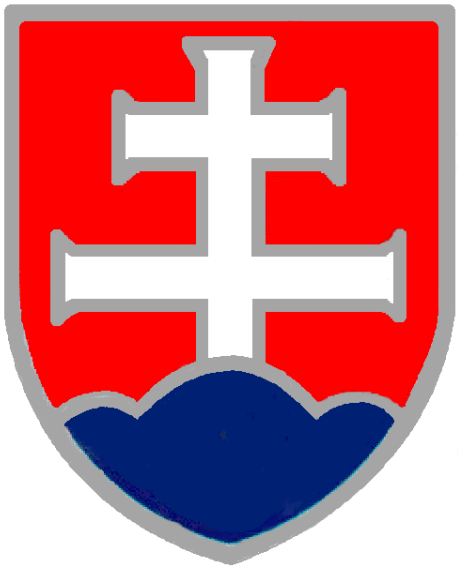
ANSWERS TO QUESTIONS

ON

NATIONAL REPORT OF

THE SLOVAK REPUBLIC



COMPILED ACCORDING TO THE TERMS OF THE CONVENTION ON NUCLEAR SAFETY

BRATISLAVA
APRIL 2014

AUSTRIA

Convention on Nuclear Safety
Questions Posted To Slovakia By Austria in 2013

Q.No 1	Country Austria	Article General	Ref. in National Report General
Question/ Comment	Did you already accomplish analysis of possible threats to your NPPs from extreme natural events taking into account the possible effects of climate change? Have there been changes in the design basis (e.g. design basis flood level) because of the increased frequency of extreme weather events?		
Answer	For purposes of developing the analysis and implementation of the reinforcement of systems, structures and components, a study on meteorological conditions with a frequency of 10^{-4}/year for the Bohunice and Mochovce sites in line with the IAEA and WANO was elaborated. A plan for the implementation of additional measures have been elaborated and their implementation is reviewed by ÚJD SR.		
Q.No 2	Country Austria	Article General	Ref. in National Report 1, p. 13
Question/ Comment	You mention that a new nuclear source project at Jaslovske Bohunice site is assessed. Could you give (or refer to) more details on the actual status of the project?		
Answer	Jadrová energetická spoločnosť Slovenska, a. s. (JESS) was founded at the end of December 2009 for the purpose of preparation, construction and operation of new NPP. The company's mission is to prepare new NPP project selecting the most proper variant, assure a construction phase and produce electricity and thermal energy in an economically, effective and safe manner. JESS Company was established on December 31, 2009 by incorporating in the Commercial Registry as a joint venture of two significant power companies of the Slovak Republic (Jadrová a vyraďovacia spoločnosť, a.s.) and the Czech Republic (ČEZ Group). For optimal approach of new NPP preparation and construction in Jaslovské Bohunice site, JESS Company has started the preparation work for the Feasibility Study elaboration. The beginning of the Feasibility Study's preparation dates back to the first half of 2010, when the potential suppliers of pressurized water reactors (Westinghouse, AREVA, Consortium MIR.1200, MITSUBISHI, ATMEA a KEPCO) were approached with a request to provide information about their latest projects. The required data necessary for the elaboration of the Feasibility Study were sent in the form of information packages at the end of 2010. The Czech company Ústav jaderného výzkumu Řež, a. s. started the elaboration of the Feasibility Study at the end of November 2011, and the Feasibility Study and the baseline		

	studies were submitted at the end of July 2012. The final study contains the analysis and evaluations of the introduced technical alternatives, the assessment of the location suitability, the supplier system, project management, financial security, and economic analysis of Project new NPP. The Feasibility Study, the company's crucial internal document, has become an indispensable basis for further decisions about the optimal procedure of the preparation and realization of project new NPP in Slovakia. In the light of the Feasibility Study conclusions and the existing analyses can be concluded that the alternatives of a single-unit or double-unit arrangement with a total capacity up to 2,400 MWe are feasible for Project New NPP in the location of Jaslovské Bohunice under the assumption that the conditions and recommendations to be provided in the next phase of the Project are followed. Based on the analysis results of the Feasibility Study in August 2013 the shareholders of JESS Company approved further action within the preparatory stage of the project in the following areas: • Analysis of suitable and available financing models to ensure the finance for all phases of the project, including finding the strategic partner for the Project – currently in the process • Environmental impact assessment process (EIA) – the beginning of in March 2014 and estimated completion in April 2016 • Continuation in subsequent project areas – the connection to the electrical grid, locality aspects – being updated data and more accurate determination of the optimal power variation NPP • Regional planning documentation update - the process of reflection NPP construction plan in the draft planning documentation of all levels • New NPP project infrastructure development – the process of the land acquiring for the plant is currently in the final stage • Preparing documents for Site Permit – currently in the process

Q.No	Country	Article	Ref. in National Report
3	Austria	General	General
Question/ Comment	Is the safety significance of deviations from applicable current safety standards and internationally recognised good practice compiled for each nuclear installation? If so, in which intervals and are these compilations accessible to the general public?		
Answer	WENRA RHWG Group prepared a Quantitative Reporting on Status of Harmonisation of Safety of Existing Reactors. Full harmonization has been achieved in a number of countries including Slovakia. This report is available on the WENRA web site a restricted document. Compilation of the safety significance of the deviations from applicable current safety standards and internationally recognised good practice is performed as a part of PSR. The PSR of nuclear facilities is		

	performed in compliance with the legal framework which accommodates WENRA reference levels and IAEA standards. PSR is performed every 10 years. Measures based on PSR results with the time schedule of implementation are set in the ÚJD SR decision. All ÚJD SR decisions are publicly available (see http://www.ujd.gov.sk/amis/dbrozhod.nsf/pageRozhodnutia2013). WENRA RL 2008 was one of the benchmarks in performing the EBO and EMO1,2 periodic safety reviews.

Q.No	Country	Article	Ref. in National Report
4	Austria	General	General
Question/ Comment	Is there any obligation for the licence holders to inform/consult the general public or stakeholders in the vicinity of a nuclear installations on issues related to nuclear safety?		
Answer	Licence holders (authorisation holder) should, based on the Atomic Act, inform the public, through its web site, press or by other publicly available means always by 30 April, on the status of nuclear safety of nuclear installations and on the management of radioactive waste and spent fuel for the preceding calendar year. In addition the licensee is obliged to inform the public about any incident, accident, measures to protect health and on activities, which need to be carried out in case of such incident or accident.		

Q.No	Country	Article	Ref. in National Report
5	Austria	General	General
Question/ Comment	To which extent does the Regulatory Body currently publish safety relevant licenses, decisions, assessments, etc.? Are there intentions to modify current practice? Is the general public currently involved in the decision making of the Regulatory Body relevant to nuclear safety? Are there intentions to modify current practice?		
Answer	Currently each decision issued by ÚJD SR is published on ÚJD SR website (http://www.ujd.gov.sk/amis/dbrozhod.nsf/pageRozhodnutia2013). Decisions are published in full wording with clear written explanation of basis for the decision. Some exceptions applies in the case of decisions containing classified information. Based on Section 3 (5) of the Administrative Code the initiation, implementation and completion of all administrative proceedings as held by ÚJD SR are published on ÚJD SR website and are available on screen (at the entrance of ÚJD SR Office) which is available 24 hours a day. Sections 14, 15 and 15a of the Administrative Code, which deals with the participation of the subjects in the administrative proceedings, applies also for proceedings held by ÚJD SR pursuant to the Atomic Act.		

	Public/stakeholders are closely involved in the decision-making processes also under other laws and in particular under the Act No.24/2006 Coll. on the environmental impact assessment and Act No. 50/1976 Coll. on Spatial Planning and Construction Order (Construction Act). Act on EIA transposes the EU directive on the EIA procedure as well as the Aarhus Convention in relation to the participation in decision-making process. At present an amendment to the EIA Act is under preparation, in which the rights of public in participation process is strengthened.

