General questions

Given the fact that Slovenia and Croatia share ownership of Krško, what is the relationship between the Slovenian regulator and Croatian energy officials?
SNSA is the regulatory authority for NPP Krško on nuclear safety. Relationship between the regulators of the two countries is good. Bilateral agreement on early exchange of information between Slovenia and Croatia is in effect, Croatian representative is a member of Slovenia Expert Commission on Nuclear Safety. Each licensing decision made by SNSA is sent for information to the Croatian regulator. There is exchange of information from the early warning networks of both sides, co-operation in monitoring of NPP Krško environment and in emergency planning. Since the very beginning each license or amendment to license issued to NPP Krško is in parallel sent for information to both: Slovenian regulator and Croatia energy officials.

In relation to upcoming privatisation of energy sector, how this fact will be faced because possible economy pressures which may be influence in the nuclear safety?
This is a generic problem that regulatory authorities are facing in many countries with operating NPPs. According to Slovenian Energy Act (September 1999), privatisation of NPP Krško is not possible. Nevertheless, Slovenia is closely following regulatory experience and trends in EU countries where the privatisation of nuclear sector is in more advanced stage.

Article 6

The report clearly stated the list of recommendation and measures taken to improve the plant safety. Which is the planned schedule that consider the on-going improvements?
Schedule for the completion of the ongoing activities is four years.

Which plant actions are planned in case of detecting earthquakes of different intensity levels?
Plant is equipped with the modern strong motion instrumentation capable to perform OBE (Operational Basis Earthquake), SSE (Safety Shutdown Earthquake) and CAV (Cumulative Absolute Velocity) analyses within 3 minutes after an event. The operators have appropriate Abnormal Operating Procedure - Earthquake per which appropriate plant parameters verifications are done and in the case that OBE is exceeded, the plant has to be placed in hot shutdown. After that appropriate plant walkdowns, equipment verifications (at the location where OBE was exceeded) and analyses are required before plant startup and power operation. If the SSE is exceeded an extensive plant analyses and verification would be required. In such case the regulatory body would need to be involved too (licensing).

How have the ICISA recommendations been addressed, and what is the current status of the implementation of these recommendations?
All ICISA recommendations were addressed and resolved. The last recommendations such as full scope plant specific simulator and SG replacements were fulfilled during plant modernisation in years 1999 and 2000.

The Report contains information on requirements and recommendations status for IRRT and WENRA missions and none is presented for the IAEA ASSET and WANO missions. What is the status of requirements and recommendations for IAEA ASSET and WANO missions?
The report and information on status of implementation of IAEA ASSET mission recommendations were provided in the first national report in year 1999. WANO is an organisation, which is not part of regulatory process and reports are considered internal.

It is understood that the concept of Periodic Safety Review (PSR) has not yet been established in Slovenia. Are there any plans to adopt PSR-practice in near future?
The concept of Periodic Safety Review in Slovenia has been established by SNSA decision at the end of 2000. The NPP Krško PSR program based on IAEA recommendations was accepted by SNSA in June 2001. The NPP Krško PSR will be completed by the end of 2003. The concept of PSR will be integrated in the new Slovenian legislation this year.

It is understood that some improvements have been done at the Krško plant to take into account severe accidents. Which kind of requirements are now in force for severe accidents. Are there still plans to improve the plant in this respect?
Momentarily, the regulatory requirements do not explicitly set any demands in the area of beyond design basis accidents. The plans to improve the plant in this respect will be set up after reviewing the final report of the IAEA RAMP mission and especially after the findings of the on-going PSR are available. Recent modifications and present considerations for further modifications are based on PSA level 1, 2 and external events studies. Recently wet cavity modification has been done. It enables cooling of the debris but not cooling of the RPV. Under consideration are the introduction of filtered venting of the containment and installation of passive autocatalytic hydrogen recombiners for coping with BDBA. SNSA is studying severe accidents with help of MELCOR and CONTAIN code NPP Krško models. NPP Krško is using MAAP4 code model. This one is also used by the full scope simulator at NPP Krško for simulating severe accidents. Procedures to cope with severe accidents (EOPs, EIP and SAMGs) are continuously upgraded to reflect modifications of the NPP and most recent knowledge about severe accidents.

