



REPUBLIC OF SLOVENIA
MINISTRY OF ENVIRONMENT AND SPATIAL PLANNING
SLOVENIAN NUCLEAR SAFETY ADMINISTRATION

5th Slovenian Report on Nuclear Safety

Answers to Questions of Other Contracting Parties

Revision 1



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Country	Art.	Question	Answer
Finland-1	Art.6	What is the status of Krsko ageing management programme under development and the process to extend the lifetime of Krsko up to 60 years?	<p>The Krško NPP submitted its application for approval of an extended design lifetime including relevant final safety analysis report changes at the end of March 2009. The SNSA found it incomplete and requested a supplement from the Krško NPP to furnish an independent expert opinion with the scope equivalent to the scope of US NRC Safety Evaluation Reports prepared as a part of US NRC review of US license renewal applications. The TSO, which was selected for implementation of that independent opinion, established an international team of reviewers with members from different countries including consultants from the USA with long professional experience within the US NRC.</p> <p>Preliminary results of TSO's review of NPP's application were presented to the SNSA in May 2010. The whole process is now slightly delayed as the NPP opted for full implementation of practically all AMP programs related to long term operation before the SNSA approves the application.. The final TSO expert assessment was delivered at the end of 2010. The regulatory review of the selected parts of the plant application and TSO review report is currently under way. The SNSA expects to issue a decision on the NPP Krško AMP program and design lifetime in the course of this year.</p>
Finland-2	Art.7.1	Please identify the main items of Slovenian Atomic legislation, which are in need to be modified as a result of implementing the EU Nuclear Safety Directive.	In preparation for transposition of the EU Nuclear Safety Directive to our legal system we realised that the only provision which is not already covered in our legal framework is the paragraph 3 of Article 9 on "self-assessment" and "IRRS".
Germany-1	Art.12	<p>It is stated that "As part of event analyses, the SNSA independently performs root cause analyses and determines the human factors that would lead to the events."</p> <p>Please elaborate a little bit more, how SNSA performs the determination of human factors in case of an event? Are organizational factors also taken into account?</p>	<p>Determination of human factors is a part of root cause analysis. During the in-depth deterministic event investigation the possible root causes of failures or mistakes are determined. For identification of root causes "Event and Causal Charting" method is used. SNSA has a list of possible root causes divided into factors connected with the equipment and factors connected with the personnel. In addition, the factors connected with the personnel are subdivided into human performance, organization control and organizational effectiveness. After the root causes are determined, the SNSA can draw the conclusions why the event has occurred and why it was not prevented. Then the corrective/ preventive actions are developed. The important part of event analysis is information gathering. Besides plant event report the inspection visits and interviews with the plant staff are the important sources of information necessary for the analysis.</p>
Germany-2	Art.13	It is stated "The 2002 Act explicitly requires that the operator of a radiation or nuclear facility must, with a view to quality assurance, set up and implement a quality assurance programme."	<p>1. The SNSA supervises and inspects the management system of Krško NPP through:</p> <ul style="list-style-type: none"> - licensing, - specialized quality management / assurance inspections and other relevant SNSA inspections,



		Please elaborate how SNSA supervises and inspects the management system of Krško NPP. Did SNSA have to approve the management system?	<p>- the technical support organization (TSO) reports. The TSOs are authorized organizations, designated by the SNSA.</p> <p>2. The Krško NPP periodically informs the SNSA about new revisions of the NPP Quality Assurance Plan, but SNSA does not approve it. However, a short description of the Quality Assurance Plan is contained in the chapter 18 of USAR documentation, which is approved by the regulatory body.</p>
Germany-3	Art.14.1	It is stated that the Rules on Radiation and Nuclear Safety Factors provide more detailed requirements for the assessment of safety before the construction and commissioning of a nuclear facility. Please give examples for this.	<p>The Rules on Radiation and Nuclear Safety Factors prescribe the following:</p> <ul style="list-style-type: none"> – the design bases for radiation and nuclear facilities; – the content of applications and their accompanying documents, necessary for issuing consents and permits for radiation and nuclear facilities as well as other less important radiation facilities, as defined in the act governing the radiation protection and nuclear safety; – the content of safety analysis reports and other documents required to demonstrate and guarantee the safety of radiation and nuclear facilities; – detailed requirements about the organization of a radiation or nuclear facility, and about the content and scope of quality assurance programme and its implementation in radiation and nuclear facilities, etc.
Germany-4	Art.15	What is the definition of “members of the reference group”?	<p>The term “member of the reference group” shall be understood as the term “representative person”, defined in ICRP 101. This is an individual, who receives a dose that is representative of more highly exposed individuals in the population due to operation of a single source (i.e. nuclear or radiation facility, etc.). For the Krško NPP a “representative person” for liquid discharges pathway of the Sava River is a fisherman, who spends some time on the riverbank and who also eats fish from the river.</p>
Germany-5	Art.17.3	Have meteorological hazards and man-made hazards been considered in the framework of the re-evaluations mentioned in Sect. 17.3? If so, which hazards were considered? If not, why were these hazards omitted from the assessment?	<p>In the national report only the hazard reassessments with important needed back-fitting were mentioned. Also other hazards were considered:</p> <p>Meteorological:</p> <ul style="list-style-type: none"> - Ultimate heat sink in extreme weather – low river flow and high air temperature - Local precipitation - High winds <p>Manmade hazards:</p> <ul style="list-style-type: none"> - Aircraft crashes (taking into account current commercial, military, and general aviation aircraft crash frequencies for takeoffs, landings, and in-flight accidents as well as possible impact of the Cerklje airport) <p>Hydrological hazards:</p> <ul style="list-style-type: none"> - Operational waves from the upstream and downstream hydro plants