Q.No	Country	Article	Ref. in National Report
8	Austria	Article 6	2.2, p. 22
Question/ Comment	You report a list of corrective actions of the periodic safety review of Bohunice NPP in 2008. Some of the corrective actions have a deadline which is in the past. Could you report on the status of these actions? Could they already be implemented? Could you give more details on the corrective actions from a.), Accident Management?		
Answer	Almost all of 105 the PSR corrective actions was implemented within deadlines, except one measure regarding analysis of BDB accidents arisen by external and internal event combination. Within the stress-tests an analysis of safety margins during extreme external events followed by internal events as long-term blackout, loss of ultimate heat sink, was developed. Results from this analysis including corrective actions were adopted within the National Action Plan after Fukushima Accident. Some of the measures have been already implemented, e.g. provision of mobile high pressure pump for steam generator water supply, mobile DG 0,4kV. The final Report will be submitted to ÚJD SR in 2014. All corrective actions resulting from PSR were implemented in compliance with terms set up in the final report of PSR V2. Complementary actions related to lessons learned from Fukushima and part of the Action Plan are under implementation. Licence holder has to report regularly on the status of implementation which is subject of ÚJD SR inspections.		

Q.No	Country	Article	Ref. in National Report
9	Austria	Article 6	2.3, p. 25
Question/ Comment	You report a list of corrective actions of the periodic safety review of Mochovce NPP in 2011. Some of the corrective actions have a deadline which is in the past, or have 31st of December 2013 as deadline. Could you report on the status of these actions? Could they already be implemented?		
Answer	All corrective actions resulting from PSR were implemented in		

	compliance with terms set up in the final report of PSR of NPP Mochovce. Complementary actions related to lessons learned from Fukushima and part of the Action Plan are under implementation. Licence holder has to report regularly on the status of implementation which is subject of ÚJD SR inspections. All corrective actions (base of date requested implementation) were implemented and reported to the regulator - ÚJD SR. The last report was sent to ÚJD SR on 15.12.2013. All measures are within the deadlines.

Q.No	Country	Article	Ref. in National Report
10	Austria	Article 6	2.5, p29-30
Question/ Comment	You mentioned that you performed an improvement program for the interim spent fuel storage facility MSVP (Response of the Interim Storage Facility (MSVP) to Events of Fukushima Type Program). Could you report if corrective actions or desirable improvements have been identified during the evaluation, and if so, which?		
Answer	The project on “Response of the Interim Spent Fuel Storage Facility (MSVP) to Events of Fukushima Type” identified a requirement for the development of the chapter “Seismic event” to the work instruction for the abnormal operation. Yet in the course of this project the chapter “Seismic event” was updated and subsequently affected employees were informed. No other desirable improvements have been identified.		

Q.No	Country	Article	Ref. in National Report
16	Austria	Article 11.1	4.2, p. 58
Question/ Comment	You mention that Act No 238/2006 Coll. I. establishes a national nuclear decommissioning fund, which basic source comes from licensees for operation of nuclear installations. Since the fund on decommissioning was established in 2006, could you provide details if resources of the fund are already sufficient to carry the cost of decommissioning of NPP EBO V1?		
Answer	According to the Act No. 238/2006 Coll. as amended, there is an equivalent source of the National Nuclear Fund (NNF) in addition to the contributions of holders of the license for operation of nuclear installation. This source is called transfer from the expense budget account of the Ministry of Economy of SR (ME SR) in form of the payment collected by the operator of the transmission system and operators of regional distribution systems. This payment is determined for reimbursement of the debt occurred at formation of the NNF resources determined for the coverage of costs of the final stage of the nuclear power engineering (so called historical deficit of financial resources), in amount of the debt created to the date of efficiency of the Act No. 238/2006 Coll. The payment is a component of the electricity price delivered to electricity end consumers. Details concerning the collection of this		

	payment are stated by the Government regulation of SR No. 426/2010 Coll. amended. Payment for the coverage of historical deficit of financial resources is decomposed within the time interval cca 35 years. The sum of payment amounts to cca 70 mil. Euro per year. The payment equals to the product of an effective rate of the payment for the coverage of debt for the corresponding year and quantity of the electricity delivered to electricity end consumers. The effective rate according to § 2 Government regulation of SR No. 426/2010 Coll. is increased yearly for a coefficient of nuclear inflation to the date of July 1, for the previous year stated by the Statistical Office of SR. According to § 2 section 13 of the Government regulation of SR No. 426/2010 Coll. this payment collected is spent for the coverage of: – costs connected to decommissioning of nuclear power plant A-1, including costs for treatment of radioactive wastes (RAW) resulting thereof, – partial costs for decommissioning of nuclear power plant V-1, which consists of a difference of comprehensive costs for its decommissioning and levied financial means for its decommissioning to the date of efficiency of the Act No. 238/2006 Coll., including costs for treatment of RAW resulting thereof, – costs for treatment of spent nuclear fuel (SNF) generated from NPP V-1. Combination of financial resources of NNF generated by contributions of operators of nuclear facilities and payments for coverage of historical deficit of financial resources together with financial means from Bohunice international decommissioning support fund (BIDSF) concerning NPP V-1, established according to the Framework agreement between the Government of SR and the European Bank for Reconstruction and Development, will provide sufficient financial means for financing of costs for decommissioning of NPP V-1.

Q.No 17	Country Austria	Article Article 11.2	Ref. in National Report 3.1.3, p42 and 49
Question/ Comment	You mentioned that 98 employees are working at the regulatory authority – could you specify how many of them are working as inspectors in the field?		
Answer	ÚJD SR has 62 inspectors.		

Q.No 18	Country Austria	Article Article 11.2	Ref. in National Report 4.2, p. 61
Question/ Comment	You give a detailed overview on the training program of personnel – at the regulatory authority. There have been reports that in Europe there is a shortfall of graduates in technical disciplines, and especially in nuclear engineering.		

	Do you face these problems as well, and if so, can you compensate by your internal training program?
Answer	The shortfall of graduates in technical disciplines is a general issue in Slovakia and in the EU as well. In recent years some positive development (stabilisation of decrease) in Slovakia could be observed. This includes also nuclear engineering and material sciences. This interest in nuclear engineering could be assigned to the continued development of nuclear energy.

Q.No	Country	Article	Ref. in National Report
22	Austria	Article 13	4.4, p. 72
Question/ Comment	You mentioned that the quality management system of licensees of operation of nuclear installations is based on an integrated management system approach as described in IAEA No. GS-G-3.1 (from year 2006). Could you please provide details on the experience with introducing and working in the frame of an integrated management system?		
Answer	The integrated management system (IMS) is built and maintained in compliance with requirements and recommendation of: - ISO standards (ISO9001, ISO14001, OHSAS18001) - IAEA regulations GS-R-3, GS-G-3.1 - national legislation, etc. Basic roles involved in the IMS on the level of whole company are identified, documents for cross-functional processes are consolidated and issued, relevant records are provided: - Integrated Policy (covers quality, environment, safety with strong focus on nuclear safety and radiation protection, security and human resources), - Main Goals for respective year, - IMS Management review for respective year, - Management representative for IMS, - IMS Manuals, - Directives for key managerial processes (IMS planning and evaluation, KPIs monitoring and measuring, Documentation and Records control, Audits, Non-conformities and Corrective and Preventive action, etc.), - IMS Audits and external audits of suppliers are fully consolidated from the content and timing point of view respecting needs and expectation of operation (mainly nuclear) and providing relevant added value, - etc. The basic principle in the process management within SE, plc. is the process approach. Process approach is supported by software applications, which represent an integrated system of IMS process documentation. Processes are identified (including external processes) in pre-defined structure and hierarchy; processes important from nuclear point of view are highlighted.		

	The Map of top processes is a part of IMS Manual approved by the national regulatory authority – ÚJD SR. Tools like questionnaires and customers' surveys are used for gathering of feedback and opportunities for improvement, utilized by process owners to define action plans and necessary measures for improvement of process effectiveness and efficiency. IMS is certified by the independent accredited certification body since 2010. Integration on the level of 95% and focus on continuous improvement activities (including the ongoing and finish projects) were underlined during the recertification and stated in final audit report.

Q.No	Country	Article	Ref. in National Report
23	Austria	Article 13	4.4, p. 74

Question/ Comment	You mentioned that licensees are required to ensure that quality programs of their suppliers meet their requirements. Could you provide details on the experience of the regulatory authority in verifying the chain of quality control?
Answer	ÚJD SR executes the supervision of licensees´ management system. Types of inspections carried out by ÚJD SR in QA area: • fulfilment of requirements specified in Licensee´s Quality manual (or Integrated management system manual), • fulfilment of process requirements specified in Quality assurance programmes for the specific nuclear facility, and • fulfilment of requirements specified in ÚJD SR regulations for Quality management system of licensees (including quality assurance audits performed by the licensee at its suppliers). The licensee is responsible for contractors´ activities and services. The licensee may require for examination of contractors´ capability, for example efficient quality management system of the contractor´s organization. A surveillance of work which is carried out by contractors / suppliers: • Quality plans have to be elaborated for all classified equipment (i.e. related to nuclear safety) and for all changes and modifications of classified equipment. The quality plans provide for following the legal requirements of quality assurance. The quality plans are validated by the licensee and approved by ÚJD SR. Decree No. 431/2011 Coll. lays down detailed requirements for all aforementioned documents and details on the scope of their approval. • Quality assurance audits performed by the licensee at contractors´ facilities. • Participation of ÚJD SR in FAT - factory acceptance tests with licensee at its suppliers.

