

Convention on Nuclear Safety

Questions Posted To Slovenia in 2005

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Seq. No	Country	Article	Ref. in National Report
1	AUSTRALIA	General	

Question/Comment

Australia notes the Agreement of March 2003 between Slovenia and Croatia concerning the joint investment in the Krško NPP. Reference is made to decommissioning funds in both States and (in Chapter 6) to provisions considering lifetime extension (if needed). What, if any, responsibilities or influences on the regulation and safe operation of the NPP continue to be exercised by Croatia?

Answer

Since the NPP Krško is located in the territory of Slovenia, Slovenian legislation only applies to it.

With respect to Croatian responsibilities regarding the decommissioning of NPP Krško and construction of a repository (see answer to first Austrian question - General/Seq. No. 2).

Seq. No	Country	Article	Ref. in National Report
2	AUSTRIA	General	

Question/Comment

Introduction and Compliance with article 4 and 6 to 19: The Report states that the Krško NPP operates as a non-profit organisation. How is the plants ability to finance safety improvements, to maintain an adequate safety culture, waste disposal and decommissioning or even the costs for recovery of a safe condition after a hypothetical core damage guaranteed?

Answer

Article 6 of the Agreement between the Government of the Republic of Slovenia and the Republic of Croatia on the Regulation of Status and Other Legal Relationships, Connected with Investments in the Nuklearna Elektrarna Krško, d.o.o., its Exploitation and Decommissioning (Bilateral Agreement) clearly states that power and electrical energy supplied shall be paid by both Founders in the amount, covering overall operating expenses, including among others also depreciation expenses in the amount of, needed to implement long-term investment renewal and investments in technical improvements regarding plant safety and economic efficiency. Estimated price for plant power and electrical energy shall be fixed on the basis of annual economic plan according to elements, stipulated by the Contract of Partnership. At the end of a business year account settlement shall be performed according to actual energy supplied and actual operating expenses.

In other words the price of electricity includes also all expenses occurring due to the requirements of SNSA concerning safety of the NPP Krško.

Regarding the Krško NPP's ability to finance waste disposal and decommissioning (see the answer to eighth Austrian question - Ch. 11/Seq. No. 37). Regarding the Krško NPP's ability to finance the costs for recovery of a safe condition after a hypothetical core damage, there are two aspects: (a) off-site (the Krško NPP is insured for its third party liability - in case of a nuclear accident), and (b) on-site (for the on-site material damage in compliance with the Slovenian legislation in force).

As the plant is State owned, the problem of financial guaranties for the maintenance of safety in extraordinary situations is of lesser concern as it would be in the case of private ownership. The 2002 Act stipulates that the owner should have financial guaranties for such cases. As the owner is the State, it could will have to cover all the costs incurred.

Seq. No	Country	Article	Ref. in National Report
3	FRANCE	General	p. 1

Question/Comment

The reports reviewed by France in view of the third peer-review meeting were all examined according to a standard list of issues derived from the obligations of the Convention. If an issue appeared to be covered in an incomplete way by the report of a Contracting Party, this led to a question or comment. However France recognizes that the corresponding information may be available in other existing documents.

Answer

Slovenia took note of the French method of reviewing the Nuclear Safety Convention reports.

Seq. No	Country	Article	Ref. in National Report
4	JAPAN	General	p43, 19.24,19.25

Question/Comment

The intention of the convention of Nuclear safety is in some sense understood to improve safety of NPPs by backfitting event/failure experience of other countries, could you explain the policy and present/futere perspective of information disclosure to public?

Answer

Unfortunately, the reference to the page 43 of Slovenian CNS Report does not match with the referenced chapter (i.e. Ch. 9).

Nevertheless, disclosure of information to the public is generally required and regulated by the Act on Access to Information of Public Nature. Specifically, the 2002 Act provides (as the one of general principles) that the information on radioactivity in the environment, on exposure of members of the public and on the procedures and activities of state authorities relating to radiation protection and nuclear safety are public. Furthermore the 2002 Act provides that the Report on Protection Against Ionising Radiation and Nuclear Safety should be prepared each year for the previous year and sent for adoption to the Government and the Parliament. After adoption the Report is accessible to the public. It is worth mentioning that the National Report under Nuclear safety Convention is also publicly available on the SNSA web site.

Seq. No	Country	Article	Ref. in National Report
5	LATVIA	General	p.9

Question/Comment

It should be considered, that finally bilateral agreement with Croatia was reached

Answer

Slovenia agrees with the Latvian comment that it was important to conclude bilateral agreement with Croatia.

Seq. No	Country	Article	Ref. in National Report
6	PAKISTAN	General	P9

Question/Comment

It has been stated that Krško NPP is a joint project of Slovenia and Croatia on 50/50 basis, the legal status of which came into force in March 2003. Is there any sharing of human resources? Had there been any change in the legal status after Slovenia became part of EU, in May 2004? What would be the channelling of liabilities in case of accidents?

Answer

The referenced agreement stipulates that the proportional representation should be ensured for the members of the Board and for those employees having specific authorities and responsibilities. For some expert posts, which are related to nuclear safety and optimum operation of NPP and are defined by the company, the Slovenian authorities shall ensure free employment, regardless citizenship. Regarding training, fellowship and expert qualification arrangements of the personnel the NPP Krško shall exercise the equal right principle, regardless citizenship.

Furthermore the Agreement provides that the contractors shall in principle be contracted by the NPP Krško on equal shares in both states, in Slovenia and in Croatia, having fulfilled certain conditions.

Membership of Slovenia in EU does not have any influence on the legal status of the Agreement.

The liability for nuclear damage in case of a nuclear accident in NPP Krško would be governed by the Slovenian legislation. In addition the Paris Convention and the Brussels Supplementary Convention would apply since Slovenia is a party to those two instruments, as well as Joint Protocol, since Croatia is a party to Vienna Convention.

Seq. No	Country	Article	Ref. in National Report
7	SWITZERLAND	General	

Question/Comment

The report is informative, precise and presents all relevant data.

Answer

Thank you for the positive comment.

Seq. No	Country	Article	Ref. in National Report
8	ARGENTINA	Article 6	page 15

Question/Comment

The Krško NPP maintains a Probabilistic Safety Analysis (PSA) assessment program by continuously updating the PSA model with inclusion of all modifications performed at the plant. The issues have various backgrounds and can generally be divided into three broad categories: (a) modifications in plant design or procedures, (b) methodological issues and (c) data update on the basis of plant-specific experience and state of knowledge.

- Could Slovenia provide detailed information about the most safety significant design changes as the result of the PSA.
- Did the Regulatory Body require the design changes?
- Which criteria have been used by the regulator to assess the PSA Level 1 and Level 2?
- Were carried out independent reviews (such as IAEA IPSAT missions) in addition to the regulatory review?

Answer

PSA analyses are involved in implementation process of all major plant modifications. Some important modifications that fully or partially came as the result of PSA are listed below:

1. FPAP (Fire Protection Action Plan) modifications. The cluster includes hardware modifications. The changes are improvements of the plant to reduce the plant risk.
2. Low Temperature Overpressure Protection Modification. The cluster includes hardware modifications that will increase the relief capability by adding two new larger capacity relief valves and eliminates the existing low temperature overpressure protection (LTOP) which involve isolation of residual heat removal (RHR) suction valves. This modification reduces the frequency of loss of RHR initiating event in shutdown conditions and reduces the shutdown risk.
3. MOV (motor operated valves) prioritization. In the process of the preparation and formulation of the Krško NPP MOV Program, based on the requirements of the US NRC generic communication issued through the GL's 89-10 and 96-05, the Krško NPP has performed MOV prioritization task (e.g. risk ranking of the plant MOV valves). The task was performed using the PSA model, in accordance with the methodology given by the WOG (Westinghouse owners group).
4. Number of fixes of plant systems, structures and components based on results and insights from seismic walkdowns performed as part of original seismic PSA.
5. Evaluation of proposed plant improvements resulting from updated seismic and internal events PSA is in progress.
6. Feasibility study for plant improvements to reduce risk from external flooding is currently in progress.
 - The regulatory body did not formally require any changes based on the PSA insights.
 - The PSA standards have been available only in the last couple of years. Therefore the criteria have been that the PSA model has to be comparable to the up-to-date foreign PSA models, it had to be found appropriate by international missions and technical support organisations. The regulator did not have the necessary expertise to perform its own evaluation of the PSA models. The last major update, the update of the seismic PSA, has been performed in accordance to the respective ANSI (American National Standards Institute) standard, and has been reviewed for the regulator by the IRSN (Institut de protection et sûreté nucléaire - Radiation Protection and Nuclear Safety Institute) and found to be up-to-date and adequate.
 - SNSA has taken the advantage of the available IAEA missions therefore a number of them have been performed, in the PSA area the following: IPERS (IAEA International Peer Review Service) in 1994 (level 1), IPERS in 1997 (level 2), Seismic safety review mission (IAEA-TA-2482 report), Engineering safety review mission (external events PSA, IAEA-TA-2483 report), IPERS in 1998 (fire PSA) and finally IPSART (IAEA International PSA Review Team) in 2000 (implementation of IPERS comments, optimisation, modernisation project).

Seq. No	Country	Article	Ref. in National Report
9	ARGENTINA	Article 6	page 18

Question/Comment

OSART missions have been carried out at Krsko NPP. The last OSART mission was in 2003.
- Were already implemented the most significant improvements suggested?

Answer

Krško NPP made an action plan for implementation of OSART recommendations and sent it to SNSA on 29 April 2004 for comments. Action plan is composed of 67 actions for 11 recommendations and 8 suggestions and should be accomplished throughout 2004 and ended in March 2005. In accordance with time schedule all items will be covered. Majority of actions, especially most significant improvements, are already implemented. To answer the mission recommendations, NEK has introduced changes to training, maintenance, organizational changes and introduced some new programs such as corrosion control program and integrated ageing management program.

Seq. No	Country	Article	Ref. in National Report
10	AUSTRALIA	Article 6	

Question/Comment

Australia notes that the Krško NPP maintains a continuously updated PSA model used for preventative online maintenance, outage activities and biennial reassessment of plant status. Is it used in the Design Modification Control Program (Article 18)? Have recent biennial reviews quantified any overall improvement in core damage frequency as a result of plant modifications?

Answer

The most important modifications, justified by the use of PSA and their contributions to the reduction of the core damage frequency were calculated correspondingly, are the following.

1. FPAP (Fire Protection Action Plan) modifications. The cluster includes hardware modifications. The changes are improvements of the plant to reduce the plant risk.
2. Low Temperature Overpressure Protection Modification. The cluster includes hardware modifications that will increase the relief capability by adding two new larger capacity relief valves and eliminates the existing low temperature overpressure protection (LTOP) which involve isolation of residual heat removal (RHR) suction valves. This modification reduces the frequency of loss of RHR initiating event in shutdown conditions and reduces the shutdown risk.
3. MOV (motor operated valves) prioritization. In the process of the preparation and formulation of the Krško NPP MOV Program, based on the requirements of the US NRC generic communication issued through the GL's 89-10 and 96-05, the Krško NPP has performed MOV prioritization task (e.g. risk ranking of the plant MOV valves). The task was performed using the PSA model, in accordance with the methodology given by the WOG (Westinghouse owners group).

Seq. No	Country	Article	Ref. in National Report
11	AUSTRIA	Article 6	

Question/Comment

The IAEA RAMP mission in 2001 indicated areas where improvements can contribute to further effective implementation of the accident management program. What actions have been defined to respond to the RAMP mission report recommendations and how is the implementation schedule for these actions?

Answer

NPP Krško issued action plan (SAMG-RAMP-AP) which contains issues remained for technical resolution. Update of plant specific Severe Accident Management Guidelines (SAMG) technical background and SAMG revision 2 were successfully implemented. Study on the possible adverse

effects of the cavity flooding strategy and if there is a need for protection of the cavity structures against energetic events have been completed. Also, the study of possible impacts of the non-uniform hydrogen distribution and the consequent fast burning was finished. Usage of passive autocatalytic recombiners will be evaluated when additional hydrogen study will be completed and approved. Some of issues (e.g. additional plant vent) were screened out in PSR project per applied criteria and further evaluation will not be done. Implementation of RAMP mission actions is behind schedule. Actions have been concluded with about one year delay and the NPP shall present a final report on implementation of recommendations to the regulator.

Seq. No	Country	Article	Ref. in National Report
12	AUSTRIA	Article 6	

Question/Comment

The IAEA OSART mission in 2003 suggested improvements in some areas. What actions are planned in response to the OSART report and what is the schedule for implementation of these actions?

Answer

Krško NPP made an action plan for implementation of OSART recommendations and sent it to SNSA on 29 April 2004 for comments. Action plan is composed of 67 actions for 11 recommendations and 8 suggestions and should be accomplished throughout 2004 and ended in the first half of 2005. In accordance with time schedule all items will be covered. Majority of actions are already implemented. To answer the mission recommendations, NEK has introduced changes to training, maintenance, organizational changes and introduced some new programs such as corrosion control program and integrated ageing management program.

Seq. No	Country	Article	Ref. in National Report
13	AUSTRIA	Article 6	

Question/Comment

The Report states that in the Agreement between Slovenia and Croatia on Krško NPP adopted in 2003, there is a provision considering lifetime extension, if it is needed. What are the preconditions that would lead to the necessity of lifetime extension for the Krško NPP and which requirements has license holder to fulfil in this circumstance?

Answer

The preconditions that would lead to the necessity of lifetime extension of the NPP Krško are the ratio between energy demand and consumption at the end of its designed lifetime and the reasonable and fair price of the electricity produced in the NPP Krško compared to other possible sources.