			<ul style="list-style-type: none"> - Determination of design basis flood with probabilistic method - Floods due to upstream river dams failures <p>Also:</p> <ul style="list-style-type: none"> - Assessment of residual risk from screened hazards <p>The previous PSR also recommended other hazard reassessments, like reassessment of railroad transportation and tornado hazard, which were screened out from the action plan with the prioritization process.</p>
Germany-6	Art.17.3	<p>“The results of the Probable Maximum Flood study show that the nuclear safety of the Krško NPP could be threatened since the design bases for the external flood protection of the Krško NPP site have been exceeded. This requires an upgrade of Krško NPP flood protection.”</p> <p>Please give information about measures which are planned.</p>	<p>Additional flood protection measures will be upgrading of current flood protection dykes along Sava river and tributary Potocnica creek, by as much as 1.6 meters, as well as elevation of an existing road bridge over Potocnica. The flood hazard for the NPP site is considered also in projects in preparation of the Brezice hydro plant and a bridge across Sava river upstream of the NPP.</p>
Germany-7	Art.18.1	<p>Concerning severe accident management it is mentioned that the issue of hydrogen is still discussed and an appropriate analysis is under way, but due to a large containment and presence of thermal recombiners, the issue is not likely to result in a substantial back-fitting.</p> <p>What are the main topics of the mentioned analysis and which analysis methods are used?</p>	<p>The purpose of NPP Krško PSR action is the analysis of thermal hydraulic conditions in the Krško NPP containment during selected severe accident scenarios. The analyses of non-uniform hydrogen distribution inside NPP Krško' containment were performed using the GOTHIC 3D program code. The hydrogen produced inside and outside reactor vessel is taken into account. There are three different accident scenarios: LB LOCA, SB LOCA and SLB. The results showed that the non-uniform distribution of hydrogen is not prevailing case for NPP Krško containment. The non-uniformity is limited to a very short time period, so it is not very likely that the conditions for explosions or combustion will be met. Such results are also in accordance with the reference studies of Large Dry Containment Hydrogen Distribution. On the basis of these analyses there is no need for some modifications or additional actions related with hydrogen distribution in NPP Krško.</p>
Germany-8	Art.19.3	<p>The Krsko NPP Specifications are based on NUREG-0452. The SNSA has licensed 17 changes of technical Specifications during the last 3 years that were defined as 3rd category modifications and 3 changes, defined as 2nd category modifications.</p> <p>Please give some information about what kind of modifications have been licensed.</p>	<p>The definition of modification of category 3 is as follows: This is a significant modification which:</p> <ul style="list-style-type: none"> – has substantial implications on radiation or nuclear safety; – involves substantial modifications of the design bases; – involves modifications of the operating licence. <p>Some examples of approved modifications in the last three years:</p>



			<ul style="list-style-type: none"> – Technical Specification changes for testing of Diesel Generators permitting lower loads and shorter testing frequency. – Replacement of the Digital Electro Hydraulic (DEH) turbine control system, turbine emergency trip system and Moisture Separator Reheater (MSR) control system. – Reconstitution of Fuel Assembly – introduction of a new methodology for application of the reconstituted fuel assemblies. – Changes of Technical Specifications - Old Racks Region 2 Criticality Curve. Introduction of a new methodology for determining the charging pattern of spent fuel in the spent fuel pit. – IB-005 room ambient temperature limitation change. Introduction of new limits on the temperature of the intermediate building due to changes in temperature conditions (related to E.Q.). – The Technical Specifications amendments relating to the completion of additional instrumentation to the the post-accident situation control. – The amendment to Technical Specifications to give effect to the new regulations relating to the level of removable contamination of sealed sources of radiation - 200 Bq.
Hungary-1	Art.8.1	<p>The report mentions (p21) that „The SNSA’s responsibilities and competencies are defined in the Decree on Administrative Authorities within Ministries .. „</p> <p>Could Slovenia clarify how is the effective separation between the functions of the regulatory body SNSA and other Administrative Authority(ies) ensured concerning radiation safety?</p>	<p>In Slovenia, in general, the Slovenian Radiation Protection Administration (SRPA) is responsible for radiation safety, except for licensing and inspection of radioactive sources and practices which are not in the area of medicine or veterinary practice. The SNSA is responsible for supervising radioactive waste management also in the medical and veterinary facilities. In more detail the delineation between the SNSA and SRPA is regulated by the Act on Protection against Ionizing Radiation and Nuclear Safety.</p>
Hungary-2	Art.19.3	<p>The report mentions (p61) that in the field of monitoring, inspection and testing you have procedure „In service Inspection - the 3rd Inspection Interval”.</p> <p>Could you provide more information on this procedure?</p>	<p>In-service inspection program TD2E / 3 (NPP Krško) includes third ten-year inspection interval for the period of operation from 2003 to 2012. The last revision of a program was developed in 2010. Standard ASME Boiler and Pressure Vessel Code Section XI, "Rules for Inservice Inspection of Nuclear Power Plant Components" Division 1, 1995 Edition With the 1996 Addenda is incorporated in the ISI program. Program is also created for management of ageing effects. At first the purpose, objectives and responsibilities of ISI program are described. There is also chapter 8.0 Appendices. The Appendix 8.1 outlines the third interval in-service inspection examination (ISI) requirements for Class 1, Class 2 and Class</p>