Q.No	Country	Article	Ref. in National Report
24	Austria	Article 14.1	4.5, p. 89

Question/	In your list of actions and recommendations following the stress tests

Comment	you mention that „requiring remote control of selected equipment“ is relevant for Mochovce NPP, but not relevant for Bohunice NPP. Could you explain the rationale for this recommendation?
Answer	“Not relevant” means already implemented (new bunkered emergency center at the Bohunice site already in operation).

Q.No	Country	Article	Ref. in National Report
33	Austria	Article 14.2	4.2, p. 62
Question/ Comment	You mentioned that SAM currently assumes single unit accidents, and that you are evaluating to extend SAMG to cope with multiunit events as well. Could you provide more details, and an estimate by when you intend to extend the scope of SAM?		
Answer	The SAM modification implementation project started in 2009 and was finalized in Bohunice EBO in 2013 and the Mochovce 12 project will be finalized in 2015. The extension of the SAM to multiunit events is a part of the National Action Plan (action No.: 52).		

Q.No	Country	Article	Ref. in National Report
34	Austria	Article 14.2	4.5, p. 76-77
Question/ Comment	You reported that Mochovce and Bohunice NPP already completed PSA level 1 and 2, for internal and external events, including shutdown operation. Do you intend to perform a level 3 PSA as well, and if so, can you provide details on the schedule?		
Answer	The national Decree No.58/2006 Coll. as amended by Decree No.31/2012 Coll. stipulate the scope and contents of PSA level 1 and PSA level 2. PSA level 3 is not legally binding. However, the utility and their TSO have performed some elements of PSA level 3 and evaluated their results.		

Q.No	Country	Article	Ref. in National Report
35	Austria	Article 14.2	4.5, p94
Question/ Comment	You mention that the recommendation to ensure at least one hour period without operator action in case of SBO/UHS following the stress tests – has already been implemented in both, Mochovce and Bohunice NPP. Can you provide details on the improvements?		
Answer	Results of analyses and stress test conclusions are that WWER 440 design has sufficient amount of water in steam generators and primary circuit to be able to meet the requirements. Steam generators contain a sufficient volume of feed-water to heat removal for 5 hours. After this time period external high pressure mobile source of feed-water (fire		

	brigade trucks) are available at the NPP with stable emergency feed water tanks (72 hours heat removal). Primary circuit made available primary coolant (boric acid) for next 7 hours to heat removal from the core. More information is available at http://www.ujd.gov.sk/files/NS_Zatazove_testy_JE_SR_angl.pdf

Q.No	Country	Article	Ref. in National Report
36	Austria	Article 14.2	4.5, p. 82-100
Question/ Comment	Many actions or recommendations following the stress tests that you listed show as deadline the 2013-12-31. Could you provide details on those actions, if the time schedule could be kept?		
Answer	Tasks are completed keeping the time schedule in the Action Plan. The plant is continuously evaluating these tasks which are reviewed and assessed by inspections performed by ÚJD SR. Latest inspections were performed in December 2013 and January 2014.As regards reinforcement of SSC in the case of extreme meteorological conditions a plan for the implementation of additional measures have been elaborated. The time schedule for the implementation of these measures is discussed with ÚJD SR.		

Q.No	Country	Article	Ref. in National Report
47	Austria	Article 19.7	19, p. 144
Question/ Comment	As you report, operators take advantage of outside experience, analyze outside events derive corrective actions based on experience of other plants. Figure 5.3.5.3 shows that the number of analyzed outside events, and the corrective actions due to outside events, strongly increased in the last six years. Could you provide more details on this trend?		
Answer	In the past the area of industry OE was managed on plant level independently inside the company. Six years ago the company started with a centralization of this process. This stage was finished by the creation of a centralized OE group three years ago. It contains three plant OE coordinators, one for corporate units and a team leader. The group also manages OE process methodology. The process is designed based on INPO OE guidelines. Most of OE coordinators have operational experience. That is an important aspect for screening quality. The OE process is connected to Corrective Action Program which has been redesigned as well. Knowledge and experience have become an important company´s values, expressed in Values Model, and promoted by managers at all levels of organization. The trend is a result of changes at process level, as well as managed changes of the whole company. The OE process is generally accepted as an important proactive and preventive opportunity. It makes wider involvement of plant and corporate departments in industry event		

	evaluation. It generates increased ability to analyse more external events as well as to increase quality of analysis by producing more preventive actions.

BULGARIA

Convention on Nuclear Safety
Questions Posted To Slovakia By Bulgaria in 2013

Q.No 12	Country Bulgaria	Article Article 8.1	Ref. in National Report page 42
Question/ Comment	As at 1 May 2013 ÚJD SR employed 98 employees, of whom 81 were civil servants and 17 employees are performing work in public interest. What type of work (functions and obligations) are performing those 17 employees in public interest?		
Answer	These employees are mainly “supporting” staff performing administrative work and service activities (e.g. secretaries, accountant, pay clerk, driver, receiver, employee performing public procurement of goods, services and work).		

Q.No 15	Country Bulgaria	Article Article 8.2	Ref. in National Report p. 41
Question/ Comment	The main regulatory authorities and the licensing procedure in issuing operating license are illustrated in Figure 3.1.3.1 Licensing procedure for construction, commissioning, operation and decommissioning. In this figure there is a box “Public”. What are the interfaces with the public in the separate stages of the licensing process?		
Answer	The amendment No. 145/2010 Coll. l. to the Act No. 24/2006 Coll. I. on environmental impact assessment and on changes and amendments to certain laws as amended extended the concerned public with individuals and legal persons having interest in the procedures of environmental decision-making. In case of an individual it must be a person older than 18 years, who files a written position, which shows his/her interest in the decision making and in the following licensing procedure has a position of a party to the procedure. This amendment further modifies the term civil initiative, as well as the way of proceeding, participation in the procedure and electing a trustee of this circle of people. Civil initiative, as well as civil association and an NGO takes a position of a party to the procedure according to special regulation provided the statutory conditions are met. The competent authority for environmental impacts assessment with transboundary effects is the Ministry of Environment of the Slovak Republic.		

Q.No 19	Country Bulgaria	Article Article 12	Ref. in National Report p. 67
Question/ Comment	Managing staff are examples models in compliance with the standards, requirements and expectations for the human factor reliability program. When working they apply observation of using instruments for prevention of human errors…..		

	What instruments for prevention of human errors are defined at the plant?
Answer	We have defined error prevention tools - 7 basic tools and 6 supplementary tools. Basic error prevention tools - job-site review, questioning attitude, self-checking, procedure use and adherence, three-way communication, phonetic alphabet, pre-job briefing. Supplementary error prevention tools - peer checking, independent verification, place keeping, turnover, flagging, post-job review. Managers at all levels observe how employees use error prevention tools within managerial observation and coaching program.

CZECH REPUBLIC

Convention on Nuclear Safety
Questions Posted By Czech Republic To Slovakia in 2013

Q.No 42	Country Czech Republic	Article Article 16.1	Ref. in National Report Section 4.7.4,/p. 115
Question/ Comment	Who specifically is responsible for recommending protective measures - iodine prophylaxis.		
Answer	Responsibility for recommendation of protective measures is on ÚJD SR and also on Ministry of Health and its Public Health Authority. The Ministry of Interior should act based on these recommendations and order protective measures including Iodine profilaxis.		

FRANCE

Convention on Nuclear Safety
Questions Posted To Slovakia By France in 2013

Q.No 6	Country France	Article General	Ref. in National Report All
Question/ Comment	The establishment of a fire brigade on NPPs, distinct from the local fire brigade and specialized in radioactive hazards should be considered as a good practise.		
Answer	The comment is well taken.		