Article 5 of the Agreement states that NPP will provide electricity to the owners "until the end of regular lifetime in 2023 or until the end of extended lifetime, if this is approved". Currently, there are no conditions defined for the lifetime extension in the Agreement or in the 2002 Act. The 2002 Act stipulates that the licence for the operation of a nuclear facility may be extended on the basis of an application by the licence holder if all conditions, required to obtain a licence at the time the licence expires, are met. Among those conditions is also approved PSR Report.

Seq. No	Country	Article	Ref. in National Report
14	GERMANY	Article 6	p. 16

Question/Comment

In what way were the issues from different review findings evaluated and ranked according to risk associated with them? Are there any acceptance criteria used by the regulatory body regarding prioritization and implementation time schedules depending on risks associated with the different issues?

How have the recommendations of the RAMP mission been used to improve the implementation of the accident management program?

Answer

PSR confirmed that the plant is as safe as originally intended and determined that there are no structures, systems, components, human activities or administrative processes that could limit the operation of the plant in the foreseeable future. This review has not revealed any major safety issue. As a result, Krško NPP can safely operate, as a minimum, up to completion of the next Periodic Safety Review.

All PSR identified safety issues are assessed based on a set of attributes utilizing a telescopic filtering method as described in Haimes’ Risk Modeling, Assessment, and Management. In the first phase, all attributes are ranked with respect to each other based on guidance from 10 CFR Part 50, Safety Goals for the Operations of Nuclear Power Plants, Policy Statement 51 FR 30028 and 10 CFR Part 830, Nuclear Safety Management. Issues are initially divided into those where a direct link to plant safety can be established and those which are a re-evaluation of the safety basis only.

SNSA reviewed the prioritization of PSR issues performed by Krško NPP. None of the issues were of high risk, e.g. ranked into categories that would lead to core damage or radioactive release into environment. Issues that were included into action plan were of minor risk and SNSA let Krško NPP to perform their prioritization. Time schedule for their implementation will be prepared by Krško NPP and approved by SNSA. Since these issues are not of high risk to the NPP operation, SNSA left to the Krško NPP to decide on the implementation schedule, considering also the budget for certain time period of the action plan. All the PSR recommendations shall be implemented by the year 2011.

NPP Krsko issued action plan (SAMG-RAMP-AP) with defined issues remained for technical resolution. Update of plant specific SAMG technical background and SAMG revision 2 were successfully implemented. Study on the possible adverse effects of the cavity flooding strategy and if there is a need for protection of the cavity structures against energetic events had been completed . Also, the study of possible impacts of the non-uniform hydrogen distribution and the consequent fast burning is finished . Usage of passive cathalytic recombiners will be evaluated when aditional hydrogen study will be completed and approved. Some of issues (e.g.additional plant vent) were screened out in PSR project per applied criteria and further evaluation will not be done. Implementation of RAMP mission actions is behind schedule. Actions have been concluded, the NPP has to present a final report on implementation of recommendations to the regulator.

Seq. No	Country	Article	Ref. in National Report
15	HUNGARY	Article 6	Art. 6, P.16

Question/Comment

There seems to be a close connection between the Regulatory Conformance Program and the Periodic Safety Review action plan. The Krsko NPP has been in compliance with more than 99 % of the US NRC requirements but some issues were evaluated and ranked according to risk associated to them. What are the most important issues?

Answer

The most important issues in relation to US NRC Regulatory Conformance Program are:

- Generic Letter 98-02 (May 28, 1998): Loss of Reactor Coolant Inventory and Associated Potential for Loss of Emergency Mitigation Functions While In a Shutdown Condition
- Generic Letter 80-113 (December 22, 1980), Generic Letter 81-07 (February 3, 1981), Generic Letter 85-11 (June 28, 1985): Control of Heavy Loads
- Generic Letter 87-06 (March 13, 1987): Periodic Verification of Leak Tight Integrity of Pressure Isolation Valves.

Seq. No	Country	Article	Ref. in National Report
16	HUNGARY	Article 6	Art. 6, P. 16

Question/Comment

The practice of Periodic Safety Review is rather new in Slovenia's legislation. How could you summarize the first experiences in this field?

Answer

SNSA has been involved in the PSR process since the Krško NPP has begun it. SNSA approved the PSR program, reviewed reports on individual topics and reviewed the methodology for ranking of PSR recommendations. PSR will be approved by a SNSA decree. After PSR action plan is done (due in June 2005), SNSA will approve the plan by a decree and will follow its implementation.

Seq. No	Country	Article	Ref. in National Report
17	LATVIA	Article 6	p.15

Question/Comment

RAMP and OSART missions; First PSR is under way.. It could be considered as good practice to utilise IAEA review mechanism, especially for countries with limited expert's resources. Could you provide more information on results from PSR since the report was prepared?

Answer

Review confirmed that the plant is as safe as originally intended and determined that there are no structures, systems, components, human activities or administrative processes that could limit the operation of the plant in the foreseeable future. This review has not revealed any major safety issue. As a result, Krško NPP can safely operate, as a minimum up to completion of the next Periodic Safety Review.

In 2004 Krško NPP has started with immediate resolving of some important issues. SNSA has reviewed methodology of PSR ranking and selected some additional PSR recommendations for implementation. Krško NPP will present an application for confirmation of PSR together with PSR final report and expert opinion of a Technical support organisation. SNSA will issue a decree to confirm the PSR. For resolving of PSR issues Krško NPP will prepare an action plan with designated responsibilities and time schedule. Action plan should be presented to SNSA for approval by June 2005.

Seq. No	Country	Article	Ref. in National Report
18	PAKISTAN	Article 7	P21

Question/Comment

It has been written under Para 7.3, that within the scope of inspection, an inspector may issue licenses and orders within the framework of administrative proceedings. Since the licenses are normally issued by higher authority, please indicate what type of licenses an inspector is authorised to issue?

Answer

The authority of an inspector to issue licenses and decisions within the framework of administrative procedure which is provided for in the Act on Ionising radiation Protection and Nuclear Safety only follows the general provisions of other act, i.e. Act on Inspection, which stipulates the general principles of inspection. It may be that the term »licence« is misleading. By the law, for each inspection visit to the licensee the separate administrative procedure (case) has to be open. Such »inspection case« may be closed by the decision/conclusion to terminate the administrative procedure in the case there are no evidence of errors or violation of the provisions of the Act or ordered measures. In all other cases the inspector has to issue a written order (licence/decision) to remedy the errors and/or violations. While performing inspection the inspector may also order , as for example, material sampling, temporary or permanent seizure of any means, documents check, searching of premises, examinations, hearings...

Seq. No	Country	Article	Ref. in National Report
19	LATVIA	Article 7.1	p.19

Question/Comment

New Act provides that the Government shall submit to the Parliament amended National Program regarding radioactive waste

What are the outcomes from the considerations by the Parliament? What are the major features in these amendments?

Answer

The first amendments in 2003 relates to the repository for the low-and intermediate-level waste repository and are explained in Slovenian CNS Report (3rd para., Section 7.1, p. 19).

The amendments of 2004 refer to the provisions on shipment, export, import and transit of nuclear and radioactive sources and radioactive waste between member states of the EU, as well as into and out of Community and through the Slovenian territory.

Seq. No	Country	Article	Ref. in National Report
20	GERMANY	Article 7.2.1	p. 22

Question/Comment

Are there specific requirements on the level of detail of the PSA with regard to applications for risk-informed inspection?

Answer

There are no specific legal requirements on the Risk-informed inspection. SNSA Inspection Division with the support of Nuclear Safety Division follows good practices in this area. Some initial developments are under way (i.e. development of Significance Determination Procedures).

Seq. No	Country	Article	Ref. in National Report
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21	AUSTRALIA	Article 8	
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Question/Comment

On the matter of budget and resources, Australia notes the separation of roles and responsibilities between the SNSA and SRPA. Does the creation of separate bodies place stress on the availability of resources and professional expertise?

A significant component (34%) of the SNSA budget for 2004 is PHARE Assistance. What is this activity?

Does the Krsko NPP pay licence or inspection fees to SNSA?

Answer

Creation of two separate bodies (SNSA and SRPA) does not place stress on the availability of resources and professional expertise. Each of two bodies has its own budget in the respective ministry, which it is a part of. With respect of human resources both regulatory bodies share the same reality as other public administration in Slovenia in general, i.e. restrictive employment policy. Professional expertise is, for the time being, still maintained but this issue will be a challenging one in the future.

The Phare Assistance which appears in the SNSA budget are the funds which have been allocated to the SNSA budget in order to settle invoices issued by the subcontractors of Phare projects. Actually, these funds were transferred to SNSA account by the European Commission (EC) and can be spent only for the contracted Phare projects, approved by the EC, and can not be spent on something else.

The operators of nuclear and radiation installations do not pay any licensing or inspection fees. The only fee which is envisaged by the law is so called administration tax for the licensing (administrative) procedure, which is of symbolic value. Such tax is paid to the state budget and not to the SNSA account. If some expertise is needed within administrative procedure the cost of such expertise is borne by applicant. Shortly, the regulatory body gets its financial resources for execution of its responsibilities and duties only from one source, i.e. state budget.

Seq. No	Country	Article	Ref. in National Report
22	AUSTRIA	Article 8	

Question/Comment

The report states that the regulatory body SNSA is independent although it is embedded in the Ministry of Environment, Spatial Planning and Energy and the Ministry is also responsible for the utilisation of nuclear energy. How is the regulatory body's independence guaranteed considering those contradictory competences?

Answer

In the Report under 8.3 the substantial explanation has been given regarding independence of the SNSA and the SRPA.

On the other hand it has to be mentioned that pursuant to the Act on State Administration, as amended in November 2004, the energy sector was re-transferred back to the Ministry of Economy. Since the SNSA remains under the Ministry of Environment and Spatial Planning the possible »conflict of interest« between promotion and safety is not an issue anymore.

Seq. No	Country	Article	Ref. in National Report
23	AUSTRIA	Article 8	

Question/Comment

The report states that appeals of licensees to the Ministry are possible, but the Act of 2002 prevents appeals for some decisions. What kind of appeals are prevented and what kinds are possible for licensees?

Answer

The 2002 Act (as amended) provides, inter alia, that there shall be no right of appeal against the:

- decision on the prohibition of or temporary suspension of the use of a radiation source (Article 13/9)
- decision on the rejection or acceptance of an assessment of the radiation protection of exposed workers (26/7)
- rejection or acceptance of an approval for the commencement of a trial operation (78/8)
- decision on periodic safety review (81/4)
- decision on the rejection or approval of the proposed changes significant for radiation or nuclear safety (84/3)
- decision on the withdrawal of the licence and on the suspending of the operation of a radiation or a nuclear facility (116/2)
- decision confirming the expiry of the licence (117/4).

It is worth mentioning that the licensee has, of course, other legal means at his disposal, i.e. court action.

On other decisions of the regulatory body the licensee has a right to appeal against.

Seq. No	Country	Article	Ref. in National Report
24	CROATIA	Article 8	Ch. 8.1, p. 25

Question/Comment

Does SNSA expect increase or decrease of Krško NPP licensing activities in the near future, and therefore connected costs?

Answer

In the last few years after major »modernisation« project (steam generator replacement, full scope simulator, power uprate) have been carried out, the licensing initiatives of the Krško NPP are stable and so is expected to be also in the near future. On the other hand, possible increase of Krško NPP licensing demands have no direct influence to the SNSA yearly budget. It could have, inter alia, some influence on the SNSA availability of its human resources and external expertise capabilities.

Seq. No	Country	Article	Ref. in National Report
25	CROATIA	Article 8	Ch. 8.1, p. 25

Question/Comment

Is the budget part dedicated for Outsourcing Nuclear Safety (Table 8.1) only source of financing independent technical expertise?

Answer

No. Independent technical expertise (i.e. opinion of an authorised expert for radiation and nuclear safety) is envisaged by the 2002 Act in many different licensing stages in connection with safety analysis report, as for example, in :

- approval of the construction or decommissioning of a radiation or nuclear facility (Articles 71, 73,75 and 76)
- approval of trail operation of radiation or nuclear facility (78)
- licence for operation of radiation or nuclear facility (80)
- confirmation of the PSR Report (82).

For the intended changes relating to such operating facilities which affect or could indirectly affect the content of the safety analysis report and are therefore of significance for radiation or nuclear safety an operator must enclose, beside proposed amendments of the SAR, also an expert assessment from an authorised expert for radiation and nuclear safety. The costs of such independent technical expertise are borne by the operator/licensee.

On the other hand the part of the SNSA budget, dedicated for outsourcing in the area of nuclear safety, is meant for supporting research and development projects in the field of nuclear safety in Slovenia – where the main contributor is the Ministry of Education, Science and Sport. In the previous years the SNSA supported independently also some projects in the area of application of probabilistic safety assessment and emergency planning.

Seq. No	Country	Article	Ref. in National Report
26	CROATIA	Article 8	Ch. 8.3, p. 27

Question/Comment

How you organize/perform the independent financing of technical support organizations?

Answer

The 2002 Act provides that the state shall ensure resources for the financing of the training of approved (authorised) experts, the development of studies and international expert co-operation.

Resources are made available within the SNSA budget. Training organised with the SNSA funding or performed by the SNSA staff is available and open to all TSOs. With respect to financial support of the SNSA to research and development studies – see answer to second Croatian question. At this point it should be mentioned that the conclusion of the concrete contracts are subject of a tendering process. Regarding international expert co-operation the TSOs are supported in different ways, as for example participation as members of Slovenian delegation to international organisations, participation in different committees of OECD/NEA, co-operation based on bilateral and/or multilateral agreements, etc. Such participation of TSOs is based on the cost – sharing arrangements.

Seq. No	Country	Article	Ref. in National Report
27	PAKISTAN	Article 8	P25

Question/Comment

Beside Slovenian Nuclear Safety Administration, some other administrations, ministries and other organizations are entrusted with the implementation of the 2002 Act on “ionizing radiation protection and nuclear safety”, e.g., physical protection comes under ministry of interior, Agency for rad-waste management, the civil protection and disaster relief administration for the off site

emergency planning. This distribution of functions requires good collaboration and coordination. How is it achieved?

