1,5.10^3cm^2/day
- difussive index of caesium (1cm) — > 1,0.10^3cm^2/day

The containers are licensed also for transport, at the same time. Filled by solid

and/or solidified waste, they represent the only waste package form acceptable for disposal in near surface repository in Mochovce, at the present time.

Q.No	Country	Article	Ref. in National Report
89	United States of America	Article 32	B, 10

Question/ Comment: Very low activity radwaste is planned for disposal at the Mochovce repository site. What is the Answer of this effort?

Answer: Design and installation of the VLLW repository is primarily financed via national resources and co-financed also through BIDSF fund (Bohunice International Decommissioning Support Fund) as well. After elaboration of the feasibility study which will set the design and execute the licensing process. The construction of the VLLW repository will be carried out by a contractor chosen through international tender according to EBRD procurement rules. According to all foreseen listed activities, operation of the VLLW repository is planned for the year 2019.
VLLW is presently stored in the on-site licensed areas designed for intermediate storage waste located directly in the A1 NPP premises or is being disposed into the fibre-concrete containers which are then transported and disposed of in the LILW Repository at Mochovce site (e.g. contaminated soils and debris – see annex V. of the Report). Missing storage and disposal capacities for RAW represents the bottleneck of the V1 NPP decommissioning, which started in 2011 with the Decommissioning Stage I. Decommissioning Stage II is foreseen to begin from January 2015.
The costs for disposal of VLLW in a special VLLW disposal facility module would be about one third of the cost of disposing of such waste as LILW. In addition, disposing of VLLW in the same manner as currently done would require a significant enlargement of the present design of the national repository.

Q.No	Country	Article	Ref. in National Report
90	United States of America	Article 32	B.1, 9

Question/ Comment: What is the basis for confidence that SNF disposition can be implemented within the planned time of interim storage, that is, within 40-50 years of fuel withdrawal from the reactor?

Answer: The updated Strategy (currently before the processes of approval) supposes as soon as possible an elaboration of the feasibility study on solution of the spent fuel management final stage. It will be surely based on the reversibility approach in the creation of implementation plans, containing also analyses of the realization risks, with outlines of “plans B, C...”(e.g. by discussing the aspects of very long term storage, which is, among others, recently also under considerations within various activities of IAEA).

Q.No	Country	Article	Ref. in National Report
91	United States of America	Article 32	K.1, 115

Question/ Comment: The National Report states: "At the Jaslovské Bohunice site there is an interim spent fuel storage facility in operation since 1987, where an enhancement of seismic resistance and increase of storage capacity project was implemented." Are there plans to consider lessons learned from the Fukushima incident with respect to

siting, design, construction, operation and decommissioning of spent fuel and radioactive waste management facilities? Were emergency preparedness and response capabilities reviewed following the Fukushima incident?

Answer

Within tests, which took place in MSVP after the Fukushima Dai-Ichi accident, the system of emergency water supply into the storage pools and the back-up emergency electric power supply system (dieselgenerator) were verified with acceptable results. Furthermore, according to ÚJD SR (Regulatory Authority) requirements, a programme on MSVP response on accidents similar to accident in Fukushima was elaborated. This programme is in the implementation phase now.
Emergency preparedness and response capabilities have been revived within the so called “stress tests” performed at NPPs. No immediate actions were identified.

Q.No 92	Country Hungary	Article Article 32.1.5	Ref. in National Report B.3, page 11

Question/ Comment

How is the distinction made between the low and the intermediate level waste categories?

Answer

ÚJD's Decree 30/2012 Coll., Section 5, Radioactive waste classes
Based on activity, radioactive wastes are classified as follows:

a) transient radioactive wastes whose activity falls below the limit value for their introduction to the environment[1)] during storage
b) very low-activity radioactive waste, whose activity is slightly higher than the limit value for their introduction to the environment,[1)] contain mainly radionuclides with a short half-life, or also a low concentration of radionuclides with a long half-life, and which during storagerequire a lower degree of isolation from the environment through a system of engineered barriers, as in the case of surface-type radioactive waste repositories;
c) low-activity radioactive waste, whose average specific activity of radionuclides with a long half-life, especially radionuclides emitting alpha radiation, is less than 400 Bq/g, maximum specific activity of radionuclides with a long half-life, especially radionuclides emitting alpha radiation, is locally less than 4000 Bq/g, does not produce residual heat, and following treatment meet safe operating limits and conditions for surface-type radioactive waste repositories;
d) medium-activity radioactive waste, whose average specific activity of radionuclides with a long half-life, especially radionuclides emitting alpha radiation, is equal to or over 400 Bq/g, may produce residual heat and measures for its removal are less than in the case of highlyactive radioactive waste, and which following treatment do not meet safe operating limits and conditions for surface-type radioactive waste repositories;
e) highly-active radioactive waste, whose average specific activity of radionuclides with a long half-life, especially radionuclides emitting alpha radiation, exceeds values specified for low-activity radioactive waste requiring measures for the removal of residual heat and can be deposited only in an underground-type radioactive waste repository.

Q.No 93	Country Hungary	Article Article 32.2.1	Ref. in National Report D.1.1 p. 17

Question/ Comment

"The main criterion for these modifications was to limit the human factor in occurrence of operational events, safety improvement in handling spent fuel, equipment reliability, operational safety of technologies and of these units as a whole."

Are there any changes in the spent fuel damage frequency due to the implemented modifications?

Answer

Implemented modifications have no impact to shut down PSA model and spent fuel damage frequency. Reported modifications contributed particularly to higher operational reliability and safety and safety culture.

Q.No 94	Country Hungary	Article Article 32.2.5	Ref. in National Report D.3.1

Question/ Comment

"The original, currently not operated storage tanks, object 41, represent the highest potential risk for the environment. Waste from this object located outside of reactor building was re-stored into tanks of object 44/10. Liquid RAW is gradually conditioned by concentration and cementation for the purpose of further conditioning and disposal."

Does the licensee implement a special environmental monitoring programme to manage this situation around the NPP A-1 Bohunice?

Answer

The licence for the decommissioning of A-1 NPP includes also the condition – environmental monitoring of this areas:

- RA gases release through ventilation to the atmosphere
- release of RA liquids to the hydrosphere
- content of RA nuclides into the basement – percolation water and underground water.

The area around the object 41, 44/10 as well as other object of JAVYS, a. s. is monitored in frame of geological survey task which is yearly approved.

Near the storage tanks are installed the monitoring drilling for the surveillance of percolating water radioactivity below 1m under the bottom of the tanks. In addition the whole area is covered by the monitoring system (bore holes) in the depth of underground water flow to allow the interpretation of RA contamination level curve and estimation of its sources. Following the data from the monitoring the calculation is predicted the evolution of the radiation situation and ensuring take action for decreasing spread of the contamination by pumping into the draining channel SOKOMAN. The approved limit of tritium activity for the start-up of the pumping is 5 000 Bq/dm3 in the underground water.

The results are presented in the annual reports of the environmental impact of the Jaslovské Bohunice area.