			<p>3 systems and components for NPP Krško. All testing methods for inspection of components under the Classification of ASME Classes 1, 2 and 3 are also described in the program. In Appendix 8.5 (ISI program plan for non-destructive examination), points of investigations, methods and inspection intervals of investigations are determined. In other appendices are Line Lists, ISI Flow Diagrams, Allocations Tables, ISI Program Plan for System Leakage Tests, ISI Figures, System Leakage Test Diagrams, System Leakage Test Isometric Drawings and List of Ultrasonic Testing Calibration Blocks.</p> <p>NPP Krško has started with preparation for the Risk Informed ISI program. The program will cover components under ASME Class 1 and 2.</p>
Netherlands-1	Art.6	What kind of changes in management structure and procedures are foreseen for the regulatory body? And why are these changes necessary?	<p>We can confirm that in the statement p. 15 about changes in management structure for regulatory body due to periodic safety review findings is not correct.</p> <p>However, in case If there will be the second reactor built in Slovenia, the SNSA has to be prepared for such a challenge. So far preliminary analyses have been made about the needed human resources. These analyses show that additional 20 new experts would be needed, if a project of a new NPP starts. The analysis also includes the preparation of the recruitment plan, of which execution would coincide with the start of the siting process of the foreseen new NPP. The licensing of the new NPP would also require new procedures to be prepared,</p>
Netherlands-2	Art.7.2.2	The ministry of environment is the competent authority for licensing construction and commissioning (after advice from SNSA) and SNSA is the competent authority for licensing operations. Why the difference? Does the ministry of environment bear any responsibility for operation?	<p>By Slovenian legislation in the licensing process of any big industrial facility, including nuclear, the Ministry of Environment and Spatial Planning is in charge for construction and commissioning phase. The regulatory body for nuclear safety only acts as the authority whose positive consent in that phase is mandatory. The construction and commissioning of any big industrial facility is finished by the licence for releasing the object in use, issued by the Ministry for Environment and Spatial Planning. For non-nuclear facilities the licence for releasing the object in use is enough to start the operation, however for nuclear facilities then the nuclear legislation requires additional operating licence issued by SNSA before the start of operation. From that moment on the facility is under the full regulatory control of SNSA. .</p> <p>During the operation even the SNSA, as well as the Ministry of Environment, does not bear responsibility for the operation of nuclear installations. This is, based on international principles (prime responsibility of licence holder), and by our legislation, the responsibility of the operator.</p>
Netherlands-3	Art.8.1	How many people are working at the moment at SNSA? Is increase of staff foreseen? How large will that be?	<p>At the end of 2010 there were 41 people at the SNSA; few more are expecting to come in the beginning of 2011 as alternative employment for those who left the SNSA in 2010 or in previous years; In the future, if Slovenia decides to build a new nuclear unit, number of employees at the SNSA needs to be increased; the precise</p>



			figures are not known yet, but approximately 20 new experts (with technical background) will be needed.
Netherlands-4	Art.9	"For the time being, the Krško NPP operator has allotted enough financial resources for maintaining the appropriate level of nuclear safety by the two owners, a Slovenian and a Croatian state owned electrical utility". But who is the license owner?	The license owner (licensee) is the company named "Nuklearna elektrarna Krško, d.o.o.", i.e. the Krško NPP Ltd. The company has its headquarters in Slovenia at the plant site location. The owners of this company are two utilities, one Slovenian and one Croatian, each up to 50 %.
Netherlands-5	Art.17.2	The documents to be submitted for a license should be revised by an "authorized expert" (pag 56) or an "appointed expert" (pag 58). What is exactly the function of this revision? Does SNSA review the documents also by itself? How is the authorization/appointment of the experts organized? What requirements should be met? Who gives the authorization/appointment? Is a similar authorization/appointment also in function for inspection activities?	The role of the authorised (not appointed, that was an error) expert is actually providing technical support to the regulatory body. The investor, in cooperation with the SNSA, prepares the specifications for the review, which can also include performing of independent calculations to confirm compliance with the safety requirements. The SNSA also performs its own review of the documentation, but focusing itself to the issues that are the most important for the nuclear and radiation safety. The expert that wants to be authorized applies for the authorization to the SNSA, which performs authorization. The requirements for the authorization are of organizational, technical, technological and quality assurance matter. They are set in the Rules on Authorised Experts on Radiation and Nuclear Safety. The SNSA has its own inspection, which can be similarly technically supported by the authorized organization.
Rep. of Korea-1	General	It is reported that Krsko NPP is required to review again its ability to withstand severe accidents and, based on such review, implement all reasonable improvements. Please explain what improvements are reasonably being implemented according to this requirement.	These improvements should be implemented at the latest within three years following the approval of the plant life extension. Because the plant life extension has not been approved yet, this action is yet to be started.
Rep. of Korea-2	Art.7.2.1	In the last 4 lines of page 18, it is stated that a nuclear facility shall also mean several of nuclear facilities when they are functionally linked on the same geographically confined territory and are managed by the same person. Please clarify the criteria for determination of "functionally linked or not" and of "same geographically confined territory or not".	As you are most probably well aware this definition is from the definition of the "nuclear installation" in the 2004 Protocol to Paris Convention; it is up to a Member State to use it its national legislation or not and we simply chose to use it, although at the time being we do not have such situation in practical terms.
Rep. of	Art.10	This CNS report describes the new	Rules on radiation and nuclear safety factors (JV5):