Answer

Distribution of responsibilities and competencies for the implementation of 2002 Act among several Governmental authorities requires good co-operation and collaboration. The formal way to achieve this goal is prescribed in general legislation (Act on Administration, Act on Inspection, Act on Administrative Procedure). By these legislation all Governmental bodies are obliged to co-operate and co-ordinate their specific responsibilities and duties with each other. This general rules are preserved by the clear and precise division of responsibilities in the sector-specific legislation, as for example in the 2002 Act. In reality each and every situation, which may arise in the day to day activities, could not be envisaged by the formal rules; that is why the »informal« arrangements must also be practised. For instance, such »informal arrangement« has been achieved between the SNSA, Custom office , Ministry of Interior and the Radwaste Agency in the case the undeclared radiation source is detected on the border.

Seq. No	Country	Article	Ref. in National Report
28	PAKISTAN	Article 8	P26

Question/Comment

Does the legislative and regulatory framework allow SNSA or SRPA to prosecute operating companies or individuals? Has the power to prosecute been exercised?

Answer

The SNSA inspectors have a number of actions to be used as an enforcement tools (see section 7.3 of Slovenian CNS Report). Specific measures are provided for in 2002 Act while the others are to be used in accordance with the general Act on Inspection (see answer to Pakistan question in Art. 7/Seq. No. 18)).

Based on the General Offence Act the offences are divided into two main categories. For the first category the inspector may charge fine (penalty payment) directly, while for the second the inspector may only initiate the administrative offence prosecution. The same is in the case of more serious unlawful activities, omissions or negligence (which are by the Penal Code qualified as a criminal offence) – the inspectors are bound by the Code of Criminal Procedure to report and initiate the criminal offence to a public prosecutor. Because of the nature of offences identified by the inspectors. for the time being only the second category, i.e. administrative offence prosecution initiative has been exercised.

Seq. No	Country	Article	Ref. in National Report
29	HUNGARY	Article 8.2	Art. 8.2, P. 26

Question/Comment

It is reported there are two expert councils concerning radiation protection (Expert Council for Radiation and Nuclear Safety and Expert Council for the Radiation Protection of the People). Are there any overlapping activities (e.g. in the case of assessment of radioactive discharges from nuclear facilities)?

Answer

The 2002 Act provides for appointment of two expert councils. The general mandate of Expert Council for Radiation and Nuclear Safety is determined as expert help to the Ministry of Environment and to the SNSA on issues relating to:

- radiation and nuclear safety

- physical protection of nuclear material and facilities
- safeguards
- radioactivity in the environment
- radiation protection of the environment
- intervention measures and mitigation of the consequences of emergencies and
- the use of radiation sources other than those in health and veterinary.

The general mandate of Expert Council for radiation Protection of the People is meant to help the Ministry of Health and the SRPA on issues relating to :

- radiation protection of workers and population,
- radiological procedures,
- use of radiation sources in health and veterinary.

Since the scope of competencies of both expert councils are prescribed in details in respective ministerial regulations there are no overlapping of activities /responsibilities. Furthermore both regulations also provide for the close co-operation of two councils.

Seq. No	Country	Article	Ref. in National Report
30	AUSTRIA	Article 9	

Question/Comment

The Report states that the prime responsibility of the license holder is defined within the 2002 Act and its execution is provided through the division of costs for the protection against ionising radiation and nuclear safety between the license holder and the state. If the prime responsibility belongs to the license holder, what is the reason for the cost sharing and how is the division of costs regulated?

Answer

As reported under Article 9, the 2002 Act provides that the licence holder shall cover the cost of its own measures relating to radiation and nuclear safety. But on the other hand in some circumstances the intervention of state is necessary, as for example:

- when in childcare, cultural, health or educational facilities workers or members of the public are exposed to radon and the doses received exceed certain values, the financial resources related to the carrying out of measures aimed at the reduction of exposure shall be ensured by the state,
- medical surveillance of exposed workers and the population in the case of emergency shall be ensured by the state,
- if an operator of a facility or user of radiation source due to bankruptcy, liquidation or other reason can not ensure the requested mitigation of the consequences of an emergency or can not be determined , the state shall ensure the funds for the required measures.

Seq. No	Country	Article	Ref. in National Report
31	ARGENTINA	Article 10	page 32

Question/Comment

It is stated that the role of training has been fully recognized by the utility management and the number of training programs reflects it.

- Are there any regulatory requirement related to the subjects to be covered by the training program?
- Does the Regulatory Body specify the minimum training hours to be achieve considering the relative relevance of each subject?.

Answer

In accordance with section 21 of the Regulation E-3 (Regulation on education, experience, examination and certification of personnel conducting specific work at the nuclear installation), the user of the NPP must organize a special training department. Section 23 of the Regulation E-3 define the supplemental professional qualification and programs of permanent improvement of operators. Training and qualification activities at the NPP are either determined or approved by the regulator in Regulation E-3, the plant Safety Analysis Report and a yearly training program approved by the SNSA. Qualification requirements for posts important for safe operation of NPP are exactly specified in the E-3 regulation. Subjects that training of the operator has to cover are specified in E-3 art. 23 that states: "Programmes supplementary professional qualification and programmes of permanent improvement for the attainment or prolongation of the certificate for the performance of works and duties of the reactor operator must, beside elementary knowledge from the fields of thermodynamics, mechanical engineering, electrotechnics and the basis of nuclear physics and radiological protection, contain the following:

- the nuclear reactor operation principles;
- design characteristics of a nuclear power plant and the characteristics of its operation;
- instrumentation and control systems;
- instructions for normal operation and in the emergency situations;
- physical protection;
- procedures and regulations for the protection against ionizing radiation;
- measures for protection and operation in conditions of war and in the case of a nuclear accident.

The programme of supplementary professional qualification and the programme of permanent improvement for the attainment or prolongatin of the certicicate for the performance of works and duties of the main operator, must, beside a thorougher knowledge from the fields listed in the first paragraph of this section, contain the following:

- the theory of nuclear reactors;
- theoretical and practical aspect of the heat and mass transfer and of the theory of systems;
- the operation of safety systems;
- the handling of nuclear fuel and the comporment of fuel in the reactor kernel;
- handling and storage of radioactive materials and the dangers and risks from ionizing radiation;
- special characteristic of operation of a nuclear power plant and nuclear heating plant, respectively;
- administrative procedures, working conditions and limitations;
- civil defence measures, in cases of natural, nuclear and other major accidents.

Exercises on a nuclear power plant simulator must be likewise included into the programmes from the first and second paragraphs of this section, so as to ensure the ability to act in case of an accident in the nuclear power plant and heating plant, respectively."

The minimum training hours are approved by the regulator through the approval of the annual training program.

A new regulation under preparation (regulation JV-4). JV4 – Regulation about qualification of personnel in nuclear and radiation objects, is stipulates in Art. 29:

"Workers who have licence for reactor operator or senior reactor operator must yearly perform at least 40 hours of simulator training.

Programme of continuous training must contain analysis of operation events in the past year, characteristic of fuel cycle, modifications of plant and procedures and technical specifications and analysis of operation events in other similar power plants."

Seq. No	Country	Article	Ref. in National Report
32	GERMANY	Article 10	p. 31

Question/Comment

Within the overall plant management program, is it intended to implement a safety management system? Does the existing quality assurance plan comply with international standards such as ISO 9000:2000?

Answer

NPP Krško has implemented safety management system in accordance with INSAG 13.

NPP Krško QA plan has been developed and implemented in accordance with the requirements of 10CFR50 Appendix B. We believe that the international standard ISO 9000:2000 is primarily focused to enhancement of "customer satisfaction" by meeting customer requirements and is therefore not fully applicable to "nuclear safety". In other words, ISO does not meet a number of nuclear quality assurance requirements.

Seq. No	Country	Article	Ref. in National Report
33	GERMANY	Article 10	p. 32

Question/Comment

Can the Independent Safety Engineering Group (ISEG) be considered as an independent plant internal review group for all safety matters? Who are the members of ISEG?

Answer

The ISEG shall function to examine unit operating characteristics, SNSA decisions and inquires, industry advisories, and other sources of unit design and operating experience information, including units of similar design, which may indicate areas for improving unit safety. The ISEG shall make detailed recommendations for procedure revisions, equipment modifications, maintenance activities, operations activities, or other means of improving unit safety to the management board. Members of ISEG are experts from different areas, majority have senior reactor operator licence and are trained in human performance areas, analysis techniques, etc.. The ISEG independence is achieved and assured through its reporting channel to plant senior management and plant management supervisory board.

Seq. No	Country	Article	Ref. in National Report
34	GERMANY	Article 10	p. 32

Question/Comment

Which types of indicators are used by ISEG beyond the established WANO indicators? In 19.7 a total of about 90 indicators are mentioned. To what extent are the proposed INSAG safety culture indicators used? What is the experience on the practicability of these indicators so far?

Answer

The whole Performance Indicators Program is based on a document Operational Safety Performance Indicators for Nuclear Power Plants, IAEA TECDOC-1141. Establishing such a program of monitoring and assessing operational plant safety performance indicators represents effective safety culture of plant personnel by itself. The results of those performance indicators reviews identifies weak points and defines corrective actions for the adverse trend indicators.

Types of indicators used by ISEG:

Unit Capability Factor, Unplanned Capability Loss Factor, Performance Indicator Index, Number of Corrected WO Related To Safety Systems, Number of Corrected WO Related To Other Systems, Corrective to preventive/predictive work orders ratio, Number of pending work orders for more than 3 months, Number of Finished Work Orders Not Closed For More Than One Month, Ratio of Unplanned and All Outage Work Orders, Ratio Between Scheduled Outage WO At Freeze Date and Scheduled WO At Outage Start Date, Chemistry Performance Indicator - WANO, Hours of Deviations From Chemistry Parameter, USAR RCS Design Transients, Fuel Reliability Indicator - WANO, Primary System Leakage, Primary System Activity, Containment Leak Rate Indicator, Number of Furmanite Intervention, Number of Unacceptable Results From ISI NDE, Number of Unacceptable Results From QC NDE, Number of Significant Events, Number of licensee event reports, Number of actual fire, Unplanned Auto Scrams per 7000 hours critical, Safety System Actuation Actual Demands Safety System Actuation Spurious Demands, Number of spurious FP system actuation, Safety Injection System Performance - WANO, Auxiliary Feedwater System Performance - WANO, Emergency AC Power System Performance - WANO, Protected area security equipment performance, Number of Safety Systems Failures, Percentage of Safety Systems Failures Discovered By Surveillance and Preventive Maintenance, Number of Maintenance Rule Related Systems In Red or A1, Examination Pass Rate, Written Exam Results, Simulator Evaluation Results, Training Attendance, Number of Operation Human Performance Events, Number of reactivity management events, Response of Emergency Preparedness Personnel, Realization of annual emergency preparedness training plan, Plant emergency warning system availability, Number of unplanned LCO entries, Number of planned LCO entries, Number of Technical Specification violations, Indication of Rx Safety During, OLM Based On ICDP, Indication of Rx Safety During Shutdown Based On CDP, Number of Unplanned Shutdown Safety Requirements, Number of violations of licensing requirements, Completion of licensing requirements of Commitment Tracking System, Number of open temporary modifications, Number of Interdisciplinary Self Assessments, Number of Configuration Management Findings, Number of Operator Work Arounds, Control Room Annunciators, Ratio of total time in LCO to TS allowed time, Collective radiation exposure - WANO, Liquid effluent activity, Gaseous effluent activity (Activity of released radioactive aerosols), Number of unplanned personnel contamination, Number of Unplanned Area Contamination, Volume of Lo-level radioactive waste- WANO, Number of workers receiving doses above NEK Criteria, Number of Human Related Events, Number of Contractor Related Events, Number of Registered Industrial Safety Events, Industrial safety accident rate - WANO, Number of training deficiencies events, Number of Procedure Deficiencies Events, Number of Events Due To Inadequate Adherence To Procedures, Number of Positive Alcohol Tests, Percentage of Overdue Corrective Actions, Percentage of Re-scheduled Corrective Actions, Percentage of overdue analysis, Number of overdue modifications, Number of procedures with expired review date, Number of Interdisciplinary self-assessments, Number of Internal and Supplier QA Audits, Number of Findings From Internal and Supplier QA Audits, Average Time To Clear Findings From Internal and Supplier QA Audits, Self-identification rate, Number of Recurrences, Ratio between number of reworks and all work orders, Net electrical energy production, Duration Annual of outages, Thermal efficiency,

Production costs, OMESAT costs, Capital investment, Warehouse Inventory, Contractors support, External Debts, Engagement of planning funds.

Seq. No	Country	Article	Ref. in National Report
35	RUSSIAN FEDERATION	Article 10	

Question/Comment

It is mentioned in the text (second paragraph) that in 2003 there were two major reviews of safety culture at the Krsko NPP.

What indicators were used to assess the status of safety culture?

Answer

The whole Performance Indicators Program is based on a document Operational Safety Performance Indicators for Nuclear Power Plants, IAEA TECDOC-1141. Establishing such a program of monitoring and assessing operational plant safety performance indicators represents effective safety culture of plant personnel by itself. The results of those performance indicators reviews identifies weak points and defines corrective actions for the adverse trend indicators. The results of the plant operational safety performance indicator assessment motivates continuous striving for the improvement as well as straightening safety culture of the plant personnel.