Q.No 11	Country France	Article Article 7.1	Ref. in National Report p. 39
Question/ Comment	The amendment to the Atomic Act which aimed at transposing the Waste Directive contained, inter alia, provisions “related to the amount of contributions payable for the State regulation by the licensee and increased the limits for liability for nuclear damage and changes in the operating licences (unlimited)”. Could Slovakia clarify the meaning of this sentence underlined?		
Answer	The Act No. 143/2013 Coll. amending the 2004 Atomic Act not only transposed the Directive 2011/70/Euratom on the RAW and SNF Management, but also, inter alia, increased the amount of contributions that are paid by the licensees for the licence on the yearly basis. Such contributions were introduced by the Act No. 94/2007 Coll. since January 1st, 2008 (amending the 2004 Atomic Act). By this law, the obligation of the licensee to pay an annual contribution for execution of state supervision upon nuclear safety was introduced to the Slovak legal system. The amount of the annual contribution of the licensee depends on the type of nuclear facility as well as on the type of issued licence. These contributions are revenue of the state budget and they are provided directly to the NRA (into its budgetary chapter). As of 1 January 2014, the Amendment No. 143/2013 Coll. also increased the nuclear liability limits of the licensee for the nuclear damages arising from the nuclear incidents. The increased limits of the liability for nuclear damages are set as follows: a) as for a nuclear installations with the nuclear reactor or nuclear reactors for the energy purposes, during their commissioning and operation, **awake to 300.000.000 Euros** (which is 4-times higher than before the 1 January 2014), b) and for other nuclear installations during their commissioning and operation, shipments of the radioactive materials, and, all nuclear installation in the decommissioning stage, up to 185.000.000 Euros (which is 3,7- times higher than before the 1 January 2014). Moreover, the Act 143/2013 laid down provision concerning the licences for operation of nuclear installations with the time restriction which were		

	issued prior to the 1 August 2013, and, which have to expire after 1 August 2013. Such licences are considered to be the licences for operation of nuclear installation **without any time limitation**. It means that licence for operation, no matter if it was issued prior to 1 August 2013 or later, they are not limited by time restrictions.

Q.No	Country	Article	Ref. in National Report
25	France	Article 14.1	§ 4.5.3 - p. 78 to 100
Question/ Comment	Slovakia states that actions resulting from the stress tests are included under an action plan. This action plan is described in pages 82 to 100, but also includes other modifications. Could Slovakia specify which actions in the action plan specifically result from the stress tests and which from the lessons learned from Fukushima Daiichi NPP accident?		
Answer	For tasks resulting from the tests and lessons learned integrated tasks, which are in Action Plan, were developed. Their fulfilment is monitored and evaluated by inspections performed by ÚJD SR .A clear distinction is not possible because many of the listed actions started before Fukushima and overlapping with the actions from the Stress Tests (e.g. severe accident management).Some of the actions like No.: 55 – large fire – does not originate from any previous event/activity and is a new initiative.		

Q.No	Country	Article	Ref. in National Report
26	France	Article 14.1	§ 4.5.3 – p. 82 to 100
Question/ Comment	The post-Fukushima action plan presented by the Slovakia contains a lot of technical modifications and mentions also some issues related to organization. Could Slovakia give more information on how safety culture and human and organizational factor issues are taken into account in this action plan, including operator training, cumulative impact on human performance of a set of post-Fukushima modifications, support of contractors for implementing actions, sufficiency of well-trained people still available on a degraded site (including availability of contractors), the correct functioning of national organizations and emergency preparedness (degree of realism of exercises and drills...) and response... ?		
Answer	The question is rather complex. Therefor a summary of main action are described: Emergency preparedness exercises and drills are performed within realistic scenarios including operating shift personnel in the simulator and reporting to the authorities (ÚJD SR, Ministry of Interior, Civil Defence Department, etc.). The development of the accident scenario is written with time skips between accident milestones in comparison with a real accident development. In 2011 NPPs of SE, plc, implemented “Human Performance Program“. In the sense of this program all employees of NPP are yearly trained (or retrained) in tools for the prevention of human errors. The program		

	introduced also observation of using tools for the prevention of human errors at performing any work in the plant. Observations are performed by managers every day according to an approved schedule. Also managers of supply companies participated in the shortened version of similar training in using tools for the prevention of human errors.

Q.No	Country	Article	Ref. in National Report
27	France	Article 14.1	§ 4.5.3 – p. 99
Question/ Comment	Regarding severe accident management measures, Slovakia defines measures to ensure containment integrity, filtration strategies and hydrogen management for the containment. Could Slovakia specify if level 2 PSAs are used to estimate the impact of these measures and to identify additional accident management measures?		
Answer	Various measures has been defined, developed and implemented to ensure containment integrity. Besides other analyses, also PSA Level 2 studies were used to identify events and/or phenomena contributing to the risk of losing containment integrity and to identify areas, where application of some measures can increase probability that in case of severe accident the containment remains intact. PSA level 2 was also used to estimate contribution of the proposed measures to accident management. The results of level 2 PSA confirmed that by application of these measures the probability of preserving the intact containment will increase significantly and thus, the uncontrolled release of the radioactive material to the environment will be prevented. Filtration strategy does not belong to the identified and/or proposed measures. Its necessity and/or necessity of other potential technical measures for long-term heat removal will be analysed by the end of 2015.		

Q.No	Country	Article	Ref. in National Report
43	France	Article 16.1	§ 4.7 – p. 107 á 123
Question/ Comment	No mention is made about the impact of the lessons learned from the Fukushima Daiichi NPP accident to the Slovakian emergency preparedness system in place. Did Slovakia made a review of its emergency preparedness arrangements in the light of this event and found any improvement to be implemented?		
Answer	The impact and lessons learnt from the Fukushima accident on the of site emergency preparedness system is described on page 16 (Summary information) and in more detail on pages 116 – 117 (Chapter 4.7.6). As regards on site emergency preparedness the operator has completed a new bunkered emergency response center at the Bohunice site in 2012 and completed the reconstruction of the existing emergency response center at the Mochovce site in 2013. These activities has been initiated before Fukushima and just confirming the correctness of decisions on this matter made in the past. Attached is a picture of the new ERC at Bohunice site.		

Q.No	Country	Article	Ref. in National Report
44	France	Article 17.1	§ 4.5.3 – p. 80

Question/ Comment	In accordance with ENSREG recommendations for external flooding and seismic events, Slovakia should base its measures on a very low probability of occurrence (less than 1.10-4/year). Could Slovakia give details of the additional measures taken into account to cope with these hazards?
Answer	For purposes of developing the analysis and implementation of the reinforcement of systems, structures and components, a study on meteorological conditions with a frequency of 10^{-4}/year for the Bohunice and Mochovce sites in line with the IAEA and WANO was elaborated. A plan for the implementation of additional measures have been

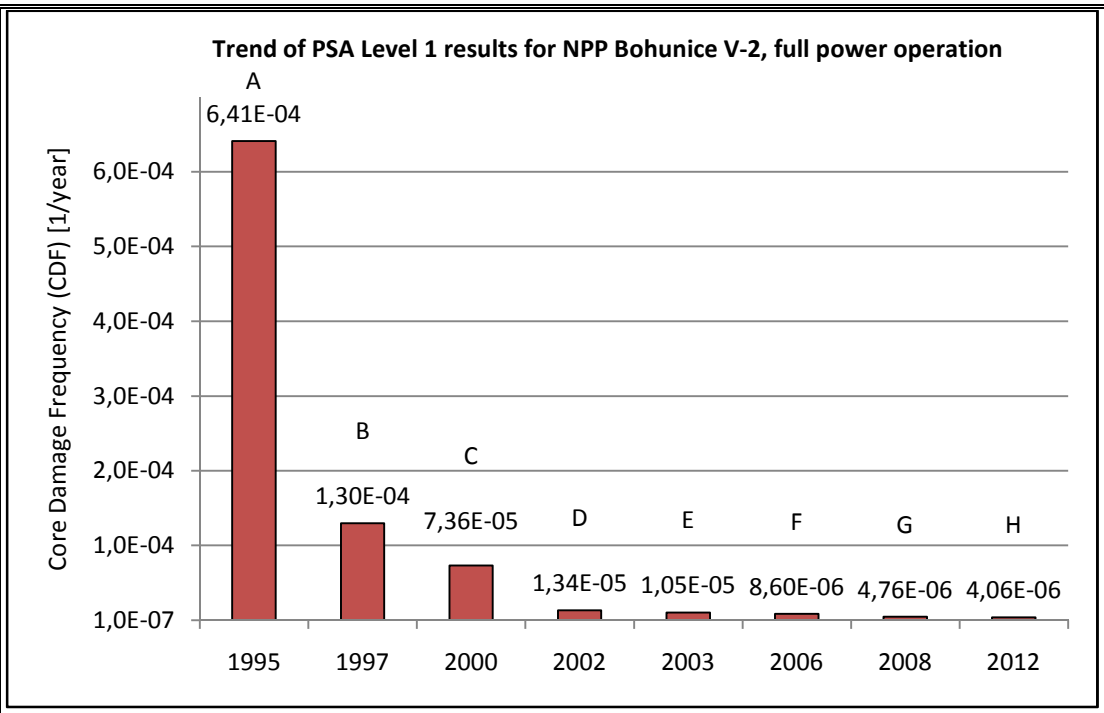
	elaborated and their implementation is reviewed by ÚJD SR.		
Q.No 45	Country France	Article Article 17.3	Ref. in National Report § 5.1 – p. 127 to 130
Question/ Comment	At the same time as it implements additional measures after the Fukushima Daiichi NPP accident, does Slovakia plan to change its siting recommendations in terms of design and construction?		
Answer	ÚJD SR continuously updates safety requirements, including requirements for siting in compliance with IAEA standards.		
Q.No 46	Country France	Article Article 19.4	Ref. in National Report § 5.3.3.5 - p. 137
Question/ Comment	Concerning the implementation of the SAMG, could Slovakia specify the training plan: days of training, personnel involved and feedback from the training?		
Answer	Training courses that have been performed already include various topics from Severe Accidents Management. Total of 369 personnel from Bohunice site and 505 personnel from Mochovce 34 site were trained along with lecturers and instructors. As follow-up, Bohunice and also Mochovce operator will update their existing SAM training materials till the end of 2014.		