Korea-3		<p>regulations JV5 and JV9 issued as the 2002 Act provisions, in which the priority to nuclear safety is given.</p> <p>What are the activities defined in the safety policies (Article 50 of the JV5), safety culture programmes and development (Article 58) related to the Regulatory Requirements for a Licensee to Prioritize Safety ?</p>	<p>Article 50 (safety policy)</p> <p>(1) As a part of the management system, the investor or operator of a radiation or nuclear facility shall make a written safety-policy document (hereinafter: safety policy) and thereby bind itself to implementing high levels of radiation and nuclear safety.</p> <p>(2) The safety policy shall:</p> <ol style="list-style-type: none"> 1. specify the investor's or operator's commitment to provide appropriate resources to accomplish the set objectives; 2. establish the clear priority of ensuring safety over all other activities in the facility; 3. contain a commitment to continual advancement of safety; 4. specify safety-policy implementation guidelines and set out the method of monitoring its efficiency; 5. contain the set safety objectives, formulated so as to facilitate their monitoring by facility management and allowing for the taking of appropriate measures. <p>(3) Safety policy shall be communicated to all facility personnel. Personnel involved in tasks important to safety shall understand safety policy and be involved in its implementation.</p> <p>(4) The key elements of the safety policy shall also be communicated to subcontractors, to allow them to understand the operator's expectations and to meet them in their activities.</p> <p>(5) The investor or operator shall, at regular intervals, shorter than the interval of periodic safety inspections, verify the adequacy and efficiency of its safety policy.</p> <p>Article 58 (safety culture)</p> <p>The investor or operator of a radiation or nuclear facility shall encourage and support a high level of safety culture, through:</p> <ol style="list-style-type: none"> 1. promoting common understanding of key aspects of the safety culture in the radiation or nuclear facility; 2. means through which the investor or operator encourages individuals or groups to perform their tasks successfully and in compliance with safety requirements, observing the links between the requirements imposed by individuals, technology and the radiation or nuclear facility as a whole; 3. promoting a positive attitude to learning and critical thought, and 4. continuous care for the development and advancement of the safety culture.
Rep. of Korea-4	Art.12	As for the description in Section 12.2, please explain briefly the main contents of the Operating Experience Assessment	The purpose of Operating Experience Assessment Program is to provide guidance for using, sharing, and evaluating Operating Experience (OE) information according to procedure Corrective Action Program which establishes guidance on