The list of indicators to assess the status of safety culture is as follows:

- Number of violations of licensing requirements
- Completion of licensing requirements of Commitment Tracking System
- Number of open temporary modifications
- Number of Interdisciplinary Self Assessments
- Number of Configuration Management Findings
- Number of Operator Work Arounds
- Control Room Annunciators
- Ratio of total time in LCO to TS allowed time
- Collective radiation exposure - WANO
- Liquid effluent activity
- Gaseous effluent activity (Activity of released radioactive aerosols)
- Number of unplanned personnel contamination
- Number of Unplanned Area Contamination
- Volume of Lo-level radioactive waste- WANO
- Number of workers receiving doses above NEK Criteria
- Number of Human Related Events
- Number of Contractor Related Events
- Number of Registered Industrial Safety Events
- Industrial safety accident rate - WANO
- Number of training deficiencies events
- Number of Procedure Deficiencies Events
- Number of Events Due To Inadequate Adherence To Procedures

- Number of Positive Alcohol Tests
- Percentage of Overdue Corrective Actions
- Percentage of Re-scheduled Corrective Actions
- Procentage of overdue analysis
- Number of overdue modifications
- Number of procedures with expired review date
- Number of Interdisciplinary self-assessments
- Number of Internal and Supplier QA Audits
- Number of Findings From Internal and Supplier QA Audits
- Average Time To Clear Findings From Internal and Supplier QA Audits
- Self-identification rate
- Number of Recurrences
- Ratio between number of reworks and all work orders

Seq. No	Country	Article	Ref. in National Report
36	SWITZERLAND	Article 10	page 32

Question/Comment

How are recent developments in the area of Safety Culture considered in the Safety Culture Assessment (e.g. IAEA SCEPT, SCART, TECDOC 1339)?

Answer

NPP Krško has developed a procedure for safety culture self assessment which is based on recent developments. The objectives of the self-assessment are to evaluate the health of plant's Safety Culture and provide recommendations to plant management to improve or sustain this health. The procedure is based on the following international references (among which is also TECDOC 1329 quoted in the question):

- IAEA Safety Series No. 75-INSAG-4 »Safety Culture«, 1991
- IAEA TECDOC-860 »ASCOT Guidelines for Organizational Self-assessment of Safety Culture«, 1996
- IAEA TECDOC-1329 »Self culture in nuclear installations«, 2002
- IAEA TECDOC-1321 » Self assessment of safety culture in nuclear installations«, 2002
- IAEA Safety reports series No.11 »Developing safety culture in nuclear activities (practical suggestions)«, 1998
- IAEA INSAG-15 »Key practical issues in strengthening safety culture«
- IAEA INSAG-13 »Management of operational safety in Nuclear Power Plants«, 1999
- IAEA Safety report series No.1 »Examples of safety culture practices«. 1997

Seq. No	Country	Article	Ref. in National Report
37	AUSTRIA	Article 11	

Question/Comment

The Slovenian state-owned electrical utility owns only a 50% of the NPP Krško. Which measures guarantee a cost recovering for decommissioning and the operation of a repository? Will these estimated costs be completely covered if the plant operates for its 40-year operating lifetime?

Answer

As stated in Article 10 of the Agreement (Agreement between the Government of Slovenia and the Government of Croatia on Settlement of Status and Other Legal Relations Regarding Investments), NEK decommissioning, disposal of radioactive waste and spent nuclear fuel is a joint liability of both Contracting Parties as stipulated in a Joint Convention of the Preamble of this Contract. In Article 12, paragraph 3 is stated that Contracting Parties shall, within 12 months from the date of entry into force hereof, adopt suitable regulations to provide funds for covering the costs from the first and second paragraph of this Article, namely in such a manner that each Contracting Party will provide regular paying-in capital in its own special fund in the amount, expected in the approved programs from Article 10 hereof. Both Contracting Parties and special fund respectively will cover half of the costs of all activities in connection with decommissioning and disposal of all radioactive waste and spent nuclear fuel, originating from plant operation and decommissioning of NEK. The decommissioning plan has been approved by the interstate commission from Article 18 hereof. According to the text of Articles 10 and 11, NPP Krško has no financial commitments whatsoever concerning the decommissioning issues.

Seq. No	Country	Article	Ref. in National Report
38	AUSTRIA	Article 11	

Question/Comment

In the report is stated that the training activities are outlined in the Safety Analysis Report. How is the regulatory body monitoring or supervising the education and training activities of the operator?

Answer

Four regular inspections are carried out per year – inspecting each training segment - (in accordance to approved Annual Inspection Program) to monitor and supervise the training and qualification process of the Krško NPP staff. Annual and semiannual reports prepared by Krško NPP Training Division are also reviewed by Inspectors.

In addition two inspectors are members of SNSA's Board of Experts for Operators Exams and evaluate all the exams.

Seq. No	Country	Article	Ref. in National Report
39	AUSTRIA	Article 11	

Question/Comment

What individuals and organizations constitute the Technical Support Organisations (TSOs) of the Krško NPP operating organisation and the SNSA?

Answer

In 2004 the following 13 organisations were listed as Technical Support Organisations:

- Milan Vidmar Electric Institute, Ljubljana
- ENCONET Consulting, Vienna, Austria

- Faculty of Electrical Engineering and Computing, University of Zagreb, Croatia
- Faculty of Mechanical Engineering, University of Ljubljana,
- IBE Consulting Engineers, Ljubljana
- Jozef Stefan Institute, Ljubljana
- Energy Institute, Zagreb, Croatia
- Institute for Energy and Environment Protection- EKONERG, Zagreb, Croatia
- Institute of Metals and Technologies, Ljubljana,
- Institute of Metal Constructions, Ljubljana
- Welding Institute, Ljubljana
- Izolirka, Fire Engineering, Radovljica
- Slovenian Civil Engineering Institute, Ljubljana

There are no individuals who hold the authorization.

Seq. No	Country	Article	Ref. in National Report
40	CROATIA	Article 11	Ch. 11.2, p. 37

Question/Comment

How will the extension of the fuel cycle to 18 months affect the Krško NPP sub-contractors and their ability to meet the quality standards in performing maintenance tasks?

Answer

Extension of fuel cycle to 18 months is a standard industry practice and should not degrade the ability of sub-contractors to meet the achieved quality standards. Between the outages the sub-contractors have engagements for on line maintenance activities where the same quality standards apply.

However, SNSA is observing, that some subcontractors are losing interest for activities in the nuclear field and are focusing to other industries. Although there are no immediate negative influences, the trend remains of the concern for the longer future.

Seq. No	Country	Article	Ref. in National Report
41	GERMANY	Article 11.1	p. 35

Question/Comment

Is the availability of sufficient financial resources for maintaining the appropriate level of nuclear safety considered as an "indicator" for the operator's performance? How does the regulatory authority assess the acceptability?

Answer

The SNSA does consider financial resources as a soft "indicator" of the operator's performance. After the Agreement between the Government of Slovenia and the Government of Croatia on Settlement of Status and Other Legal Relations Regarding Investments, concluded in 2003, the financial situation is stable and predictable, so that SNSA does not consider it as an alarming indicator.

Seq. No	Country	Article	Ref. in National Report
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42	AUSTRIA	Article 12	
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Question/Comment

The Report states that human error analysis is performed by the Independent Safety Evaluation group (ISEG). In which form is the independence of this safety evaluation group guaranteed by the licensee, what qualifications are needed for the members of the ISEG and which access to the personnel involved and to the plant records are provided to this group?

Answer

Function, composition and responsibilities of ISEG are defined in Technical Specifications. The ISEG shall be composed of at least five, dedicated, full-time engineers (Bachelor of Sciences Degree). Members of ISEG are experts from different areas, majority have senior reactor operator license and are trained in human performance areas, analysis techniques, etc. Independence of ISEG is assured by its separation from the production and operation. ISEG directly reports to president of management board and plant owners representatives. ISEG have access to all plant information system (processes, databases, documents, records, etc.

Seq. No	Country	Article	Ref. in National Report
43	AUSTRIA	Article 12	

Question/Comment

What are the activities of the regulatory body related to human factors and man-machine interface issues?

Answer

SNSA insisted that OSART mission includes (for the first time in OSART missions) also the review of safety culture at Krško NPP. Chapter 4.3 of the PSR was devoted to human factors. In 2005 an independent research study funded by SNSA will be performed and will include assessment of safety culture at Krško NPP.

Man-machine interface is examined at review and approval of Krško NPP modifications (included are safety related modifications and changes of safety analysis report).

SNSA supervises the exams for the reactor operators and issues or extends the operators' licenses.

As part of event analyses SNSA performs also root cause analyses and determines human factors that lead to the events.

Seq. No	Country	Article	Ref. in National Report
44	GERMANY	Article 12	p. 39-40

Question/Comment

How are lessons learned from international operating experience feedback programs with special emphasis on human and organisational factors evaluated in Krsko? Are there any regulatory requirements on the evaluation of these international operating experiences?

Answer

Krško NPP is continuously following the international nuclear technology practices, standards changes and improvements, and introducing them into processes and equipment upgrades. As the member of many important international integrations, Krško NPP has enjoyed the possibility of sharing its experience with others (World Association of Nuclear Operators - WANO, Institute of Nuclear Power Operations - INPO, International Atomic Energy Agency - IAEA, Nuclear

Maintenance Experience Exchange - NUMEX, Electric Power Research Institute - EPRI, Westinghouse Owners Group - WOG, etc.).The operating experience feedback process includes industry events screening for the significance, evaluation, recommendation of corrective actions, and monitoring of the effectiveness of implemented actions. All on-site and industry informations are entered in one system for Corrective Action Program. The system review function routes the information to the proper supporting plant process to correct the adverse condition (Work Order, engineering analysis, etc.). Every plant personal computer has direct connection to WANO, INPO and others databases through the Plant Management Information System. Availability of these documents encourages personnel to be aware of industry operating experience and performance data, and provides an easily accessible source of industry guidelines that can be used to improve performance. Industry operating experience is made easily available to all plant personnel for use in work planning, pre-job briefings, training lesson plans, and department meetings.

As Krško is the only NPP in Slovenia, the article 60 (the use of experiences gained during operational events) of 2002 Act requests use of international operating experiences:

- (1) An operator of a radiation or nuclear facility must ensure that programmes of recording and analysing operational experience at nuclear facilities are implemented.
- (2) In the assessment, examination and improvement of radiation and nuclear safety the operator of a radiation or nuclear facility must take into account the conclusions of the programmes referred to in the previous paragraph.
- (3) The minister competent for the environment shall determine the format and the frequency of reports on the implementation of the programmes of recording and analysing operational experience at radiation or nuclear facilities.

Use of international operating experience is addressed also in the Article 20 of the Regulation E2: The investor and the user of the nuclear facility must follow domestic and foreign experiences pertaining to similar nuclear facilities so as to improve the safety of their own facility.

The investor and the user of the nuclear facility must inform competent administrative body about occurrences or alterations that are essential for the safety of similar nuclear facilities, they must enclose an analysis on the applicability of these alterations to their own facility and recommend appropriate alterations for it.

Seq. No	Country	Article	Ref. in National Report
45	GERMANY	Article 12	p. 39

Question/Comment

Please give some more details on how human factor issues have been reviewed in the PSR? How are operator’s performance trends evaluated and monitored by the operator and how does the regulator review respective results?

Answer

Human factors are reviewed in a few safety factors: Operational Experience, Safety Assessment, and Safety Culture. In the Operational Experience in the topic “Evaluation of data” are covered following elements: Systematic root cause analysis of events, Trend analyses of safety related operational data, Analyses of safety performance indicators, Analyses of plant specific reliability data, Analyses of equipment unavailability, Analyses of human factor, Analyses of plant life influences, Evaluating the applicability and significance of experience from other plants and research findings.

In the Safety Culture in the topic “Human Factors” are reviewed following elements: Staffing level for operation, Staff selection arrangements, Staff training, Working conditions, Social welfare issues, Radiation dose records, Man-machine interfaces.

In the safety factor Safety Assessment in the topic “Safety practices” also human factor elements are reviewed: Safety related procedures and safety limits (operating procedures, Technical Specifications, Limiting Conditions for Operation, Emergency Operating Procedures), Regular review and maintenance of the procedures, Understanding and acceptance of the procedures by plant management and on-site staff.

As a part of PSR project were prepared sub-topical report, which contain the list of actual events which occurred at the plant and compared to the anticipated operational occurrences in the design basis and documentation (Updated Safety Analysis Report, Technical Specifications). A trend has been observed of moving towards outstanding performance in terms of avoiding plant trips.

SNSA was involved in the PSR since the review has started and had approved the content of the PSR program. All topical reports were sent to SNSA for review, including those covering human factors. SNSA formulated open questions regarding topics that were insufficiently covered in the PSR. These questions were discussed at meetings with NPP and PSR topical reports were supplemented accordingly. Some open issues were chosen to be dealt separately from PSR action plan.

Seq. No	Country	Article	Ref. in National Report
46	SWITZERLAND	Article 12	

Question/Comment

Slovenia addresses a wide range of human factors activities such as qualification, physical and psychological requirements for NPP staff, methods to prevent, detect and correct human errors and man-machine interface issues.

However, the report does not discuss specific human factors activities performed by the Regulatory Body, i.e. it does not mention methodologies and the reference frames that are applied by the Slovenian Regulatory Body to supervise its NPP.

Answer

SNSA supervises the exams for the reactor operators and issues or extends the operators' licenses. As part of event analyses SNSA performs also root cause analyses and determines human factors that lead to the events. The 2004 refueling outage was supervised by SNSA and an analysis of the outage activities was performed, which included also the review of organizational deficiencies and human factors found by SNSA inspectors. As part of NEA system of safety performance indicators, the regulator established a new, safety oriented, system of performance indicators for plant supervision that include several indicators to monitor human errors, organizational deficiencies and weak safety culture. In 2005 will be performed an independent research study funded by SNSA that includes assessment of safety culture at the Krško NPP.

Seq. No	Country	Article	Ref. in National Report
47	ARGENTINA	Article 13	page 43

Question/Comment

The OSART mission performed at Krsko NPP in 2003 issued a recommendation that stated that all quality assurance functions should be covered and there should be a common understanding of these functions across the plant.