It is reported that all recommendations of the IAEA ASSET mission were addressed and most of them concluded. A few

long-term requirements are under implementation.

1. Could you explain a list of long-term requirements, those are under implementation, with countermeasures and schedule?
2. Is there any document related to this matter?

All long-term requirements, which were under implementation, were already successfully implemented. Among the most important are the following:

1. The planned enhancement was achieved in maintenance personnel training on a regular basis;
2. The new plant specific full scope simulator was installed and continuing training for operations personnel is currently being performed;
3. The Foreign Material Exclusion Program has been established and successfully implemented in everyday operation and maintenance;
4. On-line maintenance program was defined and implemented with great success in plant safety and reliability improvement;
5. Improvement during Residual Heat Removal System operation is achieved by installing RHR pumps ammeters and cold overpressure protection system;
6. Various modifications on a different plant systems were implemented as a part of steam generators replacement project all in compliance with the codes and standards, approved for use in NPP Krško.

Appropriate administrative procedures and long term goals defined in station policy guidance adequately cover all programs and enhancements.

It is reported that the Government adopted in the year 1999 a three-year plan to upgrade the state seismic network to 25 seismic stations in order to improve seismic monitoring of the whole territory of Slovenia.

1. Does this area have any experience of a big earthquake in the past?
2. How do you evaluate the possibility of a big earthquake?

1. No, historically the highest earthquake recorded close to the plant was magnitude 5.8 on the distance of 9 km (year 1917).
2. For the evaluation of possible earthquake a Probabilistic Seismic Hazard Analyses was performed for the NPP Krško site using the combined approach developed by EPRI and LLNL (Lawrence Livermore National Laboratory). This study will be revisited, revised this year based on all the new knowledge obtained in additional field investigation in the period 1994 - 2000.

The report describes in Article 6, page 15 that Krško has implemented the Regulatory Conformance Program Compliance Review and created a list of NRC regulatory requirements issued from 1975 to 1995 to implement as applicable.

What NRC regulatory requirements have been listed and what are the lessons-learned from the each implementation?

The following NRC requirements were listed and reviewed: Post-Three Mile Island Requirements and Recommendations, Unresolved Safety Issues, Generic Safety Issues, Regulations and Regulatory Guidance, Promulgated Rules, Proposed Rules, Generic Communications, and Other Regulatory Impacts. The number of documents reviewed and implemented exceeds several hundred and lessons learned for each item can not be described in short. Generic lessons learned is that implementation of requirements requires significant resources and allow the plant systematic and consistent follow up of safety requirements.

Article 7

NSC requires the Contracting Parties take the appropriate steps to ensure an effective separation between the functions of regulatory body and those of any other body or organisation concerned with the promotion or utilisation of nuclear energy. Taking into account that the legislation came from the federal legislation of the former Yugoslavia. Which changes have been introduced or will be introduced considered the commitment of the NSC about the independence of the regulatory body?
As stated in our report (Section 8.1, page 43) the Slovenian Nuclear Safety Administration was established at the end of 1987 by the Slovenian act, as an independent and functionally autonomous regulatory body. With an act of 1991 the SNSA came under the Ministry of Environment and Spatial Planning. Such an organisational solution within the governmental organisation frame was in line with the provisions of NSC regarding the separation between safety and promotion of nuclear energy. On latest changes within governmental organisation in this area - see more under Article 8 / answer to question No. 4 .

The Slovenian act gives specific competence to inspectors to stop the operation of the plant if the requisites are not fulfilled. What kind of enforcement actions have been applied since the plant commissioning in 1984? If it there are any please, give the example.
SNSA has ordered the plant to shut down in 1991 during the short war for the independent of Slovenia and in 1994 when the plant after occurring SG tube leakage went down to detect and repair (plug leaking tubes) and then return to operation. During restart, the SG leak was detected again, that could go over the daily TS limit and SNSA order the plant to shutdown. In addition there are two examples when inspectors imposed enforcement actions which resulted in delay of the plant restart after outage period 1. inspection of fuel elements and 2. during the outage inspectors requested to review EC results of SG tubes ISI inspection.