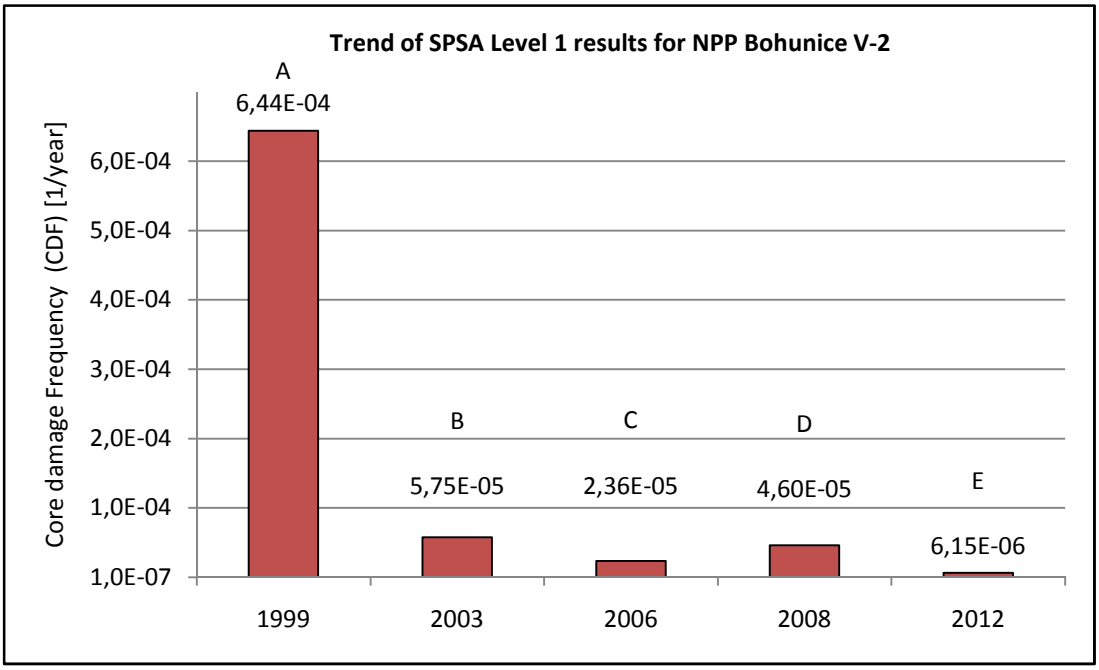
GERMANY

Convention on Nuclear Safety
Questions Posted To Slovakia By Germany in 2013

Q.No 7	Country Germany	Article General	Ref. in National Report p. 16
Question/ Comment	The construction of the Mochovce NPP units 3&4 is continuing however a delay of more than 13 months is recognised and there are several causes for the delay, for example the underestimation of the complexity of the project. Please explain what is meant by "underestimation of the complexity of the project".		
Answer	Mochovce NPP units 3&4 are not fall within the scope of the CNS. Despite of this Slovakia provided basic information on the status of the project. As regards the project, reference is made to chapter 2.3.2.2 of the National Report which describes the complexity of safety improvements implemented at the power plant. The implementation of these measures was and is a challenge to the project management and the regulator as well.		

Q.No 28	Country Germany	Article Article 14.1	Ref. in National Report section (4.5.2), p. 76-77
Question/ Comment	To supplement Section 4.5.2, please provide the differences in the estimated CDF values between the first PSA study and the latest update of PSA Level 1 for the operating NPPs?		
Answer	The first PSA study of the V2 plant was prepared for level 1 full power PSA of the unit 3. It has been completed in a RELKO and VUJE co-operation in 1994. The PSA study was subject of international peer review organized by the IAEA. Then, RELKO updated the study in 1995 and CDF value was 4.60E-4/y for full power operation (Level 1 PSA study for unit 3 Bohunice V2 NPP, Main report, RELKO report 1R0195, September 1995). CDF value was reduced based on many factors mentioned in Section 4.5.2 of the PSA part. Major changes in PSA studies were implementation of symptom-based emergency operating procedures in 1999 and the modernization during the time period 2002-2008. The last PSA study for NPP Bohunice V-2 was completed in 2012. CDF value was 4.06E-6/y for full power operation and for low power and shutdown modes was CDF value 6.15E-6/y (Level 1 PSA study for unit 3 Bohunice V2 NPP, Main report, RELKO report 1R0111, 2R0111, September 2012).		





Q.No	Country	Article	Ref. in National Report
29	Germany	Article 14.1	Section 4.5, p. 95 to 138,..

Question/ Comment

Please provide additional information on Section 4.5 “Assessment and Verification of Safety”:

A) Which measures/strategies will be implemented for SAM (pages 95, 38, 138) and when?

B) Please inform about performed/planned activities of ÚJD SR in the assessment of the SAM project prior to its implementation

C) Which role plays the international cooperation in the SAM related activities?

	D) Why will the necessity of filtered venting be analysed until 2015 (page 82), whereas SAM hardware modification is being performed earlier?
Answer	A) Measures which have been implemented (or will be implemented) to cope with severe accidents and the performance dates for both sites are:

Title of subproject SAM	EBO3,4	EMO1,2
Reactor Cavity Flooding	2010	2012
Primary circuit Depressurization	2012	2015
Containment Hydrogen Management	2012	2013
Containment Vacuum Breaker	2012	2015
Alternative Coolant System	2013	2015
Alternative Power Supply System	2013	2015
I & C – PAMS, Control	2013	2015
Containment Long Term Heat Removal	2013	2015
SAMG Implementation	2013	2015