- In addition to the OSART recommendation did the Regulatory Body issue any requirement related to the quality assurance functions?.
- Could Slovenia provide information about the utility actions taken to implement this recommendation.

Answer

Through the appropriate documents, management will promote QA standards across the organization and improve the conditions for QA division function.

Improved systematic initial and periodic training and indoctrination of personnel on the subject of QA principles and usage of QA Plan have been established. Training program also includes clearly defined levels of knowledge for individual job titles / areas.

Internal and external audits will be performed in a timely and higher quality manner in accordance with the established program and the schedule. Reports will be submitted to the management, and QA committee for review and further improvement of audits.

As a result of the PSR an action plan was prepared which is just about to be approved by SNSA. It includes also the improvements related to QA. SNSA also reviewed the OSART action plan and the implementation will be subject to regulatory inspection.

NPP Krško is organized as an utility in the sense that the owners do not possess technical knowledge in operation of the plant neither in the nuclear safety - briefly, all the expertise is concentrated within the NPP.

Seq. No	Country	Article	Ref. in National Report
48	AUSTRALIA	Article 13	

Question/Comment

On the matter of the SNSA Quality Management System, is the SNSA Quality Management System subject to any external certification, inspection or review?

On the matter of the Krsko NPP Quality Management System, is the NPP Quality Management System subject to certification, periodic inspection or review by SNSA or other Quality Management specialist organisation?

Answer

Position of SNSA is that ISO certification of the QMS is not appropriate for a regulatory body because of specificity of its processes. A system of external review and certification for regulatory bodies has not been developed yet. As SNSA is a part of State Administration, it is following the guidelines set forth for the complete governmental system. The NPP Quality Management System is not formally certificated by accredited certification organisation, however, the Quality Management System is periodically inspected by the SNSA. Furthermore, the NPP Quality Management System was subject to Periodic Safety Review in 2003 and to OSART Mission in 2003.

Seq. No	Country	Article	Ref. in National Report
49	AUSTRIA	Article 13	

Question/Comment

When will the implementation of the quality management system at SNSA be completed?

Answer

Quality Management System (QMS) at SNSA is being implemented step by step in parallel with the development of QMS documentation. Major processes have already been documented as well as majority of working procedures. The development of these documents was usage driven. Preparation of the quality manual as the highest level document is scheduled to be completed by the end of 2005.

Seq. No	Country	Article	Ref. in National Report
50	AUSTRIA	Article 13	

Question/Comment

What actions have been taken by the senior management of Krško NPP to fulfil the recommendation of the OSART mission in quality assurance and how will these actions be monitored by the regulatory body?

Answer

Through the appropriate documents, management will promote QA standards across the organization and improve the conditions for QA division function.

Improved systematic initial and periodic training and indoctrination of personnel on the subject of QA principles and usage of QA Plan have been established. Training program also includes clearly defined levels of knowledge for individual job titles / areas.

Internal and external audits will be performed in a timely and higher quality manner in accordance with the established program and the schedule. Reports will be submitted to the management, and to the QA committee for review and further improvements of audits.

The implementation of the recommendation of the OSART mission is subject to periodic inspections by the SNSA.

Seq. No	Country	Article	Ref. in National Report
51	CROATIA	Article 13	Ch. 13.2, p. 43

Question/Comment

What was done or is planning to be done on the implementation of OSART mission recommendation regarding improvement of QA functions?

Answer

Training program (QD-3) was developed, plans for internal and external audits were established, audits performed, documented and reports distributed, Benchmarking on application of US rules and standards in European circumstances is under preparation (visiting the European NPPs which apply the US rules), Development of performance indicators is in progress.

Seq. No	Country	Article	Ref. in National Report
52	GERMANY	Article 13	

Question/Comment

During the 2003 OSART Mission it was recommended to take actions to ensure that the quality assurance functions provide an effective barrier to a potential decline in plant performance. How has this recommendation been approached by the senior management? What is the current status of implementation?

Answer

Training program (QD-3) was developed, plans for internal and external audits were established, audits performed, documented and reports distributed, Benchmarking on application of US rules and standards in European circumstances is under preparation (visiting the European NPPs which apply the US rules), Development of performance indicators is in progress.

Seq. No	Country	Article	Ref. in National Report
53	SWITZERLAND	Article 13	page 41

Question/Comment

When does SNSA plan to implement a Quality Management System (schedule, timetable)?

Answer

Quality Management System (QMS) at SNSA is being implemented step by step in paralel with the development of QMS documentation. Major processes have already been documented as well as majority of working procedures. The development of these documents was usage driven. Preparation of the quality manual as the highest level document is scheduled to be completed by the end of 2005.

Seq. No	Country	Article	Ref. in National Report
54	UNITED STATES OF AMERICA	Article 13	

Question/Comment

How are you dealing with the internationalization of suppliers of components and services? That is, since your QA program uses the US 10 CFR Appendix B, how do you ensure the quality of components and services supplied from abroad?

Answer

NPP Krško is NUPIC member and quality of components, spare parts and services is assured through NUPIC approved supplier list (ASL). If supplier is not on NUPIC ASL NPP Krško performs audits in accordance with requirements defined in US 10 CFR Appendix B.

Seq. No	Country	Article	Ref. in National Report
55	CROATIA	Article 14	Ch. 14.1, p. 45

Question/Comment

What is the status of Krško NPP operating license in the light of the new periodic safety review provisions in the 2002 Act?

Answer

Act 2002 states that operating license is valid for max of 10 yrs (art. 111). The NPP Krško operating licence is to be replaced by the new licence according to art. 112, para 4 and 5. The

new licence will include the scope and the time period of adjustment to the new conditions/ requirements. As the new regulations in accordance with the new Act are still being drafted, the new licence has not been issued yet.

Seq. No	Country	Article	Ref. in National Report
56	PAKISTAN	Article 14	P48

Question/Comment

A worldwide practice exists for posting resident inspectors at NPPs sites. It has been mentioned that SNSA has no site inspectors. How are the day to day matters related to safety taken care off?

Answer

The Krško NPP is located relatively close to the SNSA offices (approx. one hour drive away). The decision was made, not to have resident inspectors on site. However, the SNSA inspectors perform inspection on site two to four days a week, during the outages an inspector is located in the hotel in a nearby town and is on-site every day.

A procedure was established to determine the everyday exchange of relevant information (by phone) between Main Control Room and inspector on duty. The information is recorded and stored in a special form.

Seq. No	Country	Article	Ref. in National Report
57	SWITZERLAND	Article 14	page 46

Question/Comment

This paragraph states that "the Krško NPP maintains a 'living' Probabilistic Safety Assessment (PSA) model". Furthermore, in Chapter 6 it is indicated that "both the model and corresponding report are also delivered to the SNSA".

- a) What is the scope of initiating events and operational modes considered in this PSA?
- b) How are the risk-analyses reviewed under the authority of the regulatory body and, in particular, how does the regulatory body make sure that the risk analyses well reflect the current plant configuration?

Answer

- a.) The living PSA model is a full power PSA model consisting of internal and external initiators (explicitly are modelled seismic, fire and flood external events) and hence, the parameters of concern in the process of update could be grouped in two major categories: those relevant for internal events model and those relevant for external event models. The parameters from both categories quantitatively describe the discrete elements of the models (i.e. basic events), necessary for the purpose of the quantitative analyses. Besides the above mentioned living full power PSA model NPP Krško also maintains a simplified shutdown PSA (for ORAM support tool) that is also regularly updated between the outages.
- b.) In the past, due to lack of the regulator's own experience, the review has been done through different IAEA missions and partial PSA reviews by independent technical support organisations. The PSR that has just been finished has also included review of the PSA by the NPP subcontractor. For the area of special interest to the regulator, e.g. seismic PSA, review for the regulator has been performed by IRSN within the scope of EU Phare assistance to Slovenian regulatory body. The level of knowledge of PSA at the regulator has increased so that the regulator can review additional modifications being done to the PSA model within the Living PSA program at the NPP (and the NPP also provides regular reports on the updates of the PSA model and their effects).

Seq. No	Country	Article	Ref. in National Report
58	FINLAND	Article 14.1	

Question/Comment

Could you provide some information on the content and positive effects of the recent comprehensive periodic safety review performed in Slovenia.

Answer

Look at the uploaded answer support document "answer to Finland".

Support Documents

» answer to Finland ¹

Seq. No	Country	Article	Ref. in National Report
59	GERMANY	Article 14.1	p. 46, 14.1.2

Question/Comment

Please give an example for a typical content of the 20 procedures for design modifications.

Answer

The typical contents (chapters) of the design modifications procedures:

1. General Requirements,
2. Design Inputs,
3. Design,
4. Design Outputs,
5. Design Change Package,
6. Design Change Implementation,
7. Design Change Completion,
8. Organizations and Departments,
9. Required Records,

Titles of some of those 20 procedures:

- Plant design modifications,
- EQ program in design modification process,
- Organisation of modification Implementation,
- Temporary modification control,
- Plant design modification and control process,
- Implementation of repair, replacement and modification (RRM) program,
- Temporary modification control,
- Authorization of changes, tests and experiments (10CFR50.59),
- Administration of changes to the updated safety analysis report (USAR).

¹ Appendix 1

Seq. No	Country	Article	Ref. in National Report
60	GERMANY	Article 14.1	p. 46, 14.1.2

Question/Comment

For which part of the primary and secondary circuits of Krsko NPP has the Leak Before Break (LBB) concept been applied and licensed? Which analyses have been performed and which international experiences have been considered for justification of the decision to apply the LBB concept?

Answer

The Leak-Before-Break (LBB) concept has been applied and licensed for primary class 1 components, including primary coolant circuit piping, surge line and auxiliary lines of minimal diameter 150 mm up to the first isolation valve.

In the scope of the LBB concept licensing, the requirements for review and acceptance criteria of United States Nuclear Regulatory Commission Standard Review Plan 3.6.3 have been satisfied. Additional analysis for piping, equipment supports and branch nozzle connections have been performed upon Slovenian Nuclear Safety Administration request (some repeating already performed analysis to check their consistency and to fulfill the regulatory requirements for independent expert evaluation), covering:

- identification of most loaded welds for the purpose of In-Service Inspection;
- stability of delta-ferrite in primary coolant circuit piping and welds;
- critical leakage crack size evaluation and its stability;
- thermal stratification on surge line and on Residual Heat Removal System isolation valve;
- fatigue induced by thermal stratification including crack growth;
- reactor coolant system support acceptability for the gaps that had during the start-up tests exceeded the tight tolerance limits.

The thermal stratification monitoring has been applied and monitors have been build on pressurizer, surge line and class 1 auxiliary lines. Thermal stratification analysis will be reviewed again regarding actual data/transients from thermal stratification monitoring during the outage 2006, after the expiration of the testing period.

For the LBB concept licensing the experiences gained from United States have been of the primary importance. Next to these the European study B7-5200/97/000782/MAR/C2, Rev.2, Survey of European Leak-Before Break Procedures and Requirements Related to Structural Integrity of Nuclear Power Plant Components, Comparative Analysis for Harmonization Purpose has been taken into account. Regulatory bodies from Belgium, Finland, France, Great Britain, Sweden and Switzerland were contacted regarding their national practice regarding LBB concept. Their experiences have been considered in the decision making process. NPP and the regulatory body sought and received support in their decision making not only from Slovenian but also from international experts and technical support organisations (for example, from the United States of America and Belgium).

Seq. No	Country	Article	Ref. in National Report
61	RUSSIAN FEDERATION	Article 14.1	Section 14.1.2

Question/Comment

Section 14.1.2 says that a comprehensive program is established for design modification control.

- 1) What is the main purpose of this program?
- 2) What are the criteria for selecting design modifications, for which NPP safety assessment has to be performed? (Examples would be welcome).

Answer

Look at the uploaded answer support document "answer 2 to RF question".

Support Documents

» Answer 2 to RF question²

Seq. No	Country	Article	Ref. in National Report
62	FRANCE	Article 14.2	§14.3 - p. 47-48

Question/Comment

The report provides (§ 7.3 p. 21-22 and also §14.3 p. 47-48) with the main aspect for the NPP supervision by inspectors. It would be helpful to illustrate this information with some statistics regarding the number and the main topics of inspections performed during the current period: this would facilitate the understanding of the main current safety issues. Could Slovenia provide some information on this matter?

Answer

The SNSA inspectors perform about 130 inspection days in the Krško NPP. In accordance to our legislation also SNSA experts or experts from Technical Support Organizations sometimes participate when performing inspection.

The main topics of inspections performed during the current period were: Regulatory requirements, Operation, Surveillance testing, Outage activities, In Service Inspection (Control Rod Driving Mechanism), Potential Impact of Debris Blockage on Emergency Sump Recirculation at Pressurized-Water Reactors, Maintenance Rule, Regulatory Conformance Program, Operational experience feedback program, Radioactive waste management, Modification Implementation, Motor operated valves, Training and qualification, Reactor protection system, Auxiliary feedwater system (in-depth inspection) and some others in accordance to approved document "Annual Inspection Programme – 2004".

Seq. No	Country	Article	Ref. in National Report
63	GERMANY	Article 14.2	p. 47

Question/Comment

For which applications is the living PSA model used by the operator? What is the position of the regulator with respect to these applications?

Answer

Living PSA model is used for PSA On Line Maintenance evaluation.

² appendix 2

The regulator has not expressed any requirements regarding such use neither have been any such applications officially approved by the regulator. In general, the regulator is in favour of such applications but regulatory framework for their use is still being prepared.

Seq. No	Country	Article	Ref. in National Report
64	RUSSIAN FEDERATION	Article 14.2	

Question/Comment

Section 14.2 mentions that an Ageing Management Program has been developed at the Krsko NPP as a contribution to Periodic Safety Review.