What is the schedule for completing the revision of the 1984 Act on Radiation Protection and the Safe Use of Nuclear Energy?
With the National Action Program Slovenia has laid down most of the legislative framework for the implementation of the EU's acquis; it is foreseen that the new nuclear and radiation act is adopted by the Parliament by the end of 2002, while the second level regulations are to be adopted in the period of 9 to 18 month after the promulgation of the act.

The nuclear and radiation legislation is being revised in Slovenia. Which kind of time schedule has been established for this work?
See answer to the question No. 3.

: What are the practical provisions for insurance of your nuclear power plants?
The third party liability for nuclear damage is governed by legislation as described in section 7.1. of the Report - page 31. The existing legislation is based on the Vienna Convention on Civil Liability for Nuclear Damage. Some further steps have been made from the time the report was prepared i.e.: • Slovenia became a party to the Paris Convention by accession with effect of 16 October 2001; • in November 2001 Slovenia sent to the depository of the Vienna Convention a notification of termination of application of the Vienna Convention (pursuant to the Article XXV.2, the Convention will cease to apply to Slovenia as of 12 November 2002) • in December 2001 Slovenia sent to the depository of the Brussels Supplementary Convention an application for accession to that convention.

Based on these steps, in December 2001 the Government adopted a new Decree which increases the amount of limited operator's liability and the amount of insurance for liability for nuclear damage from 42 million USD to 150 million SDR. The Krško NPP insured its liability for nuclear damage through the insurance contract concluded with the Slovenian Nuclear Insurance and Reinsurance Pool.

Article 8

It is reported that the 1980 Act empowers in Section 14 the appointment of organisations by the Regulatory Body to be its technical support organisations.

1. How is the budget mechanism works in the case of requesting assistance to a support organisation?
2. How many staffs are involved in the support organisations to the works of regulatory body assistance?

The 1980 Act does not provide mechanism which would regulate the financial means in case of requesting assistance of TSOs. The Act on general administrative procedure however provides ways of using TSO experts opinions during the regulation process, but in practice it is used seldom, due to difficult legal proceedings.
Basically, for all modifications which impact the current licensing basis a license amendment issued by the SNSA is required. As reported (under section 7.2., page 39) for Technical Specification (TS) changes, besides other requirements, the third party independent evaluation, performed by a TSO, is mandatory. The arrangements of performing such an evaluation are under the responsibility of the licensee. On the other hand the SNSA may also require some assistance from TSOs. For this purpose the SNSA has (see section 8.1., page 50 of the report) allocated some funds in its yearly budget. With respect to availability of the TSOs staff for the SNSA it must be outlined that the tasks carried out by these TSOs are threefold:

- independent safety review tasks, ordered by the licensee on a contract basis;
- independent verification activities during outage, ordered by the Krško NPP on the contract basis and the costs of which are billed also directly to the Krško NPP;
- expert tasks ordered mainly by the Krško NPP and sometimes by the SNSA.

The number of TSOs' experts, potentially available in the area of nuclear safety is around 100, while the staff involved in the assistance to the regulatory body is much lower and is limited by the financial resources, allocated in the SNSA's yearly budget as well as with the fact that the potential conflict of interest should be avoided since TSOs perform work also (and mainly) for the licensee.
It is expected that the new Act on nuclear and radiation safety will include a clear and straight provision with respect to ensure financial means for such TSOs support.

What measures are foreseen to guarantee adequate financial resources for the regulatory body for an independent safety assessment capability?

See answer to the question No. 1.

Which measures are foreseen to assure sufficient financial resources for the regulatory body in order to increase its capability for performing independent safety assessments?

See answer to the question No. 1.