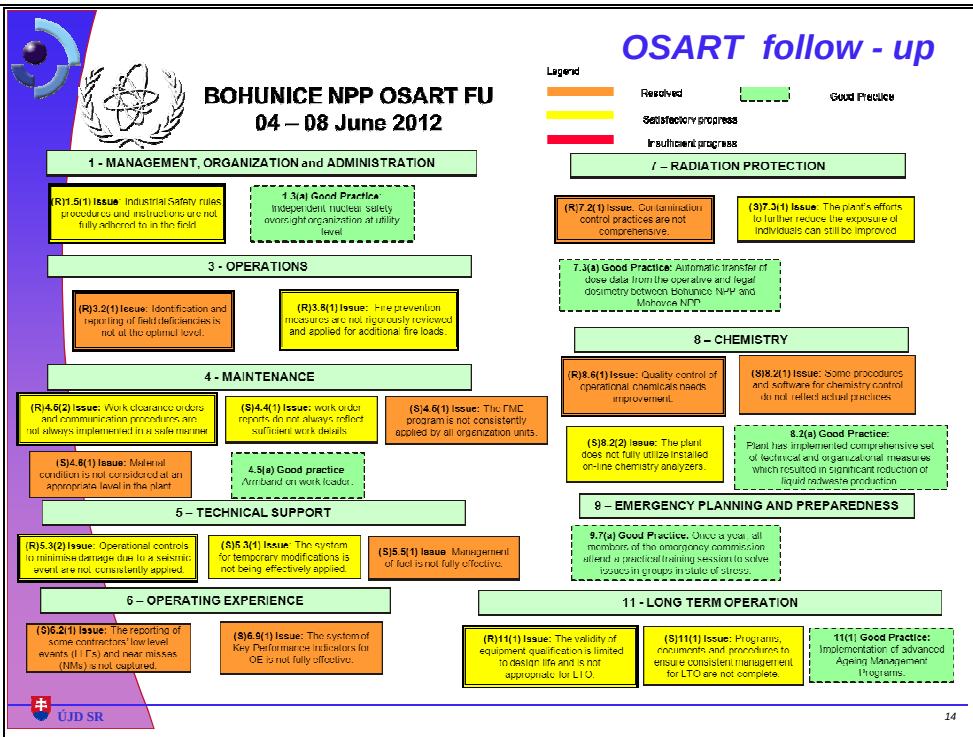
B) ÚJD SR has made legislative provisions, according which the operator is obliged to and has responsibility for arrangement for the fact, that SAMGs have to be verified and validated in the form in which they will be used, to ensure that they are administratively and technically correct for the plant and are compatible with the environment in which they will be used. Also ÚJD SR has been evaluating the SAM project and its implementation against requirements of IAEA and WENRA and has been performing the specific inspections on site, dedicated for this area. Besides all these, independent analyses focusing on assessment of the SAM has been performed and planned.

C) International cooperation plays a very important role in SAM related activities. The effort started by the complex analytical project PHARE 4.2.7 a Beyond Design Basis Accident Analysis and Accident Management, implemented in 1996-1998. Main objectives of this project were analyses of VVER 440/213 type NPP response, identification of containment failure mechanisms under severe accident conditions and review of applicability for V213 containments the basic strategies identified for Western containment types. This project was followed by two other projects – PHARE 2.06 Analysis of the Need and of Alternatives for Filtered Venting of Containments and PHARE 2.07 Hydrogen Control during Severe Accidents, which were finished in 1999. These three projects jointly performed by Westinghouse and research institutes from Slovakia, Czech Republic and Hungary represent a comprehensive study

	of vulnerability of V213 units in severe accident conditions and a preparatory phase for implementation of Accident Management in severe accidents initiated by internal events. SAMG were developed in co-operation with Westinghouse Electric Belgium, in the common EBO3,4 and EMO1,2 project during the period from 2002 to 2004. Unlike similar projects in Western NPPs it was decided to mitigate or eliminate all identified containment vulnerability mechanisms by suitable modifications or extensions of V213 basic design. Proposals of such key modifications have been prepared in several stages and several analytical projects were implemented for verification of feasibility and of efficiency of developed strategies. The project for implementation of modifications needed for severe accident management was proposed in compliance with updated requirements of Slovak legislation in 2006 - 2008. The modifications were reflected in the measures resulting from periodic safety assessments of EBO3,4 and EMO1,2. During this implementation phase international cooperation continues in various forms and at various levels, especially by consultation with other operators of WWER-440/V213 and research institutes in Hungary and Czech Republic, as well as by changing experience with partners and international experts of IAEA, OECD/NEA, EUR, AREVA, WENRA, GRS, etc. D) As explained above in the response to question C), SAM related activities in Slovakia started in 90-ties. Among various activities and analyses, also 2 projects - PHARE 2.06 Analysis of the Need and of Alternatives for Filtered Venting of Containments and PHARE 2.07 Hydrogen Control during Severe Accidents, were finished in 1999. These projects jointly performed by Westinghouse and research institutes from Slovakia, Czech Republic and Hungary represent a comprehensive study of vulnerability of V213 units in severe accident conditions. Filtered venting was not included in the planned modifications at that time. By the end of 2015 (i.e. by the deadline for SAM project implementation) a necessity of filtered venting of the containment and/or other potential technical measures for long-term heat removal from the containment and reduction of radiation load of the environment will be analysed, considering measures already implemented within the SAM project and taking into account activities in this area by other operators of WWER-440/V213.

Q.No	Country	Article	Ref. in National Report
37	Germany	Article 14.2	section 4.5.3, p. 17, 23, 78

Question/ Comment	Referring to the OSART follow-up mission in 2012, it is mentioned that 9 identified in 2010 issues have been resolved and in 10 issues satisfactory progress has been achieved. Please cite some examples concerning the recommendations/suggestions for improvement made by the IAEA OSART mission in 2010?
Answer	This is an overview of actions:



Q.No 38	Country Germany	Article Article 14.2	Ref. in National Report section 5.3.5.3, p. 145

Question/ Comment

Figure 5.3.5.3.c presents the numbers of reported occurrences at NPP Bohunice V-2.
Please, give some details about an operational event occurred at NPP Bohunice V-2 in 2012, which was rated as INES 1.

Answer

Category of event as per the Act No. 541/2004 Coll.	**Event**	INES	**1**
Title of event	**A failure to meet requirements for check of limit condition during the scheduled reduction of boronacid concentration in the spent fuel pool.**		
Number of event	**005_2012_EBO3_P**		
Date of event	**17.7.2012 20:50**		

On 17 July 2012, a shift supervisor informed a chemistry unit representative of higher concentration in the pool and in the shaft No 1 and recommended to reduce the concentration in mentioned volumes. The task was defined to reduce the H_3BO_3 concentration in the Unit 3 pool to 13.5 – 14.0 g/kg and to prepare a manipulation procedure for this operation with an emphasis put on exclusion of introduction of pure condensate into the primary circuit. On 17 July 2012 in the afternoon shift, a reactor operator calculated the required change of level and wrote a manipulation procedure for removal of required manual valves. From 05:35 p.m. to 07:18 p.m., the pool and the shaft No 1 were drained according to this procedure. Thanks to this manipulation, level in the pool and in the shaft No 1 reduced from 20.9 m to 19.58 m, i.e. by app. 1.3 m. At 07:50 p.m., filling of the pool and the shaft No 1 with pure condensate started. The filling ended at 20.7

	m on 18 July 2012 at 00:40 a.m. The pool was made up with the flow rate of app. 10 m^3/hour with pure condensate. After mixing with a pump, coolant in the pool was sampled at 5 o'clock in the morning and the sample was evaluated. The concentration value was 12.8 g/kg. To confirm this data, another sample was taken and evaluated at 05:15 a.m.; the result was the same. When this fact was found out, the shaft No 1 was connected at 06:30 a.m. to be mixed too. At 07:30 a.m., the pool was sampled; the sample showed the H_3BO_3 concentration 13.1 g/kg. This result was confirmed by another sample taken at 07:46 a.m. After the sample evaluation at 07:30 a.m., the shaft No 1 was disconnected from mixing. At 09:50 a.m., another sample was taken, where the H_3BO_3 concentration 13.1 g/kg was found out. Based on this, the shaft No 1 was re-connected for mixing at 10:40 a.m. However, the sample taken from the pool at 11:30 a.m. showed the H_3BO_3 concentration 13.1 g/kg. Therefore about 5 m^3 of H_3BO_3 with the concentration 41.3 g/kg was added to the pool from 12:20 p.m. to 01:30 p.m. which increased level in the pool and in the shaft No 1 to 21.07 m. The sample taken from the pool at 01:35 a.m. showed the H_3BO_3 concentration 13.3 g/kg. The minimal operating value of the H_3BO_3 concentration – 13.5 g/kg was achieved in the taken sample at 02:32 p.m. and confirmed by the sample at 04:20 p.m. Mixing of the shaft No 1 with the pool finished at 04:50 p.m. When the requirements for check of the H_3BO_3 concentration during the spent fuel pool make-up were not fulfilled, the Technical Specification was breached.