- 1) What is the main purpose of this program?
- 2) What is the frequency of safety reviews at the Krsko NPP in the course operation?

Answer

The main purpose of ageing management program is to provide reasonable assurance that subject systems, structures, and components are capable of performing their intended function(s) under all current licensing basis conditions. Programs and activities will be credited for the management of aging under licensing basis conditions. Aging management will be provided through activities such as continued monitoring and assessment of conditions, trending and/or through control of system/structure parameters to preclude degradation.

Inspections are performed regularly by inspectors, both on power and during refueling modes of operation. During the refueling period, TSO's are engaged to cover (inspect and evaluate) different but quite substantial parts of plant maintenance and testing. All activities and findings are described in TSO's and inspection reports.

NPP Krško has started the activities to perform The Periodic Safety Review (PSR) in the years 2001 to 2003. There will be a complete review based on international standards and practices (IAEA guidelines and other Western European and USA standards)."

Details on PSR are in the answer to 1st Finnish question (see uploaded document), frequency of PSRs is prescribed in the 2002 Act as at least once in ten years.

Seq. No	Country	Article	Ref. in National Report
65	ARGENTINA	Article 15	15.4 p.52

Question/Comment

In the report were indicated the different regulatory tasks performed to control the utility activities.

- What are the criteria used and the aspects considered for approval of medical practitioners? .

Answer

Radiation workers in nuclear installations shall pass medical examinations, performed by the approved medical practitioners. The approval granted by the Ministry of Health comprises a fulfilment of the following criteria for the medical practitioners (as stated in the Rules on Health Surveillance of Exposed Workers (OJ RS No. 2/2004):

- (1) qualification: specialist on occupational medicine,
- (2) they have relevant equipment, working space and personnel,
- (3) have at least 5 years working experiences at medical examinations of radiation workers,
- (4) have knowledge in the field of medical surveillance of radiation workers; the approvals to the practitioners have the maximum validity of the 3 years.

The scope, content and duration of refresher courses shall be approved by the Slovenian Radiation Protection Administration.

Seq. No	Country	Article	Ref. in National Report
66	BULGARIA	Article 15	page 50

Question/Comment

The gaseous release are < 2% of the limiting value, and the exposure to a member of the public is < 1.5 microSv, mainly due to the intake of C-14. What is the contribution of other important radionuclides? What is the dose distribution due to other radionuclides?

Answer

The principal pathway of exposure is intake of C-14 (cereals for adults, milk for children). The other pathways are less important: inhalation of released iodine results in 0,2 microSv and inhalation of particles (Co-60, Co-58 and Cs-137, Cs-134) with partial exposure of 0,05 microSv. Hypothetic ingestion of river water (Co-60, Co-58, Mn-54, Cs-137, Cs-134) gives a dose of 0,3 microSv. Overall exposure due to H-3 is estimated to be 0,01 microSv. External radiation (noble gases, deposition) contributes with less than 0, 001 microSv.

Seq. No	Country	Article	Ref. in National Report
67	GERMANY	Article 15	

Question/Comment

Are acceptance criteria used for the regulatory review of the radiological consequences of design basis accidents? If yes, are these criteria related to releases or related to radiological exposures? If dose limits are applied, which are the parameters (e.g. exposure pathways, integration times, distances) considered for the calculation?

Answer

In the Safety Analysis Report, Ch. 15, the design bases accidents were considered. As the licensing requirement the following values were used, which are in accordance with US regulation 10 CFR 100 Reactor Site Criteria, i.e. the person in the exclusion area (area, which is under the authority of the licensee, about 500 m around the reactor) should not receive dose in excess of 250 mSv to the whole body and 3 Gy to the thyroid. For the postulated set of design bases accidents the accident with the most severe consequences is LOCA, which can attribute only a fraction of doses set by the above criteria.

Seq. No	Country	Article	Ref. in National Report
68	HUNGARY	Article 15	Art. 15, P. 50

Question/Comment

Figure 15.1 shows the collective doses in Krsko NPP for the period of 1996-2003. What is the characteristic dose distribution between the operation personnel and outside workers?

Answer

The ratio between an annual collective dose for a plant personnel and collective dose for outside workers strongly depends on the working activities during an outage. Generally the annual collective doses of outside workers in the Krško NPP are higher for the outside personnel and represent around 70% of the total dose if no special activities are going on during an outage. In the year 2003 the annual collective dose of the outside workers was 0.58 man Sv

and 0.22 man Sv for the plant personnel. The average annual dose for outside workers was 1.26 mSv and 0.57 mSv for a plant personnel in the year 2003. The main activities which usually substantially contribute to the personal exposures are activities during outages like inspection of the components, maintenance and plant modification, scaffold installation.

Seq. No	Country	Article	Ref. in National Report
69	HUNGARY	Article 15	Art. 15, P. 50

Question/Comment

Figure 15.2 shows the individual dose distribution in the Krsko NPP. Are the internal exposures involved?

Answer

Yes, the internal doses are taken into account although their contribution, compared to external dose, is negligible (i.e. internal collective dose is about a few tens of man-microSv).

Individual dosimetry of the Krško NPP personnel and outside workers comprises external exposures (gamma, neutron) and internal exposures. Internal exposures are estimated via whole body counting (WBC). All workers involved in practices within contaminated area are subject of WBC control and consequently internal dose assessment.

Seq. No	Country	Article	Ref. in National Report
70	SWITZERLAND	Article 15	page 49

Question/Comment

Lack of information about:

- Clearance of inactive and low level radioactive material from NPP sites as one part of the aspect "release of radioactive material".
 - Dose limits for personal under exposure not related with their work, emergency conditions and chronic exposure, pregnant women.
- Please give the missing information.

Answer

The NPP has to notify the competent authority before the material is released from the NPPs. The licensee has to keep a record on the material quantities, date of release and the way of management after release. Clearance levels for low level radioactive material from NPP sites (for unconditional release) are quoted in the Decree on Radiation Practices (OJ RS No. 48/2004). The only criterion is a limitation of specific activity of a particular radionuclide. If the activities of the material are below clearance levels no authorisation is required. In other cases the authorisation could be given if the annual effective collective dose does not exceed 1 manSv and if an annual dose to a member of a public does not exceed 10 micro Sv. (2) Dose limits for personnel which is exposed during their work but not directly involved in dealing with radiation sources are the same as for radiation workers, i.e. 20 mSv per year for workers class A and 6 mSv per year for workers class B. In emergency conditions, the range of intervention dose limits is 20-500 mSv, with particular values depending on the importance of the protective measures. The upper limit of 500 mSv is considered as the threshold for deterministic effects and is justified primarily for rescuing of human lives and prevention of a reactor core melt.

Seq. No	Country	Article	Ref. in National Report
71	SWITZERLAND	Article 15	page 52

Question/Comment

Who has contracted the technical support organisations, which are performing the measurements of the monitoring programme in the vicinity of the nuclear installations?

Answer

The nuclear installation establishes a contract directly with the approved technical support organisations. The approval was granted to the TSOs on the basis of their capabilities for performing environmental radioactivity monitoring, i.e. relevant laboratory and measurement equipment, adequately qualified personnel and relevant references. At present only two institutes in the country have been recognised to be approved in the field of environmental radioactivity monitoring (Jozef Stefan Institute and Institute of Occupational Safety).

Seq. No	Country	Article	Ref. in National Report
72	ARGENTINA	Article 16	16.4 p.56

Question/Comment

- Could Slovenia provide detailed information about the participation of the NPPs neighbor population during the emergency exercises and the dissemination of information to the population

Answer

Any emergency shall be notified by the Krško NPP to the National Notification Centre and the Krško Regional Notification Centre. The National Notification Centre send information to the competent bodies in the national level. The Krško Notification Centre shall notify to mayoral offices in the Posavje region. Informing members of the public in the event of an accident at the Krško NPP consist of informing the population in the affected areas and informing the general public. In the event of a general emergency being declared the population shall be alerted of the imminent danger of a radioactive release which could pose a risk to the population by an alarm sound which could activated by the Krško Regional Notification Centre. This shall be followed by an announcement of the implementation of protective measures delivered through the national and local media. Instructions for the population following the alarm shall be prepared in advance and shall be enclosed with the regional plan. Informing the public about the enforcement of protection, rescue and relief operations within governmental competence shall be the responsibility of municipalities, government and ministries. In the event of an accident the public shall be informed through the media. In the last exercise the national radio and national TV informed the population like in the real accident.

Seq. No	Country	Article	Ref. in National Report
73	AUSTRALIA	Article 16	

Question/Comment

As presented in the report, the respective roles and responsibilities of the Administration for Civil Protection and Disaster Relief, the SNSA and the Krsko NPP remain somewhat unclear. In particular, the first two organisations are said to play the key roles in emergency preparedness but important responsibilities are also outlined for Krsko NPP. For an emergency with potential off-site consequence what is the sequence of events and the responsibility of each organisation?

Answer

As stated in the national report the roles and responsibilities of the Administration for Civil Protection and Disaster Relief and the SNSA were described in more detail in the previous two National Nuclear Safety Convention Reports.

The Administration for Civil Protection and Disaster Relief (ACPDR) is accountable for the maintenance of National Nuclear Emergency Plan. During the response phase of the nuclear accident ACPDR provides support in implementation of protective actions and it is responsible for the organization of civil protection forces in the nuclear installations. The SNSA competencies are focused on-site, i.e. on the procedures and measures related to the on-site emergency plan, inspection of technical support centre, emergency personnel training and on-site drills and exercises.

The sequence of events during an emergency is (a) notification (NPP-National and Regional Notification Centre-authorities), (b) activation of necessary personnel within the organisations based on the level of emergency, (c) response is led by the National Civil Protection Headquarters (NCPH) and its Commander as a chief decision-maker; the NCPH is assisted with technical expertise of the SNSA; the Administration for Civil Protection and Disaster Relief is responsible for communication support, logistics and support in protective action implementation; other Ministries provide support in the area they are accountable for, (d) the important aspect is radioactivity control, which is provided by mobile measuring teams and stationary laboratories.

Seq. No	Country	Article	Ref. in National Report
74	AUSTRIA	Article 16	

Question/Comment

Is the off site emergency planning in Slovenia considering insights of probabilistic evaluation of accidents sequences and expected release categories? Are you prepared to share those information with your neighboring states in order to enable optimization of their (i.e. neighbor's) emergency preparedness for nuclear accidents?

Answer

The "Threat Analysis for the Nuclear Accident in Slovenia", which served as an input document for the preparation of National Nuclear Emergency Plan, evaluated the probability for a core melt in pressurized water reactors. The source terms for different accident scenarios and their probability were calculated in the framework of the Krško NPP Probabilistic Safety Analysis (PSA) Level 2. These source terms could be used during the assessment of likelihood and scale of radioactive release by the expert group which consists of nuclear experts.

The PSA document is the proprietary document of the Krško NPP, which was produced on demand by decision of the SNSA. The SNSA is willing to share the information with the neighbouring states to the extent needed to bring their emergency planning in line with international practice.

Seq. No	Country	Article	Ref. in National Report
75	AUSTRIA	Article 16	

Question/Comment

Apart from the notification of an accident as required by the Convention on Early notification will the Slovenian emergency authorities and/or NPP in Slovenia be able to provide estimates of "expected source term before" the release (i.e. during an accident, when a release becomes imminent) as well as actual source term and the local weather data at the time of release?

Answer

Slovenia has resources (human and technical) to produce the "expected source term before" the release. However, one has to recognize the difficulties, i.e. uncertainties, associated with this task. In the Krško NPP there are technical means to provide the necessary measurements

to accomplish this task, i.e. post-accident radiation monitors including high range radiation monitors in the containment, post-accident sampling system, monitors in the vicinity of the plant and mobile radiation monitoring teams. For the Krško NPP the on-line local meteorological data can be obtained from the instruments located in on-site mast and four meteorological stations within the 10 km radius of the NPP.

Seq. No	Country	Article	Ref. in National Report
76	CROATIA	Article 16	Ch. 16.2, p. 56

Question/Comment

Does the revised National Nuclear Emergency Response Plan includes provision for prompt information of Croatian warning point about any kind of declared emergency class in Krško NPP?

Answer

For the time being, all emergency classes (alert, site emergency, general emergency) are notified to Croatian State Notification Centre from the Slovenian State Notification Centre, which receives notification directly from the Krško NPP.

Seq. No	Country	Article	Ref. in National Report
77	CROATIA	Article 16	Ch. 16.2, p. 56

Question/Comment

Clinical Medical Center Rebro in Zagreb is equipped for providing appropriate medical help and therefore assigned as an institution for receiving of persons injured in case of radiological related accident. How did the Slovenian side define the protocols for transport of injured persons across the Slovenian – Croatian border?

Answer

The medical treatment of irradiated (and/or injured) persons by the Clinical Medical Center Rebro in Zagreb was agreed by the agreement between the afore mentioned medical institution and the Krško NPP. The subject of the treatment are the Krško NPP personnel. The authorities were not involved in defining the asked protocols, but the Krško NPP maintains a procedure for transport of injured persons to medical institution, which is a procedure in the set of Emergency Implementing Procedures.

Seq. No	Country	Article	Ref. in National Report
78	PAKISTAN	Article 16	Section 16.1

Question/Comment

Please elaborate what does a “complete radiological emergency plan” signify in relation to civil protection regulations? What is the frequency of exercising the Krsko NPP emergency plan for off-site facility and the off-site public authorities’ facilities? What are the criteria used to determine the different protection measures for the public living within the area of planned urgent protective actions (sheltering, evacuation, distribution of stable iodine tablets etc.)?

Answer

The expression “complete” radiological emergency plan is referring to previous legislation on the final safety analysis report (FSAR) which requested only the information about the radiological emergency plan. The Act of 2002 clearly stipulates that the radiological emergency

plan itself is a part of FSAR. The actual content of the emergency plans including NPP's on-site radiological emergency plan is regulated by the secondary legislation issued on the basis of the Act on Protection against Natural and Other Disaster (i.e. basic legal document in the area of civil protection).