The report mentions in §8.1 that, based on the last amendment of the Organisation and Competence of Ministries Act, the regulator SNSA and the energy section now report to the same Ministry of Environment and Spatial Planning. Thus the same Ministry is "covering both the promotion of energy production (also nuclear) and nuclear safety". Article 8 of the Convention stipulates that "appropriate steps shall be taken to ensure an effective separation between the functions of the regulatory body and those of any other body concerned with the promotion or utilisation of nuclear energy".
Can Slovenia indicate if steps are intended to ensure the effective separation requested to comply with Article 8?

The primary objective of the SNSA, as a regulatory body in the area of nuclear safety, is to ensure that the site, personnel, the general public and the environment are protected from possible adverse effect arising from the nuclear power plant.
For this purpose the Slovenian legislation empowers the SNSA with competencies as laid down in section 8.1., page 44

of the report. In those areas the SNSA deals with regulatory, inspection and technical tasks.
The SNSA as a regulatory body in the area of nuclear safety is a part of the Ministry of Environmental and Spatial Planning to which the energy sector was transferred, by the last amendment of the Organisation and Competence of Ministries Act.
Slovenia, is aware of the fact that the double role lies now with the Ministry and is planning to improve the situation through legislation to be adopted in the future. Although, both safety and promotion of nuclear energy are formally within the same ministry, the SNSA's functionally autonomous position within the ministry in evaluating safety is not - in the day to day work - compromised. It has to be stated that the safety (SNSA) and the "promotion of nuclear energy" (energy sector) are two separated units of the Ministry, headed by the director of SNSA and state secretary for energy who are both responsible for their work to the minister and are reporting to minister independently. Further more the nuclear safety inspection is still part of the SNSA and has not been incorporated into Inspectorate of the Republic of Slovenia for Environment and Spatial Planning which is organised on the ministry level. In licensing (on the first level), inspection and other regulatory activities the SNSA preserves independent and autonomous status.

It seems that conflict of interests might occur as bodies in charge for use of nuclear energy and for nuclear safety are both within the competence of the same Ministry. How is 'effective separation', as stated in the report, ensured?

See answer to the question No. 4.

SNSA is operating under the Ministry of Environment and Spatial Planning. This Ministry is also responsible for promotion of energy production, including nuclear energy. Has any conflicting matters raised due to this situation? Are there any plans to improve the situation, as the double role lies now with the Ministry.

See answer to the question No. 4.

It is reported that 15 mostly young technical professionals of nuclear and radiological safety left the SNSA in the last twelve years. The reason can be found in the uncertain career promotion in the state administration, uncertainty of the nuclear field in future and others.

1. How do you cope with this problem?
2. Is there any good measure for keeping young technical professionals?

The fluctuation of professional staff is not only the problem of the SNSA or in the filed of nuclear and radiation safety but generally of all sectors of the Slovenian Government. The fluctuation rate of the SNSA is similar to the rate of other sectors of the government because of uncertain career promotion, low salaries. In nuclear sector the reason for fluctuation can also be found in uncertainty of the nuclear field in the future. Nevertheless, manpower development has been maintained and even increased by employing the young staff who are then given an opportunity for additional training. The SNSA also invests in upgrading of formal education of its perspective professional staff by sponsoring formal graduate and post-graduate studies. Some perspectives might be envisaged within the overall governmental concept of strengthening administrative capacity under the EU accession process and within the revision of the general administrative legal frame which regulates the wages policy and status of civil servants.

It is reported that one of the activities of the ICJT is public information about nuclear technologies and safety.

1. How detail information is released? Could you explain the procedure and means for releasing the information?
2. Are the plant data and the accident information also included in the information to be released?
3. Does SNSA release information to the public individually?