HUNGARY

Convention on Nuclear Safety
Questions Posted To Slovakia By Hungary in 2013

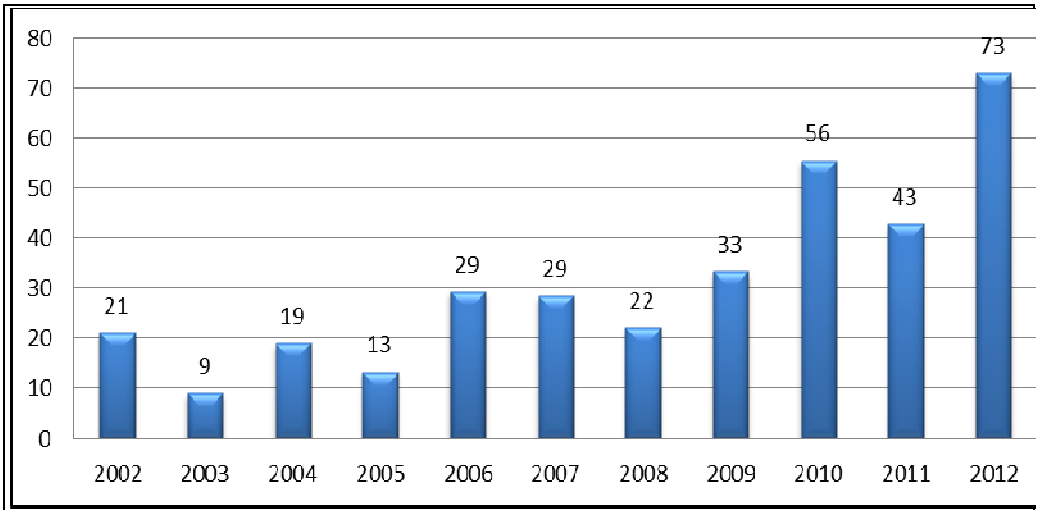
Q.No 13	Country Hungary	Article Article 8.1	Ref. in National Report Chapter 1.3, p. 18,
Question/ Comment	Can you please provide some more details about the causes of the delay? What conclusions did you make on them?		
Answer	The extension of the stage of MO3,4 construction was induced by various factors related to requirements for enhancing nuclear safety in connection with stress tests, especially by the process of mounting anchoring elements (plates, anchors) necessary for meeting requirements of the design resistance to seismic events.		

Q.No 14	Country Hungary	Article Article 8.1	Ref. in National Report Chapter 3.1.3.4, p. 47
Question/ Comment	Can you please describe the most important experiences gained during the preparation for the mission?		
Answer	The main purpose of self-assessment and IRRS mission in Slovakia was to examine the national regulatory infrastructure, resources, activities and outputs of ÚJD SR activities regarding to the IAEA requirements, reveal weaknesses and highlight the strengths of the scope and organization of the ÚJD SR. An important aspect of self-assessment and IRRS mission was independent (international) verification of conditions, activities, ÚJD SR outputs and discussion problems in the supervisory activities of the ÚJD SR and methods for their possible removal. Performance of self-assessment, preparation of recommended documentation and mission conductance requires considerable resources (human and financial), effort and time. The work was done in parallel with everyday regulatory activities. The results of self-assessment and IRRS mission depend on the professionalism and qualification of experts involved. They should be carefully selected. Performance of the self-assessment, IRRS mission and implementation of the Action Plan for improvements contributed to an increase of ÚJD SR effectiveness, ÚJD SR credibility, service delivery and meeting the legitimate needs and demands of stakeholders. It complied with the relevant provisions of the Atomic Act, the recommendations of EU Council Directive 2009/71 EURATOM, IAEA and ÚJD SR internal normative acts. At the same time it contributed to the achievement of the National Quality Program of the Slovak Republic.		

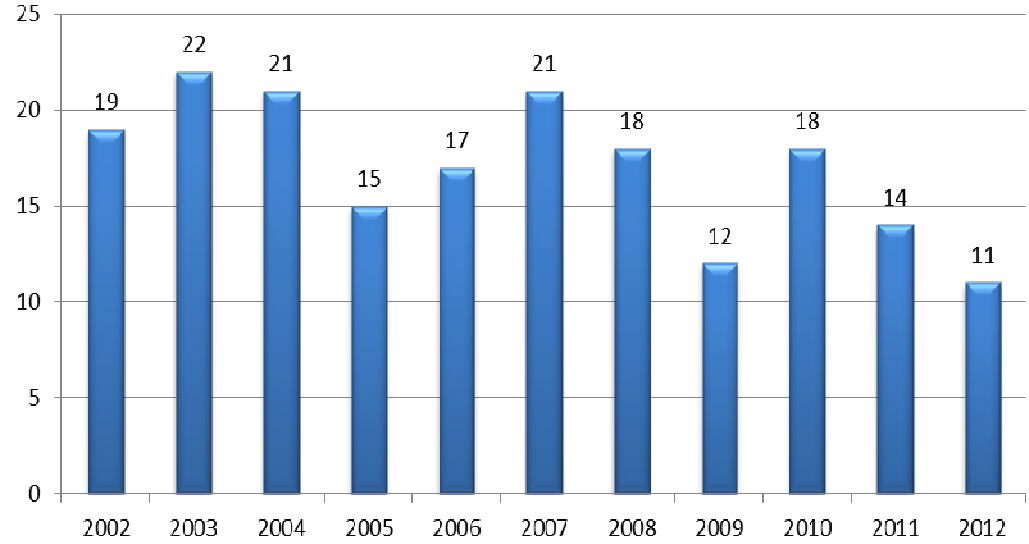
PAKISTAN

Convention on Nuclear Safety
Questions Posted To Slovakia By Pakistan in 2013

Q.No 21	Country Pakistan	Article Article 12	Ref. in National Report Section 4.3.3, p. 66
Question/ Comment	In this section, methods of detecting and correcting human errors are described which includes process of incident investigation through, quick analysis of events, HPES (Human Performance Enhancement System), TapRoot etc. Slovak Republic may like to elaborate how effectiveness of these methods in terms of human error reduction is assessed?		
Answer	In SE, plc. there is the directive JE/SM-135 “Human Performance Improvement” covering following areas: • Human performance improvement program • Observation and couching • Event – free clock reset • Prompt analysis of events with human factor • Human factor report events report • Human factor report for manager • Information of all staff of plant The investigation of human performance is carried out at following levels: • Committee of all events – monthly • Report on Human Performance –quarterly • Report on Operation and Safety Indicators –quarterly • Quick analysis of human events are submitted to the plant director. The methods of human errors analyses allowed us to improve the impact of human errors on event initiation. Therefore the statistics started to indicate the increased contribution of human errors to event occurrences. On the other hand, this better identification allowed us to take more effective corrective actions in the area of human errors prevention, which is proved by decreasing of total number of significant events. Contributions of human error to significant events generation in EBO		



Number of significant events in EBO



Q.No 39	Country Pakistan	Article Article 15	Ref. in National Report Section 4.6.2, p. 104
Question/ Comment	It is stated “Personnel monitoring can be performed by authorized dosimetry service…..” SR may like to explain the type of authorization required by the dosimetry service.		
Answer	The Authorized Dosimetry Service needs an authorization from Public Health Authority of the Slovak Republic. The requirements for this are specified in the Act 355 Coll. on Protection Support and Development of Public Health (Art.45, par.4., letter f, and Attachment No 4). The Attachment No 4 described documentation needed for this purpose (for example the approval of devices for dosimetry monitoring by the National Metrology Institute).		

REPUBLIC OF KOREA

Convention on Nuclear Safety
Questions Posted To Slovakia By Republic of Korea in 2013

Q.No 20	Country Korea, Republic of	Article Article 12	Ref. in National Report p. 69
Question/ Comment	It is described in Article 4.3.3 that "To improve the safety culture the operators develop and evaluate action plans for safety culture on a yearly basis. Safety culture indicators are defined to evaluate it." Please describe details on safety culture indicators and how safety culture is evaluated.		
Answer	Safety culture is evaluated by means of several tools to get as reliable outcomes as possible. Safety culture indicators (monthly, quarterly and yearly) are some of them. An independent evaluation is regularly performed using surveys, observations and interviews (ones per two years). Action plans setting measures for further improvement of safety culture are defined based on the assessment report. 15 safety culture indicators are used: 1. Number of condition reports in shortcomings in EPT(error prevention tool) application Purpose: To support employees´ responsibility for shortcomings identified in the fulfilment of anticipated standards (use of human error prevention tools - EPT) 2. Number of appraisals for safe behaviour Purpose: To support application of managerial tools for reinforcing expected behaviour 3. Condition reports produced by management from inspection rounds and observations Purpose: To reinforce visible leadership of plant management at workplaces and the responsibility for safety. Effective rounds and observations indicate the senior managers´ commitment to safety 4. Supervision over safety-important tests by management Purpose: To reinforce involvement of plant management in safety by supervising safety-important tests and works 5. Management´s participation in training Purpose: To reinforce personnel´s expected behaviour by involving senior managers in training 6. Management´s meetings with personnel Purpose: To contribute to confidence-building and reinforcing of sound safety culture by communicating important managerial decisions to personnel 7. Condition reports owing to the failure to commence works or owing to suspension of works Purpose: To support application of the conservative approach in case of ambiguities 8. Operational events related to reactivity management, heat removal, defence in-depth or physical barriers Purpose: To provide support to work activities that may influence		