		<p>Program and Corrective Action Program.</p>	<p>the effective and efficient use of OE information to improve plant/personnel safety and plant reliability. The primary objectives of the Operating Experience Assessment Program (OEAP) are to promote the identification and transfer of lessons learned from internal and industry events, such that these lessons are shared between NPP Krško and the nuclear industry. The OEAP expects to prevent similar events from occurring at NPP Krško by increasing plant personnel's awareness of previous on-site and industry events and issues. OEAP should also identify and analyze weaknesses of the minor events and near misses in order to prevent occurrence of significant events. This procedure describes the methodology for receiving, processing, screening, reviewing, evaluating, status reporting, defining and implementing preventive/corrective actions in response to OE information of the two basic areas of activity:</p> <ul style="list-style-type: none"> a. Events occurring on-site including equipment failures, human errors and programmatic issues, b. Events occurring off-site. <p>The OEAP process includes:</p> <ul style="list-style-type: none"> a. Events detection and reporting via ADP-1.0.020, which is the plant procedure, b. Screening for significance and/or applicability to NPP Krško, c. Apparent or Root Cause Analysis, d. Trending and Common Cause Analysis of minor and near-miss events, e. Event coding, f. Suggestions for equipment, human behavior or plant processes improvement, g. Recommended actions plan development, h. Reporting and approving of the analysis and recommended actions plan, i. Completed corrective actions effectiveness monitoring. <p>In 2010 the main actions which stem from the OEFP were as follows:</p> <ul style="list-style-type: none"> - A thorough project review and testing plan for the new reactor vessel head, - Improved training, more accurate load gauge of the polar crane, - Installation of windows for visual and thermographic inspection of high voltage connections; check of the isolation resistance of all power supply connections/cables on all 6.3 kV transformers. <p>The above actions were based on lessons learned from the events in the Kozloduy NPP (problems with the insertion of the control rods), the Turkey Point NPP (bending of the lifting rod of the control rod assembly) and the Columbia NPP (inadequate connection between the transformer and phase buses).</p> <p>The main purpose of the Corrective Action Program is to improve nuclear safety, personnel safety and reliability of the plant. Corrective Action Program is a computer</p>
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			based tool which enables initiation, processing, tracking and analysing of requests and assessment of implemented corrective measures. The program improves efficiency in elimination of deficiencies and non conformances for proposals and suggestions for improvements in the field of Operational Experience Feedback Program.
Rep. of Korea-5	Art.12	According to the descriptions of Section 12.2, staff's workload is strictly regulated and overtime is limited to 8 h/week, 20 h/month, and 180 h/year. Based on this regulation, please explain briefly for your working system (i.e. shifting schedules and rules) of the reactor operators' crew.	This regulation is valid for all employees in Slovenia. There are six shifts of MCR and field operators on the plant - four shifts on duty each week to cover three eight hour shifts plus weekends and holidays, one shift is on training, and one is in reserve if somebody gets sick or some other not anticipated event. So the regulation does not compromise nuclear safety of the plant.
Rep. of Korea-6	Art.15	It is stated that the authorized dose limit for the members of the reference group due to radioactive discharge from the Krško NPP during normal operation was set to 0.05 mSv/yr. This figure shall be the sum of partial exposures, taking into account all pathways of radionuclide transfer. However, it is understood that the limit of 0.2 mSv/yr was set for external radiation from the plant facilities, controlled at the fence. With the annual public dose limit set as 0.05mSv, why is the external dose limit of 0.2 mSv/yr at the fence needed?	As it was stated, the dose constraint for an individual of the reference group (for a representative person) due to <i>radioactive discharges equals 0.05 mSv/y</i> . It includes also external exposure due to discharged noble gases and radioactive air particles. The separate/additional limit for external radiation of 0.2 mSv/y is related to the radiation sources within the facility and to radioactive waste stored on the site. This limit refers to the direct shine (external radiation) from the facility. In fact, overall authorised limit for a hypothetical individual, who is permanently living at the fence of the facility, equals 0.25 mSv per year.
Rep. of Korea-7	Art.10	SNSA performed the review of the Krško NPP arrangements, including those defining approach to Priority to safety. - What kind of and how many reportable events were checked since the last review meeting? - What regulatory activities were conducted against each event? - What are the indicators prepared to look for potential weaknesses that might lead to the degradation of nuclear safety?	1) SNSA checked all of the events that were reported by the Krško NPP in the period 2008-2010. There were 18 such events, 5 on fire protection system, 3 on diesel generator system, 2 on seismic instrumentation. A description of events is available in the annual reports on the SNSA web site: www.ursjv.gov.si . 2) For every event SNSA reviewed the report on the event and the proposed corrective actions to prevent recurrence of such events. Such report shall be prepared by the licensee. The SNSA inspection is following the implementation of corrective actions at the plant. SNSA also prepared its own analysis of every event and of the root causes that lead to the event, with proposal for additional corrective actions in some cases. 3) SNSA has established an independent set of 38 safety performance indicators that allow an oversight of different safety areas of the NPP, such as integrity of barriers, operational risk, maintenance, modifications, radiation safety, quality