The ICJT as a part of the "Jožef Stefan Institute" provides public information about nuclear technologies and safety only as a part of its basic objective, i.e. promotion of knowledge on the use of nuclear energy. For this purpose the ICJT organises guided tours in its training centre and TRIGA research reactor, publishes leaflets, posters and other information on peaceful use of nuclear energy and radiation safety, participates in Nuc-Net activities and has been engaged in publication of the Slovenian translations of some basic IAEA's safety series. On the other hand the SNSA as the regulatory body for nuclear and radiological safety in Slovenia is responsible for public information in the area of its

competencies. The director of the SNSA is authorised to communicate with the public by means of press releases, interviews, press conferences, public statements etc. Other means of releasing information are:

- Annual Reports on Nuclear and Radiation Safety in Slovenia which are prepared for the Government and the Parliament where they are discussed and adopted; the Annual Report is sent to public and some specialised libraries, ministries, mayors, NGOs etc.
- reports on the SNSA's activities are also published in a bulletin "Environmental and Spatial Planning", published by the Ministry of Environment and Spatial Planning;
- SNSA web-site, where the Annual Report, NSC National Report and several other information are displayed (as for example information system with on-line radiological monitoring, international agreement to which Slovenia is a party; EU directives and regulations; IAEA Standards; basic information about the SNSA etc);
- during yearly outages, starting with the steam generator replacement in year 2000, SNSA displays on WEB site weekly the progress report of inspections activities during the plant outage.
- the SNSA has also its own library which is open to the wide audience;
- the SNSA also sponsors translation of IAEA Safety Series publications into Slovenia language; the distribution of this publications is very broad (ministries, libraries, universities, NGOs, media, etc.)

The Krško FSAR is distributed to National, universities libraries and to the public libraries in Slovenia. With respect to "accident information" the NPP operator and the SNSA are obliged to inform the general public about the possible consequences.

The first review meeting raised the issue of budget and self-sufficiency of the regulatory body. The report discusses progress made in this area (Article 8.1, page 43), however it appears that the regulatory body (SNSA) continues to have difficulty retaining personnel because of governmental salary restrictions. What future steps are planned to ensure that the regulatory body maintains adequate technical competence to fulfill its regulatory role?

See answer to the question No. 7.

Article 8.2 explains that the regulatory body is empowered to appoint technical support organisations and indicates that the qualification criteria for these technical support organisations are defined as having a qualified staff, appropriate technical means, an adequate QA program, etc. Do the technical support organisations work exclusively for the regulator, or do they also perform work for the utility? If the organisations also work for the utility, how does the regulator preclude any potential conflict of interest?

See answer to the question No. 1.

Article 10

It is reported that the Government, which was appointed this year, transferred the energy sector from the Ministry of Economy to the Ministry of Environment and Spatial Planning. This change has created a situation in which the regulatory line is not fully separate from the energy production line.

1. How will you deal this problem from the viewpoints of the effective separation of regulatory body?
2. Was there any discussion at the step of planning of reorganization of the Government?

See answer to the question No.4 on Article 8.

The Report indicates that the Slovenian Government decided this year to transfer the energy sector from the Ministry of Economy to the Ministry of Environment. How is avoided the jeopardising of the separation between safety and production interests ?

See answer to the question No.4 on Article 8.

Responsibility for safety should be allocated to the senior managers within the NPP operating organisation. How do these managers demonstrate their commitment to safety as an overriding priority to the regulator?

Allocation of responsibility for plant safety is determined and described in plant licensing documents (TS + USAR) and plant internal documents (plant management directives and procedures). Continuous plant safety improvements and operation in compliance with regulatory requirements demonstrates plant management commitment to plant safety.

Annex J (pages 159-161) provides statistics on six major performance indicators. Article 10 (page 63) indicates that the licensee performs an extensive indicator program which is based on WANO performance indicators and IAEA INSAG Safety Culture Indicators. Trend and pattern analyses are performed. To what extent are performance indicators used by the regulator (versus the licensee) to assess nuclear power plant safety?

SNSA is monitoring safety indicators and based on them long term measures are taken by SNSA. Few examples:

- By monitoring plant trips and analysing their causes, the SNSA put additionally measure on the licensee to re-analyse plant trip data base and made substantially improvements in the plant operation by enhanced training of operators, imposed procedures maintenance and testing. The final results are favourable.
- By monitoring indicators for fuel leakage and analysing of radionuclides in the primary water, the SNSA put additional request on reporting of the licensee and on preparing program of improving fuel reliability which resulted in favourable trend.
- By monitoring radiation exposure of workers the SNSA is concerned about latest rise in indicators and is analysing root causes. Report the fact that in year 1999 preparation for steam generator replacement took place and one primary pump was disassembled for inspection in year 2000 and that in year 2001 ISI program took place (weight the second RC pump inspection) the doses could be lower. SNSA is putting additional efforts in its regulatory and inspection activities in this area and will closely observe this year's outage.