	the reactivity management, heat removal, defence in-depth or barriers for retention of radioactive materials to be performed in a consistent manner in accordance with regulations, with better care and precaution 9. Effectiveness of personnel´s examinations Purpose: To enhance the knowledge of employees regarding operation and power plant facilities and thus to create a firm basis for reliable decisions and conduct 10. Operational events caused by inadequate preparation of works Purpose: To reduce the risk of occurrence of operational events caused by insufficient preparation of works 11. Analyses of precursors´ root causes Purpose: To reduce the risk of occurrence of operational events by due attention paid to precursors 12. Enhancement of process efficiency based on measures resulting from self-assessment and benchmarking Purpose: To cultivate the need of constant efficiency improvement and to prevent satisfaction 13. Duration of event analysis and implementation of corrective measures Purpose: To reinforce employees´ confidence that nuclear safety issues are paid the overriding attention and are handled in time 14. Performance of self-assessments and independent assessments Purpose: To ensure the balance in assessment of the nuclear safety level 15. Measures to enhance SC based on SC self-assessment Purpose: To enhance safety culture by its effective periodic assessment

UKRAINE

Convention on Nuclear Safety
Questions Posted To Slovakia By Ukraine in 2013

Q.No 30	Country Ukraine	Article Article 14.1	Ref. in National Report para 4.5.2, p. 78
Question/ Comment	One of the WENRA recommendations on the periodic safety review for power units of older design is to apply provisions of the “Safety Objectives for New Nuclear Power Plants”. Has the Slovak Republic ever applied the provisions of this document when conducting the periodic safety review for its NPP?		
Answer	This document was issued after conducting of PSR in NPP´s so it could not be applied during the last PSRs. Nevertheless the legislation commits the licence holder to apply the newest knowledge from nuclear safety.		

Q.No 31	Country Ukraine	Article Article 14.1	Ref. in National Report para 4.5.3, p. 95
Question/ Comment	Were SAMG revised to take account of the stress tests results? What is the currently accepted scope of SAMG?		
Answer	Measures which have been implemented (or will be implemented) to cope with severe accidents and the performance dates for both sites are:		

Title of subproject SAM	EBO3,4	EMO1,2
Reactor Cavity Flooding	2010	2012
Primary circuit Depressurization	2012	2015
Containment Hydrogen Management	2012	2013
Containment Vacuum Breaker	2012	2015
Alternative Coolant System	2013	2015
Alternative Power Supply System	2013	2015
I & C – PAMS, Control	2013	2015
Containment Long Term Heat Removal	2013	2015
SAMG Implementation	2013	2015

	The SAMG have been revised during 2013 to include all modifications installed in the frame of SAM project. The planned revision of SAMG will take into account HW modifications to be installed in the frame of the National Action plan after Fukushima. SAM project, aiming at eliminating all identified containment vulnerability mechanisms and being currently implemented in NPP Bohunice and Mochovce, is based on originally defined scope with assumptions for occurrence of a severe accident on only one of two units. Further SAMG improvement and preparation of additional supporting documents for decision making by SAMG and main control room teams will be adopted based on results of validation at the project completion. Based on the lessons learnt from Fukushima, the SAM project will be analysed from the view point of severe accident management at all units at the same site (fuel situated in the reactor core and in the spent fuel pool) and if needed, the SAM project will be modified so, that sufficient measures can be implemented. A plan of implementation of additional measures for extension of the SAM project to improve the severe accident manageability at its simultaneous occurrence in all units at the same site will be prepared by the end of 2015.

Q.No	Country	Article	Ref. in National Report
32	Ukraine	Article 14.1	para 4.5.7, p. 103
Question/ Comment	Do you develop the ageing management programs for each unit of NPP? How many units of equipment of the power plant is included in the ageing management program? How do you choose the equipment to be included in ageing management program?		
Answer	SE plc. has implemented a generic ageing management programs for all four units at EBO and EMO NPPs (not separately for each unit). Following criteria were used in the selection of equipment: ÚJD SR requirements, WENRA requirements, experience from operation, relation to safety function, relation to long-term operation, equipment qualification, results of research projects and IGALL experiences.		

Q.No	Country	Article	Ref. in National Report
40	Ukraine	Article 15	para 4.6.2, p. 106
Question/ Comment	It is stated in the report that three reference levels are established for monitoring the environmental impact of NPP: recording, investigation and intervention. What is the procedure for their establishing and how often should they be revised.		
Answer	As it is mentioned in the National Report there are requirements on the operators for monitoring in the Regulation of the SR Government No. 545/2007. There is also paragraph concerning recording, investigation and intervention levels. Data from the monitoring are recorded (recorded values) in order to		

document types and quantities of the radionuclides discharged, for the purpose of demonstrating that radiation doses and the annual discharges comply with the appropriate authorization. Recording levels are all measured and analysed values.
According to the authorization issued by the - Public Health Authority - for EBO and EMO NPPs guidance values were established for investigation levels (given in Bq/day or Bq/dm^3 respectively) and intervention levels (given in Bq/day or Bq/dm^3 respectively) as well as activities and performance in case of their exceeding. The last revision of investigation and intervention levels was carried out in 2011.
Tables of investigation and record levels for EMO and EBO NPPs.

EMO1,2

Investigation levels for activity of exhausts		
Noble gases (any combination)	$1{,}1.10^{13}$	Bq/day
Iodine (gaseous and aerosol phase)	$1{,}8.10^{8}$	Bq/day
Aerosols – mixture of long-lived radionuclides	$0{,}5.10^{9}$	Bq/day
Investigation levels for activity of substances discharged in wastewater		
Tritium	$3{,}0.10^{7}$	[Bq/m^3]
Other corrosion and fission products (except tritium)	$4{,}10^{4}$	[Bq/m^3]

Intervention levels for the activity of exhausts		
Noble gases (any combination)	$5{,}5.10^{13}$	Bq/day
Iodine (gaseous and aerosol phase)	$9{,}0.10^{8}$	Bq/day
Aerosols – mixture of long-lived radionuclides	$2{,}5.10^{9}$	Bq/day
Intervention levels for activity of substances discharged in wastewater		
Tritium	$1{,}0.10^{8}$	[Bq/m^3]
Other corrosion and fission products (except tritium)	$4{,}0.10^{4}$	[Bq/m^3]

EBO3,4

Investigation levels for activity of exhausts		
Noble gases (any combination)	$1{,}6.10^{12}$	Bq/day
Iodine (gaseous and aerosol phase)	$5{,}3.10^{7}$	Bq/day
Aerosols – mixture of long-lived radionuclides	$6{,}6.10^{7}$	Bq/day
Investigation levels for activity of substances discharged in wastewater		
Tritium	$6{,}5.10^{7}$	[Bq/m^3]
Other corrosion and fission products (except tritium)	$3{,}7.10^{4}$	[Bq/m^3]

Intervention levels for the activity of exhausts		
Noble gases (any combination)	$2{,}7.10^{13}$	Bq/day
Iodine (gaseous and aerosol phase)	$8{,}9.10^{8}$	Bq/day
Aerosols – mixture of long-lived radionuclides	$1{,}1.10^{9}$	Bq/day
Intervention levels for activity of substances discharged in wastewater		
Tritium	$1{,}95.10^{8}$	[Bq/m^3]
Other corrosion and fission products (except tritium)	$3{,}7.10^{4}$	[Bq/m^3]

Q.No	Country	Article	Ref. in National Report
41	Ukraine	Article 15	para 4.6.2, p. 106

Question/ Comment

Do you have monitoring the Tritium and Carbon-14 in the liquid discharges? If so then how?

Answer

As explained in the National Report the Public Health Authority authorizes the discharge of radioactive substances into the environment from nuclear installations The values of discharges from these authorizations are in the Annexes of the National report.
In the authorizations of the Public Health Authority for EBO and EMO NPPs in the case of liquid discharges there is obligation for operator to monitor the value of tritium but no for carbon-14.
For purpose of the tritium in liquid radioactive laboratory analyses are

	used. These are carried out using a liquid scintillation spectrometer after the sampling and sample processing.