Rep. of Korea-8	Art 12	<p>According to the descriptions of Section 12.1, Slovenian legislation covers the human factor issue in Article 62 of the 2002 Act, which defines workers' qualifications and physical as well as psychological requirements and the condition of workers must be regularly checked. Especially for the reactor operators' crew, please explain briefly the main contents of the requirement to judge the appropriateness of worker's qualifications, and physical and psychological conditions.</p>	<p>assurance, regulatory compliance and other.</p> <p>Training and qualification activities at the Krško NPP are governed by:</p> <ul style="list-style-type: none"> – the 2002 Act, – the Regulation on qualification requirements to be met by workers performing duties and tasks of safety significance in nuclear and radiation installations, which was adopted in August 2005 and entered into force on 1 January 2006, – the plant's Updated Safety Analysis Report, applicable plant procedures/ programs, – the annual training program for licensed operators and shift engineers, approved by the SNSA. <p>The education and training requirements are outlined in the Updated Safety Analysis Report. The process is further elaborated in the administrative procedure Training and Qualification of the Krško NPP Personnel. Further training procedures cover specific areas, such as the Licensed Operator Training Program, the Licensed Shift Engineer Training Program, the Non-licensed Operator Training Program, the Health Physics Training Program, and so on.</p> <p>In general, the training programs are divided into initial and continuous training. The Systematic Approach to Training principles, including Job and Task Analyses, were applied for developing technical training programs.</p> <p>Training program for licensed operator and shift engineer is completely implemented in-house. The continuing training for licensed personnel consists of multiple weekly training segments (typically 4 per year) which comprise a two-year cycle of requalification training. In each day of training, there are lectures and exercises on a simulator.</p> <p>Initial licences and their renewals are obtained based on examinations conducted by the SNSA's Expert Commission for the Examination of the Operator's Qualifications (Commission). In accordance to our legislation, the SNSA nominated nine members of the Commission. Two members of the Commission come from the regulatory body, two from technical support organisations, two from the Krško NPP and two are retired senior experts.</p> <p>The examination consists of:</p> <ul style="list-style-type: none"> – written examination: 38 to 40 questions (mainly multiple choice), – simulator examination – AOP, EOP and EIP procedures, – oral examination: reactor physics, nuclear safety, thermo hydraulics, technical specifications and administrative procedures, emergency preparedness,
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			<p>– walk-down (for new reactor operators only).</p> <p>Fitness for duty is covered by a medical examination.</p>
Rep. of Korea-9	Art.14.1	Please explain how the Maintenance Rule program has effectively contributed to safety improvements since 2001, and please provide us the examples specifically.	<p>The Maintenance Rule program is prepared according to the 10 CFR 50.65 “Requirements for Monitoring the Effectiveness of Maintenance at Nuclear Power Plants”. Since 2001, it has effectively contributed to safety improvements by changing the status of the reference documents, introducing the nuclear safety indicators, simplifying the definition regarding the maintenance activities, introducing a corrective program, performing optimisation activities through PMA (Preventive Maintenance) applications, establishing the criteria for selection of the equipments, and other measures.</p> <p>In the framework of the Maintenance Rule Program a three month report of the system conditions is regularly issued. There are reported important problems of the systems. According to the findings of this report the plan for corrective actions is prepared. The Maintenance Rule also influences safety indicators, which remain the same until the corrective action plan is finalized.</p>
Rep. of Korea-10	Art.19.7	The section 19.7 describes the plant policy for a restart following a reactor trip. Please explain the regulatory activities regarding the restart approval after the reactor trip.	<p>The role of SNSA is supervising plant activities. After a reactor trip the SNSA investigates the details about the trip.</p> <p>After an event the operator shall evaluate and verify the safety of the facility. If the evaluation and verification of safety shows that it is necessary to perform some corrective actions, change or improve operational conditions and limitations contained in the safety analysis report, then the operator shall draw up a proposal for changes and/or amendments to the safety analysis report.</p> <p>In the case of event in NPP Krško on 4th June 2008 NPP evaluated and verified the safety of facility and informed SNSA about the conclusions of the evaluation. After review of conclusions and inspection at the plant site, the SNSA made a decision that NPP Krško could restart the reactor.</p> <p>Additionally if the shutdown (also trip) is initiated due to the following:</p> <ul style="list-style-type: none"> - a deviation from operational limits and conditions is detected; - the operating personnel is in any doubt whether the actual state is within the ranges specified in operational limits and conditions; - the facility does not respond in the anticipated manner. <p>then the facility operator shall according to regulatory rules, prior to restarting a reactor:</p> <p>identify the cause of the circumstances that led to the deviation from the operational limits and conditions and determine corrective measures to avoid any recurrence of the event. In these cases SNSA would review the findings and corrective measures</p>



			before the restart.
Rep. of Korea-11	General	<p>In Appendices to your report on Page 67, it is stated that you have the Act on Liability for Nuclear Liability and the Act on Insurance of Liability for Nuclear Liability. We are also informed that you are one of the state parties to the Paris/Brussels conventions for nuclear liability.</p> <p>1) What is the liability amount/required insurance amount under the nuclear liability acts?</p> <p>2) Is there any gap between the two amounts? If so, what kind of financial securities complements the gaps?</p> <p>3) What is your stance for the ratification of so-called 2004 new Paris/Brussels conventions?</p> <p>4) If there is any progress towards the ratification, please explain the basic policy for the financial security.</p>	<p>When the last report on Nuclear Safety Convention has been prepared the new Third Party Liability (TPL) Act has not been adopted yet and at that time we had two acts: on liability itself and on insurance of liability. In March 2010 Slovenia ratified both 2004 Protocols (to the Paris Convention and to the Brussels Supplementary Convention) and in September 2010 Slovenia adopted the new TPL Act.</p> <p><u>1. and 2.</u> Under the new TPL Act the liability amounts are in the line with revised PC, i.e. 700 mio. EUR for NPP, 70 mio. EUR for low-risk installations and 80 mio. EUR for transport; the insurance must be in the same amounts.</p> <p><u>3 and 4.</u> As already explained the 2004 Protocols were ratified in March 2010.</p>
UK-1	Art.6	<p>The analysis of the potential flooding of Krsko NPP as a consequence of hydro-electric developments on the River Sava has shown that action may be needed both on and off the Krsko site. The Report states that enhanced flood protection is needed by raising the height of dykes or by other means. What other means are available? What is the new concept for flood protection mentioned in Appendix 2A(iii)? The report also states (p15) that the Brezice hydro plant project may have to be adapted to take account of 'high flow waves'. How are on-site and off-site actions coordinated.? What body enforces off-site actions that are not under the control of the NPP or the Regulatory Body?</p>	<p>1) The new flood protection concept will be upgrading of current flood protection dykes along Sava river and tributary Potocnica creek, by as much as 1.6 meters.</p> <p>2) Other means will be rising the existing road bridge over Potocnica to a height that will allow passing through of a probable maximum flood on the location. This requirement is to be considered also in a project for a new bridge across Sava river upstream of Krško NPP.</p> <p>3) The Brezice hydro plant project will be adapted to allow spill over of high flow waves (of the probable maximum flood) to the right bank of the Sava river. This will be achieved through a requirement of SNSA that the construction of hydro plant dykes on the right bank of the river downstream the Krško NPP is not allowed because it would affect the hydraulic height of flood waves at the NPP site.</p> <p>4) The Brezice hydro plant project affects not only the flood hazard to the Krško NPP, but also impacts the NPP's ultimate heat sink and its operation. Therefore, SNSA has actively participated in preparation of the hydro plant project through issuance of guidelines and limitations for the project, to mitigate or eliminate the effects that the hydro plant would have on the NPP. The Decree on the areas of limited use of space due to a nuclear facility and the conditions of facility construction in these areas requires that every such facility in the vicinity of the Krško NPP that may affect the NPP safety needs to adapt to the requirements in this</p>