Another set of indicators that SNSA is following is connected to the on line maintenance by monitoring the number of hours the plant is in LCO and the number of systems that are simultaneously in LCO. No regulation position was taken in this area but SNSA is closely monitoring the developments. NPP Krško operation performance indicators are compared with those WANO and IAEA INSAG indicators that are available to the regulatory body. Attention is being paid to the trends and to the causes which drive it. In the case of deviating parameters the regulator asks for additional information and if needed full scope report including corrective action program.

Article 11

As indicated Slovenia plans to abandon nuclear energy in 2023. The nuclear power phase-out may induce problems on the staff motivation and turnover and recruitment of competent engineers. Is Slovenia investigating this long-term problem?
Slovenia is not specially investigating the perspective of nuclear connected jobs. In general, nuclear jobs are attractive in the region of Krško. This region is subjected to major job cuts in many fields of industry (textile, mining, machinery etc.). Most important motivation factors for the NPP Krško job are training and qualification, as well as stable job position with a salary exceeding the average of the region. There are two ongoing post-graduate studies of nuclear technology at the Jožef Stefan Institute (University of Ljubljana) and at University of Maribor. These post-graduate studies educated several experts in nuclear field in recent years.

Article 12

What is the type of Emergency Operating Procedures used in Slovenia (event oriented or symptom oriented)?
NPP KRŠKO uses symptom based EOP procedures since 1989.

Which procedures have been developed to incorporate systematic root cause analysis of human-induced events into the event reporting system of Krško NPP?
The overall root cause analysis in NPP Krško is based on the administrative "Root Cause Analysis" procedure. This procedure covers root cause techniques that is based on the following methods: Event and Causal Factor Charting, Change Analysis, Barrier Analysis, MORT (Management Oversight and Risk Tree) and Human Performance Evaluating System. Human Performance Evaluating System technique is applied when human related event is detected as a possible Root Cause. It applies all above mentioned analyses as appropriate plus some, specially developed for breaking a task into subtasks in order to identify specific human errors. These analyses are: 1. Walk-through Task Analysis is a step by step re-enactment of the task without performing any of the required actions. The purpose of this analysis is to determine how the task was actually performed. 2. Human Factors Survey addresses the man-machine interfaces and how they relate to procedures, design factors and general physical environment, i.e. the work area. 3. Technique of Operational Review analysis is a tool for detecting management oversight and omissions. It is used for evaluation of repeated inappropriate actions. 4. Human Performance Questionnaire is used to determine the specific mental process and the type of inappropriate action involved in the event as well as the most appropriate form of a corrective action. The questionnaire is helpful in determining if the training program covers the appropriate material or if the person involved in human performance has retained the supplied training. 5. Interviewing is the most important and direct method of data gathering. It is the only reliable way to determine all behavioural factors and casual factors. However, interviewing does have limitation: it can be time consuming and require a degree of skill. Also facts become less clear as the time between the event and the interview increases.

What are the criteria to determine whether the encouraging environment to report potential problems as well as ideas for improvement in human performance is in sound status or not?
: The NPP Krško policy is that all individuals concerned shall constantly be alert to opportunities to reduce risks to the lowest practicable level and to achieve excellence in plant safety. There is a strong positive reinforcement to the plant personnel for early detection and reporting of all problems regarding optimal human performance, which makes the whole environment susceptible to ideas of human performance enhancement.

It is described that the NPP Krško operates the OEAP (Operating Experience Assessment Program) to prevent, detect and correct human errors. Are there any regulatory requirements to check the effectiveness of OEAP used for improving human performance or to review it periodically?
Evaluation of the Operating Experience Assessment Program (OEAP) effectiveness including human performance improvement is covered by plant internal audits and reviews defined by NPP Krško procedures. SNSA inspect the process of OEAP and its effectiveness in the area of human performance. Presently there are no specific regulatory requirements for such effectiveness checking. During the ongoing NPP Krško Periodic Safety Review the effectiveness of the OEAP for improving human performance will be evaluated. The regulatory requirements may be created based on this evaluation.