The current frequency of exercising is once a year for the on-site emergency exercise and once in eight years for a full scope national nuclear exercise. The criteria for different protection measures are based on intervention levels, which are similar to those described in IAEA Safety Series No. 109 "Intervention Criteria in a Nuclear or Radiation Emergency".

Seq. No	Country	Article	Ref. in National Report
79	SWITZERLAND	Article 16	page 56

Question/Comment

The Krško NPP had prepared an information brochure for the population living within the area of planned urgent protective actions. What is the content of this brochure and up to which distance around the NPP was the brochure distributed?

Answer

The brochure was distributed to households within the urgent protective actions planning zone, which is in 10 km radius of the Krško NPP. The brochure titled "How to React in Case of a Nuclear Accident" contains material on:

- the principles of operation of the Krško NPP,
- general facts about radioactivity, radioactive release and classification of nuclear emergencies,
- methods of notification of the emergency to the population,
- a description of activities for each urgent protective action (e.g. sheltering, administration of potassium iodide, evacuation) and protective actions in relation to the food-chain,
- a preparation phase for evacuation.

A glossary of terms is attached. Enclosed is the map of evacuation routes within the urgent protective actions planning zone. On the reverse side of the map there is a list of individual settlements with information on the evacuation routes and evacuation muster points, brief information on protective measures, a list of radio stations and TV channels, which would broadcast information about the emergency and the countermeasures.

Seq. No	Country	Article	Ref. in National Report
80	GERMANY	Article 16.1	p. 55

Question/Comment

Emergency plans are public documents. What was the response of the public to these plans?

Answer

Summary of emergency response plans is available at Internet (<http://www.urszr.si/slo/page.php?src=na14.htm>). Emergency plans were presented to the public in the affected area but the attendance of the public was below expectations.

Seq. No	Country	Article	Ref. in National Report
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81	GERMANY	Article 16.1	p.57, 16.4 last para
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Question/Comment

Regarding the experiences of the unannounced exercise mentioned, please explain in more detail the findings. What are the reasons requiring more planning in the area of exercise observers?

Answer

A scenario of the unannounced exercise was based on a design basis accident - therefore there were no significant radioactive releases to the environment. The exercise was "driven" by the staff from the full scope simulator. The findings of the unannounced exercise could be divided in two groups: for the Krško NPP and the SNSA. In the Krško NPP some participants when they were called in they had not been informed that this was an exercise. The shift turnover was exercised successfully. The Krško NPP mobile radiation monitoring team was dispatched although this was not foreseen by the scenario. The evacuation of the NPP was tested and should be improved. For the SNSA there was substantial delay in the delivery the notification to the on-duty officer because the operator in the State Notification Centre was not informed that SNSA should play the exercise as well. After the activation of the SNSA staff was started the three emergency groups were operable in 40-90 minutes from the start of activation. For the unannounced exercises one needs enough observers who are properly briefed about the exercises. With unannounced exercises one has to keep the number of observers at minimum to prevent leak of information and treat all information about the exercise confidential - these are the aspects which need different planning as with the announced exercises.

Seq. No	Country	Article	Ref. in National Report
82	AUSTRIA	Article 17	

Question/Comment

Are there any regulations that ensure the re-evaluation of relevant site related factors to ensure the continued safety acceptability of the nuclear facility? How is re-evaluation of continued site acceptability handled as part of the Periodic Safety Review (PSR) process?

Answer

The PSR is a legal requirement stipulated in the article 81. of the Act. The re-evaluation of continued site acceptability is addressed through the Periodic Safety Review (PSR) process. The Probabilistic Seismic Hazard Assessment (PSHA) for seismic events is produced and implemented in the PSA for seismic events.

Seq. No	Country	Article	Ref. in National Report
83	AUSTRIA	Article 17	

Question/Comment

Has the seismic hazard analysis for the Krško NPP been re-evaluated? If so, what methods were employed in the re-evaluation and how does the seismic hazard estimate (including uncertainty) compare with previous estimates? Are there any implications of the revised seismic hazard estimate for the seismic design basis of the NPP? Has the revised seismic hazard estimate been reflected in the latest PSA revision (and with what results) for the NPP?

Answer

The seismic hazard analysis for the Krško NPP site has been re-evaluated. The field of assessment covered both, the Probabilistic Seismic Hazard Assessment (PSHA) and the Seismic Probabilistic Safety Assessment (SPSA). The uncertainties were included.

The PSHA has shown ground response spectra with higher peak ground accelerations than previous similar analyses. However, the spectra have been convoluted to the foundation level spectra, the resulting foundation level spectra were of the similar magnitude as before. The foundation level spectra were one of the main inputs to the SPSA analysis, which took into account also newer data about the seismic capacity of the equipment, took credit for some systems previously assumed to be unavailable after a seismic event and removed some conservatisms in the plant model. The result did not show any increase of the Core Damage Frequency. However, steps are foreseen to reduce it even further through the implementation of a PSR Action Plan.

Seq. No	Country	Article	Ref. in National Report
84	SWITZERLAND	Article 17	page 59-60

Question/Comment

What are the criteria that a site is suitable for the construction of a nuclear installation?

Are the site-related factors periodically reassessed?

Are there cross border consultations in connection with the licensing or construction of nuclear installations in border regions? Are there agreements of information exchange with neighbouring countries in the vicinity of nuclear installations, which enable these countries to evaluate the safety impact on their own territory of the nuclear installation?

Answer

The criteria for siting and construction of a nuclear installation are set in Slovenian legislation. In the licensing process for approval of construction, the licensee has to present the SAR. During operation of the NPP both, the PSHA and the SPSA are performed when important new information on seismic hazard of the site and design changes occur.

NPP Krško is a joint venture of Slovenian and Croatian electric utilities. Therefore the licensing processes and safety of operation are transparent to both countries. But, one should note that NPP Krško operates under Slovenian legislation and law enforcement.

Seq. No	Country	Article	Ref. in National Report
85	GERMANY	Article 17.3	p. 59

Question/Comment

To what extent are site related hazards reassessed during the plant lifetime? Are respective findings transferred into the updated safety analysis report?

Answer

The extent of other site related hazards reassessed during the plant lifetime is similar as described above. The respective findings are transferred into the updated safety analysis report.

Seq. No	Country	Article	Ref. in National Report
86	ARGENTINA	Article 18	page 63

Question/Comment

Among the new programs that were established in the KRSKO NPP, it was included the risk evaluation of preventive on-line maintenance programs.

- Could Slovenia provide detailed information about the content and implementation of this program? .
- What benefits and experience were obtained from the program application?

Answer

On-line maintenance (OLM) program was established to reduce outage time by shifting maintenance activities from outage to the power operation, considering system configuration control with respect to safety and availability of the power plant. OLM program covers corrective, preventive and predictive maintenance, surveillance testing, inspections, calibrations and implementation of modifications.

OLM activities for the new cycle are predicted in advance at the latest one month after the completion of the outage, while work orders are issued four weeks before planned OLM activities. Weekly planned OLM activities are scheduled to start on Tuesday and are to be completed not later than on Friday. Monday is reserved for corrective activities of lower priority.

OLM activities are limited in two ways: their duration shall not exceed 55 % of allowable outage time as specified by technical specification for that equipment and there are limitations regarding OLM effects on core damage probability (CDP). Weekly CDP due to OLM shall not exceed the value of $6E-7$. The CDP is assessed in advance. Afterwards, the quantification based on the actual time used for each OLM activity is performed. Yearly cumulative CDP due to OLM shall not exceed the value of $4E-6$. Mentioned limitations do not apply for corrective activities. Corrective activities are performed with regard to their priority. Urgent intervention can cause rescheduling of planned OLM activities.

Weekly reports of planned and performed preventive OLM activities are regularly submitted to the regulatory body. Contents of weekly reports include all systems involved in preventive OLM activities, evaluation of corrective activities imposing additional risk impact on preventive maintenance, components with explicit impact on core damage frequency and calculation of CDP for preventive maintenance.

Till now, preventive OLM activities have been inside the set limits for weekly CDP as well as for yearly cumulative CDP. Nevertheless, sometimes quantification of the performed OLM activities results in greater CDP than the value assessed in advance. The power plant has been asked for justification and, if necessary, the regulatory body performed focused inspection on problematic issues.

The main benefit from the OLM program is definitely disburdening of the maintenance staff during the outage of the plant. During an outage the maintenance staff can be very busy if all of the equipment needs to be maintained, thus the possibility of a human mistake increases. OLM program supports better planning of the equipment maintenance regarding the availability of man power, the need for availability of the equipment as well as the set limits of CDP.

Another benefit is also a better insight into the contribution of the maintenance of the equipment to the overall risk which the plant management has through the Probabilistic Safety Assessment analysis. This enables more efficient allocation of the resources while lowering the risk and identification of "critical" equipment that has to be available from the PSA point of view during the maintenance of the particular equipment.

Seq. No	Country	Article	Ref. in National Report
87	AUSTRIA	Article 18	

Question/Comment

Since the 9/11/2001 the risk of terrorist attacks has to be taken into consideration. What actions have been taken by the NPP or the regulatory body to analyse the impact of a terrorist attack by a civil aircraft crash on the reactor building and the spent fuel storage and which measures have been taken for prevention or mitigation of such an event?

Answer

Since 1991, when the independence of Slovenia was declared, the regulatory body has had some relevant analyses, which evaluated the effects of military attack, including military aircraft. After the 9/11 attack a technical support organisation has prepared for the regulator a report about the steps undertaken in the world. Also a meeting with the air control authorities had been organized. During the meeting the regulator expressed its concern and asked them to undertake appropriate steps. The regulator has asked the NPP to perform (voluntarily) an analysis and corresponding corrective actions. After assessment of solutions to this problem in other countries of the world, the position of SNSA is not to require any special or additional measures to prevent or mitigate such an event. However, number of improvements have been implemented on site by the operator, among others:

- More restrictive site access controls for all personnel;
- Enhanced communication and liaison with the state agencies;
- Enhanced readiness of security organisation by strengthening training and qualifications programs for plant security forces;
- Required vehicle checks at greater stand-off distances;
- Improved capability to respond to events involving explosions or fires.

In addition, SNSA expects, that some of the actions to be implemented after the PSR will contribute also to the mitigation of consequences of possible terrorist attacks (ie. enhancement of emergency power supply systems).

Seq. No	Country	Article	Ref. in National Report
88	GERMANY	Article 18.2	p. 62

Question/Comment

The storage capacity of the spent fuel pool has been increased by a factor of two.

What are the results of the safety analysis for the re-racking of the spent fuel pool regarding loss of cooling, loss of water from the fuel pool, and external hazards?

Answer

The reracking of the spent fuel pool at Krško Nuclear Power Plant is subject to licensing on the basis of U.S. NRC regulations and Slovenian Regulatory Body (URSJV). Compliance with requirements of both is given when analysis yields the conclusion that all applicable criteria established by the U.S. NRC in regulatory guidance, standards, and regulatory precedents are satisfied. The design work performed for the Krško SFP Reracking Project includes the following analyses:

1. Storage Capacity Analysis
2. Structural Design of Racks
3. FHB and SFP Structural Analysis
4. Nuclear Criticality Analysis
5. Thermal-Hydraulic Analysis
6. Radiological Protection and ALARA Analysis
7. Cooling Capacity Analysis of SF and Complementary Systems (CCS, ESW)
8. Fuel Handling Accidents and Contingency Analysis

Seq. No	Country	Article	Ref. in National Report
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89	AUSTRALIA	Article 19	
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Question/Comment

For the period covered by this report (2002-04) what were the statistics for application of the AOPs, EOPs and SAMGs (Article 19.4) and the INES reports (Article 19.6)?

Answer

There were three applications of EOP's all in connection with reactor trips in a period from 2002-2004. There were several applications of the AOPs and, of course, no application of SAMGs in this period.

There were 3 INES reports issued in the period 2002-04, of which there was one transport event (INES 2), one radiation event (INES 1) and one event at the NPP (INES 0). The latter event occurred in 2002 and was caused by a malfunction of temperature indicator of a reactor coolant pump which gave a false indication of overheating of the pump bearing.

Seq. No	Country	Article	Ref. in National Report
90	AUSTRIA	Article 19	

Question/Comment

The Report states that the decision for the operating license is based on prescribed documentation and an opinion of an approved expert for radiation and nuclear safety. On which basis of information is the expert's judgement and how is the extent of the necessary documentation regulated?

Answer

Article 34 of the Regulation on siting, construction, commissioning, start-up and exploitation of nuclear facilities prescribes the documentation (15 items, among them safety analysis report, operation limits and conditions, QA program, radiological emergency response plan, etc) that is required for issuing of operating license.

Draft of a new Regulation on approved experts for nuclear and radiological safety in attachment 3 defines that the opinion of approved expert shall be based on documentation of nuclear facility, legal documents and requirements, standards, regulator's decrees and shall take into account also operational experience, analyses and evaluations, usage of procedures, criteria and requirements. This regulation is under review and the Minister of Environment should pass it in 2005.

Seq. No	Country	Article	Ref. in National Report
91	AUSTRIA	Article 19	

Question/Comment

Performance indicators are used for assessment of the operation by the Krško NPP. In which way are the results of such assessment used within the NPP and how is the regulatory body involved in the analysis of this assessment?

Answer

The results of the operational plant safety performance indicators reviews should identify weak points and define corrective actions for the adverse trend indicators. SNSA receives performance indicators from Krško NPP at regular intervals (monthly, quarterly or yearly) and reviews them against legal requirements (limits). Trend of the indicator values is also assessed. In case of irregular trends or exceeded values, SNSA requires an explanation from Krško NPP

and may organize a topic inspection to the NPP to gather more information on causes for such abnormal state of the indicator. Indicators are presented and explained in the Annual report on the nuclear and radiological safety in Slovenia. Causes for irregular values are presented together with corrective actions to improve the indicator values in the future.