			Decree and obtain an approval by the SNSA to the project of the facility. 5) The siting process for the Brezice hydro plant is coordinated by the Ministry of the Environment and Spatial Planning.
UK-2	Art.7.1	The National Report discusses the enforcement powers available to individual inspectors and to SNSA as an organisation. It is not clear how much power is delegated to an individual inspector before he/she must seek authorization from senior SNSA management. Could Slovenia provide more information on this? This section also states that SNSA may order the suspension of NPP operation. Has this ever been done and, if so, for what reason?	Based on the Inspection Act and based on provision of the Act on Ionising Radiation Protection and Nuclear Safety, which relates to inspection and enforcement, all the powers are delegated always to individual inspector and the SNSA (or any other regulatory body) has no exceptional powers. The individual inspector should, however, follow eventual general instructions of his management. It is also up to the management to plan the inspections. Of course, in reality the inspector may well use his discretion and consult whomever he/she wants in the concrete case; normally he/she would consult with his colleagues- other inspectors or even with senior SNSA staff. But formally, he is not bound with their opinions and may act on his own. The suspension of NPP operation has never been done by SNSA. Hopefully it will never happen, as that would mean that the operator was not responsibly operating the plant. That would be the situation which everybody would like to detect very early and prevent before any serious degradation in the field.
UK-3	Art.8.1	The National Report states that the Government of Slovenia has followed a policy of not increasing the number of civil servants. This includes SNSA staff. It is also stated that SNSA has compensated for this by improving its management system and increasing the effectiveness of its staff. Could Slovenia provide specific examples of these measures?	Some examples are given here: - The process for the preparation of national reports according to this convention is developed and described in detail in a written procedure. By following the well established and checked steps the report is finalized with much less human resources spent in up to one half of time as before. - The in-house information system keeps track of tasks to be performed and automatically alarms when the deadlines are approaching. - Licensees are automatically alerted when their licensees are going to expire. - Performance Indicators are giving directions where it is worth to invest more resources. - Regular exchange of information vertically and horizontally in the organisation contributes to effectiveness.
UK-4	Art.10	Could Slovenia provide further information on the effectiveness of the SNSA approach to regulation using the set of 46 safety performance indicators (SPIs)? Section 14.3 (p 44) of the report states that many of the SPIs are the same as those used by Krško NPP. Could Slovenia provide examples of those SPIs that are specific to SNSA?	1) Effectiveness of the SNSA set of safety and performance indicators (SPI) is positive due to the following reason: SNSA every month sends to Krško the NPP »Report of the status and trend of SNSA performance indicators«, with the purpose to notify the plant about potential problems and weaknesses that might lead to further degradation of nuclear safety. In general, the NPP Krško responds very quickly in order to resolve problems and weaknesses. Regarding to the SPIs of the NPP Krško the SNSA has identified most open potential problems which refer to procedures backlog, fire safety, etc.