Seq. No	Country	Article	Ref. in National Report
92	AUSTRIA	Article 19	

Question/Comment

The Report states that the spent fuel will be disposed by the year 2050. What measures will ensure the safe storage in the time after operation and decommissioning of the NPP? What are the plans for construction of a dry storage of spent fuel?

Answer

According to current version of Decommissioning Program spent fuel will be stored in the spent fuel pool. In 2003 the capacity of the spent fuel pool was extended to provide sufficient storage capacities for next 20 years of operation. New racks were introduced and another heat exchanger was added to the spent fuel pool. The analyses assured safe storage from the point of criticality control and decay heat removal with application of single failure criteria. Additional analyses were performed also for a possible phase 2 of the reracking, which would allow further extension of storage capacity. As one of possible temporary option in spent fuel management after closure of the NPP, a dry storage was considered in a decommissioning plan. Dry storage is mentioned as an option and there are currently no plans for dry storage. Safe storage in the time after operation is foreseen 20 (40) years from now and safety measures will be followed based on the safety standards and requirements set up at that time.

Seq. No	Country	Article	Ref. in National Report
93	SWITZERLAND	Article 19.8	page 68-69

Question/Comment

Are there already requirements set up for the acceptance of waste at the final repository and - if so - are they reflected by the waste conditioning procedures applied?

Answer

Waste acceptance criteria for final repository of Low and Intermediate Level Waste have not been established yet. However, treatment, conditioning and onsite storage of operational LILW do consider some general guidance in term of acceptability of waste forms and packages for final disposal. For example, LILW is stored in solid form, lead is not used as a shielding in barrels, etc.

Seq. No	Country	Article	Ref. in National Report
94	FRANCE	Planned Activities	p. 70

Question/Comment

The report does summarize, or suggested by the guidelines for national report the activities planned by the regulator and the operator to improve safety. Could the Slovenia provide information about the main activities planned for further improvement?

Answer

The future actions that NEK will take to improve safety were influenced by considerations and perspectives of plant risk profile brought in by issues raised by PSR. The issues have been ranked according to their importance and they were addressed by means of corrective measures proposed, as described in Issues Ranking Report. In the frame of NPP Krško Periodic Safety Review, Phase 2, a comprehensive and documented review has been performed of the plant operational and design status. Review confirmed that the plant is as safe as originally intended and determined that there are any structures, systems, components, human activities or administrative processes that could limit the life of the plant in the foreseeable future. This review has not revealed any major safety issue. As a result, Krško NPP can safely operate, as a minimum up to completion of the next Periodic Safety Review. The review has nevertheless identified a number of recommendations to further enhance the plant safety and its documentation. The proposed measures were prioritized according to their strength and the relevance of issues they address. Examples of such activities are i.e., installation of additional AC power supply for PDP pump and battery chargers, inspection and replacement of some transmitters, improved version of technical specification etc. Other planned modifications include providing a double containment sump, replacement of reactor vessel head, actions from fire protection action plan, installation of new low pressure turbine, actions to mitigate effects of seismic and external flood risk. PSR also identified many changes to the Technical specifications LCOs and SRs, as well as changes to AOPs and EOPs and some organizational changes. NPP also plans actions to address corrosion, ageing of SSCs and EQ.

To improve safety, the regulator has started with new methods of supervision of NPP operation and safety, such as financing of research projects (ageing, core parameters of extended cycle, PSA applications, safety culture assessment in NPP etc.), analysis (root cause and PSA) of events in the NPP, of outage activities and inspection findings during testing and outage. As part of NEA system of safety performance indicators, the regulator established a new, safety oriented, system of performance indicators for plant supervision. A research project is aimed also to establish a system for risk informed inspections to the NPP.

APPENDIX 1

Finland – Article 14.1

Question: Could you provide some information on the content and positive effects of the recent comprehensive PSR performed in Slovenia?

NPP Krško Periodic Safety Review

PSR content

It has been a comprehensive safety review and the following safety factors were considered:

Safety factor 1: Operational Experience

- Major Operational Problems
- Record requirements for operational data
- Evaluation for failure rates and safety performance data
- Feedback of relevant experience of other NPPs

Safety factor 2: Safety Assessment

- Safety standards and practices topic list review
- Operating limits and procedures
- Maintenance, test and inspection procedures
- Modification and backfitting procedures
- Radiological protection systems and procedures
- Probabilistic Safety Assessment
- Design Bases Accidents/Severe Accidents
- Seismic design and seismic PSHA Analysis

Safety factor 3: EQ and Ageing Management

- Equipment conditions
- Ageing management
- Equipment qualification

Safety factor 4: Safety Culture

- Organizational factors
- Quality Assurance
- Human factors

Safety factor 5: Emergency Planning

Safety factor 6: Environmental Impact and Radioactive Waste

- Radioactive waste storage and handling
- Environmental impact

Safety factor 7: Compliance with license requirements and prioritization

- Compliance with license requirements
- List of issues from various review process,
- Prioritization process

Positive effects

In the frame of NPP Krško Periodic Safety Review a comprehensive and documented review has been performed of the plant operational and design status. The review has not revealed any major safety issue. As a result, Krško NPP can safely operate, as a minimum up to completion of the next Periodic Safety Review. The review has nevertheless identified a number of recommendations to further enhance the plant safety and its documentation.

The highest ranking recommendations from PSR NEK with direct link to Plant Safety Issues are connected with I&C Safety Related Systems like:

- Inspect Barton transmitters housing and replace if necessary
- Inspect the Safeguard driver boards for case and lead corrosion of the 2N2405 transistors

The highest ranking recommendations from PSR NEK of Re-evaluation of Safety Basis Issues are connected with Review of Non-Seismic hazard Analyses also covering PSA External Events Non Seismic like:

- Frequency of External Floods from High River Flow
- Frequency of External Floods from Dam Failures
- Frequency of High Winds
- Credit for Operator Actions

Nevertheless, the implementation of the recommendations will be carefully monitored.

Additional, in our opinion quite important positive effects has been:

- Better overall understanding of the relevant safety insights of the plant.
- No major issue was found.
- Comprehensive review of all relevant safety factors.
- There is room for improvements in number of areas. Mostly in safety assessment.
- Prioritisation process performed to set up the plant improvements action plan.
- Initiation of the comprehensive Ageing management program.
- It is expected that the corrective measures, which have been suggested, would improve the level of the safety.

APPENDIX 2

Answer to question 2 – Russian Federation, Article 14.1 – 14.1.2

14.1.2 Implementation

In accordance to the Slovenian legislation, with respect to every intended change relating to the facility or to the management method used or to the operation of the facility, including maintenance work, inspection, testing or the introduction of a technical, organisational or any other change relating to the aforementioned tasks (hereinafter: change), which affect or could indirectly affect the content of the safety report, the facility manager must evaluate the intended change in relation to its significance for radiation or nuclear safety.

With respect to their significance for radiation or nuclear safety, changes may be:

1. **such that it shall be necessary only to notify the competent ministry,**
2. **such that the intention of their implementation must be reported to the ministry responsible for the environment,**
3. **of significance for radiation or nuclear safety and for the implementation of which a decision from the ministry responsible for the environment must be obtained.**

Screening criteria for determining the need for safety evaluations, guidance for performance of these safety evaluations and requirements for documentation review and approval are specified in accordance with 10 CFR 50.59.

In practice the selected modifications in the first group are all the changes for which during the safety evaluation screening process the answers for the questions:

- Does the proposed activity change the facility from the description in the SAR?
- Does the proposed activity change the procedure from the description in the SAR?
- Does the proposed activity involve a test or experiment not described in the SAR?
- Could the proposed activity affect nuclear safety in a way not previously evaluated in the SAR?

If one or more of the above questions is answered YES, the Safety Analysis Report is affected, the licensee has to perform the Safety Evaluation - it has to answer the following questions:

- Does the proposed activity increase the probability of occurrence of an accident previously evaluated in the SAR?
- Does the proposed activity increase the consequences of an accident previously evaluated in the SAR?
- Does the proposed activity increase the probability of occurrence of a malfunction of equipment important to safety previously evaluated in the SAR?
- Does the proposed activity increase the consequences of a malfunction of equipment important to safety previously evaluated in the SAR?
- Does the proposed activity create the possibility of an accident of different type than any previously evaluated in the SAR?
- Does the proposed activity create the possibility of a different type of malfunction of equipment important to safety than any previously evaluated in the SAR?
- Does the proposed activity reduce the margin of safety as defined in the basis for any Technical Specification?

If all the questions in Safety Evaluation are answered NO, the proposed action (change) is not an unreviewed safety question and is selected in the second group of modifications which must be

reported prior to its implementation for Slovenian Nuclear Safety Administration (SNSA) approval.

If any of the questions in Safety Evaluation are answered YES, the proposed action (change) constitutes an unreviewed safety question and an SNSA decision is required prior to its implementation. Decision for any changes in operational conditions and limitations (Technical Specifications, TS) must be obtained too.

Screening of changes, except TS, is not required for editorial corrections or format changes. Changes not listed in the Safety Analysis Report do not normally require a Safety Evaluation.

When considering the term SAR other documents which may contain licensing basis information or commitments to SNSA shall be included. Examples of documents to consider are:

- Emergency plan
- QA program
- Reload Licence Submittal
- Fire Protection Manual/Analysis/Plan
- Evaluation and Responses to URSJV Requests
- Offsite Dose Calculation manual
- Precess Control Program
- Station Blackout Analysis
- Security Program

Control of temporary modifications is done through specific procedure which requires safety screening and evaluation as for permanent modifications.

Examples:

Changes such that it shall be necessary only to notify the competent ministry – i.e. SNSA was only notified

1. Modification 358-CH-L
»Assurance of uninterrupted operating of PIS system (PIS level 1 UPS Sources)«.
2. Modification 219-CH-L
»Transfer of PIS data to Ljubljana (ERDS&EOF)«.
3. Modification 254-CH-L
»Integration&Connection of technologic computer net«.
4. Modification 269-HC-S
“Replacement of oxygen cylinders (O2) on system HC”.
5. Modification 265-XP-S
“Alternative power supply for auxiliary station transformer T3”.

Changes such that the intention of their implementation must be reported to the ministry responsible for the environment – approval has been obtained from the SNSA

1. Modification 086-CC-L
Installation of Containment isolation valve in CC (Component Cooling System) of RCP pump cooling line. Additional Isolation valves were installed in CC line for to the Reactor Coolant pumps and to heat exchanger of primary circuit drain tank (RC- Reactor Coolant System Drain Tank Heat Exchanger). Installation of new valves enables testing of reactor building`s CC penetrations with air. Installation of new valves in a pipe system required modifications of the pipe supports. During NPP operating these valves are locked in open position.

2. Modification 339-RC-L
 “Modernisation of the system for reactor pump inspection of vibrations (RCP vibration monitoring)”. With modification was removed analyser Bruel&Kyaer and installed new box with control system Bentley Nevada in DEH.
 Sensors with pre-amplifier of absolute values were reconnected to new system (7 measurement channels for each pump). Surveillance expanded with installation of new measurement channels, measures of relative moving of axis and measures of speed (8 measure channels for pump). Configuration of alarms on MCB was kept in the same function, but possibilities of diagnostics expanded. New surveillance system will collect data in real time and observe, store and alarm when the values will exceed limitations (alarm, trip).
3. Modification 248-VA-S
 »Pressure regulation in AB Auxiliary Building«. Modification makes better control of permanent negative pressure in Aband operating of PCV 6635 valve. Controller with the possibility to set the values (set-point) with non-active range (dead-band), was installed , and assured stable operating of valve and switched off its permanent cyclic operating.
4. Modification 372-CT-S
 “Replacement of instrumentation for monitoring of temperatures of CT –pumps”. Two displays of temperatures (for every pump) were replaced. New Yokogawa digital displays were installed and its wire connections adapted. Sensors and installation remain the same.
5. Modification 376-FP-S
 “Replacement west part of hydrant system”. In a project of replacement of whole hydrant system piping with new HDPE were changed pipes from valve V3 and to V3A (west part of facility between the building for decontamination and intermediate and auxiliary building (IB and AB)). Both isolation valves were replaced too. This part of hydrant system was in the last period isolated because of leaking. At the same time were replaced also all hydrants on this lay-out.

Changes of significance for radiation or nuclear safety and for the implementation of which a decision from the ministry responsible for the environment was obtained.

1. 152-RC-L: »RCS Protection against unexpected pressure rise at low temperatures« (Low temperature Overpressure Protection – LTOP). Intention of the modification was to assure protection of RCS against sudden rises of pressure when operating at low temperatures. Protection is requested in NUREG 0800, Chapter 5.5.2 For the overpressure protection the existing relief valves on the RHR lines were replaced with the bigger with greater relief capacity. Consequentially also the relief pipes and support were modified. The electrical interlock for the closure of RHR to RCS isolation valves was removed.
2. 350-RC-L: Loose parts monitoring
 Analog system for identifying loose parts in primary circuit, was replaced with the new digital multichannel system. Ten new detectors have been added on the primary and secondary side (Steam Generator)- Acquisition Cabinet with digital system have been installed in computer room. Alarm which will activate abnormal state of noise in RCS leads to an alarm window in MCR.
3. 356-FP-L: »Installation of Fire protection alarms in In Drum Drying System (IDDS)«. After the event of spontaneous ignition of rag, that have been dried in IDDS SNSA licensed an application to continuously observe IDDS from Fire protection aspect. The event didn` t have any consequences on operating of facility neither did cause any material damage. V in IDDS two smoke detectors and manual actuation switch were installed , that covers all the space and are connected to the main FP cabinet.