			<p>If the Krško NPP does not resolve problems and weaknesses, then the SNSA approach is more formal. In that case the open issues are investigated by the SNSA inspection.</p> <p>2) Some examples of specific SNSA SPIs are as follows: Violation of regulation, Violation of technical specification, Number of evaluated events from foreign nuclear plants, Leak from RCS isolation valves.</p>
UK-5	Art.11.1	<p>Does Slovenia anticipate future difficulties for the utility and the regulator in recruiting adequate numbers of skilled, qualified and experience staff at all levels? Has Slovenia assessed its human resource requirements in the event of Krsko continuing to operate up to a 60 year life and/or Slovenia embarking on a new build NPP programme?</p>	<p>The staffing for future projects is a complex issue. In the last two years, for example, the situation has dramatically changed in a positive direction because of the sudden surplus of people at the labour market. For the time being it is therefore not a problem to hire well educated people, which, however, still need additional training. The situation, however, may change in the future.</p> <p>At the SNSA we have prepared the analysis of SNSA's needed human resources for the possible new nuclear build, which also includes the recruitment plan for new staff.</p> <p>Regarding the extended lifetime of existing plant, the plant has its own program of hiring, educating and training of its staff and can assure the adequate number of competent staff with it.</p> <p>Specific and peculiar problem represents the human mobility in EU. In recent years several well educated and trained nuclear experts moved to the positions in international institutions in the Western Europe. Due to the economical differences it is practically impossible to attract some comparable educated and trained people from the "old EU countries" to Slovenia. Therefore the Slovenian institutions are forced to keep training young professionals and hope that they will stay longer active in the country.</p>
UK-6	Art.14.1	<p>Section 14.2 and Appendix 2 present a comprehensive and informative overview of the Krsko ageing management programme and its input to the life extension work. Appendix 2C(iii) states that SNSA approval of life extension beyond 40 years will depend on the outcome of an independent expert review. Who is carrying out this review?</p>	<p>The independent expert review was carried out by the company ENCONET Consulting Ges.m.b.H., which is the SNSA technical support organization. For that purpose they have assembled an international team of senior experts with the extensive experience in that field.</p>
UK-7	Art.14.1	<p>Section 14.3 and several other parts of the National Report refer to the work of the TSOs. Are the TSOs engaged and paid by SNSA? Are the TSOs allowed to work for organisations other than SNSA? If so, how</p>	<p>Are the TSOs engaged and paid by SNSA?</p> <p>TSO's have a legal status defined in Act on Ionising Radiation Protection And Nuclear Safety Act and in subsidiary legislative JV3 (Regulation on authorised experts for radiation and nuclear safety). The arrangements of performing an independent evaluation are under the responsibility of the licensee. The TSOs</p>



		<p>is potential conflict of interest addressed?</p>	<p>perform activities under the contract, which has been concluded and was paid by the licensee, but the scope of review report (i.e. independent outage reviews by TSOs) is determined by the SNSA.</p> <p>On the other hand the SNSA may also require some assistance from TSOs. For this purpose the SNSA has allocated some funds in its yearly budget.</p> <p>Are the TSO's allowed to work for organisations other than SNSA? If so, how is potential conflict of interest addressed?</p> <p>Yes, the TSO's are allowed to work for other organisations. The TSOs are not Slovenian organisations only. Several TSOs are from Austria and Croatia. And these TSOs are involved in many different international and Slovenian projects.</p> <p>Regulation on authorised experts for radiation and nuclear safety in Article 16 defines what the independence is.</p> <ol style="list-style-type: none"> 1. Authorized expert shall not be under the direct commercial or financial dependence to the employer, which could influence his professional decisions. 2. Authorized expert shall not engage in activity that could undermine confidence in the independence and integrity of its assessment of its activity in the area of empowerment. <p>According to the 58. article of Act on Ionising Radiation Protection And Nuclear Safety, the designated expert in the event that he does not meet the conditions under which authorization has been issued, he shall lose the status of authorized expert.</p> <p>Generally conflict of interest is resolved in manner that TSOs involved in particular project with NPP couldn't be independent reviewer (authorised experts) of this project.</p>
UK-8	Art.18.1	<p>The report addresses the criteria for the design of modifications to existing plant citing specifically the new regulations JV5 and JV9. Are these regulations specific to the Westinghouse plant at Krsko? If Slovenia embarked on a new build programme in the future could the existing regulations be used to assess the safety of different plant designs?</p>	<p>New regulations JV5 and JV9 are not specific for the Westinghouse or any other type of NPP. These regulations are mainly based on IAEA standards and WENRA Reference Levels. They set general requirements and can be used also for the possible new build, as well as for new and different designs.</p>
USA-1	Art.6	<p>Please provide information regarding the status of the additional flood protection</p>	<p>Additional flood protection measures will be upgrading of current flood protection dykes along Sava river and tributary Potocnica creek, by as much as 1.6 meters, as</p>



		measures identified for the Krško site?	well as elevation of an existing road bridge over Potocnica. Currently, the plant is in the process of acquiring a construction permits for three segments of dykes upgrade. The process shall continue into 2011.
USA-2	Art.6	Have all of the remaining action items identified in the PSR Action Plan for Krško completed during/after the November 2010 outage as planned?	SNSA agreed with the Krško NPP to postpone some PSR-1 actions to the 2012 outage due to larger complexity of implementation as originally planned. Among those are: the installation of the third emergency diesel generator, the reconstruction of flood protection dykes and a number of issues related to environmental qualification of equipment.
USA-3	Art.10	Were improvement opportunities identified in the December 2008 and December 2009 ISO audits of the SNSA management system?	<p>Three external control audits were performed after the first certification audit in December 2007. The first control audit was performed in December 2008, the second in December 2009 and the third in November 2010. The second audit also formed the transition to the new fourth edition of the ISO 9001 standard , namely ISO 9001:2008.</p> <p>During the both control audits, no non-conformances were identified by the external auditor. However the external auditor suggested some recommendations, which the SNSA took into account in implementing their activities.</p> <p>The most important are:</p> <ul style="list-style-type: none"> - improvements of management reviews, - improvements in implementing internal audits regarding corrective actions, - improvements in defining indicators measuring effectiveness and efficiency of processes and process activities;
USA-4	Art. 16.1	What is the status of the latest revision of the national emergency plan?	The National Emergency Plan, revision 3, was adopted by the Government in July 2010.