Article 13

Does SNSA conduct inspections surveillance and perform review of NPP Krško QA Plan implementation? What are results?
SNSA inspectors conducts inspections of the Krško NPP QA Plan implementation based on the Yearly Inspection Program. Typically two inspections have been planned per year. Last inspection was performed on March 19, 2002 detected improvement in certain weaker areas, such as: maintenance of the Q - List of Equipment, control of QA procedures and implementation of internal QA audit and training and indoctrination programs. Inspection is still not completely satisfied with the management review of the QA System performance and with the functioning of the Krško Quality Assurance Committee.

Is there a system to collect and analyse the events related to quality in order to implement a continuous improvement of the quality assurance system?
Non-conformance reporting system is in place and also QA Committee is established within NPP KRŠKO to deal with events related to quality in order to implement a continuous improvement of the quality assurance system.

Article 14

: What are the regulatory requirements for performing Periodic Safety Review?

The regulatory requirements imposed by a decision of SNSA are that PSR shall be in accordance with IAEA safety philosophy and in compliance with international practice, particularly: IAEA Safety Guide 50-SG-012, Periodic Safety Review of Operational Nuclear Power Plants and EU experiences and PSR approaches, and in compliance with: Periodic Safety Reviews of Nuclear Power Plants in EC Member States, Finland, Sweden and Switzerland: A Review of Current Practices, Rep. EUR 15555 EN, European Commission, Brussels (1995). The NPP Krško PSR Program was approved by SNSA. Based upon existing documentation and safety management practices, a specific structure of PSR is expected:

1. Operational Experience,
2. Safety Assessment,
3. Equipment Qualification and Ageing Management,
4. Safety Culture,
5. Emergency Planning and
6. Environmental Impact.

Did the latest PSA studies, including shutdown modes, raise some issues? Did they result in modifications subjected to the prioritisation process?

Krško PSA study finished in 1995 provided the assessment of a risk profile which was dominated by a risk originating from internal fire events. Speaking in terms of Core Damage Frequency (CDF), internal fire-induced risk contributed more than 40 % to the total risk expressed by CDF. The next 50 % was, roughly, evenly shared by internal initiating events and seismic events, while the residual risk came from internal floods and the category of other external events, such as high winds and external floods (less than 10%). In absolute terms, internal fire-induced CDF was assessed to be approximately 1E-04 per reactor year of criticality. Consequentially, in responding to the insights gained from the overall PSA study main focus was upon reducing the fire risk. For this purpose the Krško Fire Protection Action Plan (FPAP) was developed. Its objective was to prioritise fire protection modifications that were proposed on the basis of Fire Hazards Analysis done in 1991, Fire PSA study and international missions' recommendations. The risk-informed approach was used which provided for a timely reduction of the significant contributors to fire-induced core damage frequency. A cost-benefit analysis, based on a value / impact assessment methodology, has been performed for proposed modifications in fire areas, which were found to have fire-induced CDF exceeding 1E-6 per reactor year of criticality. The methodology enabled ranking of the proposed modifications into three rank categories. Implementation of FPAP modifications reduced fire-induced CDF by, roughly, an order of magnitude.
Beside fire protection modifications, a number of other improvements had been carried out, ranging from procedure changes through addressing various findings associated with systems and structures, up to the improvements in plant design.
For example:

- improvements in various supporting structures throughout the plant and reducing the possibilities for equipment interactions as a consequence of seismic events, in response to Seismic PSA study findings;
- developing procedures and risk management guidelines considering plant safety in shutdown modes;
- developing severe accident management guidelines.

One additional point is development and installment of full-scope plant-specific simulator. The improvements had significant effect on both risk level and risk profile, as assessed on the basis of the living PSA updates. As for the first, it was assessed that the total CDF had been reduced by, roughly, 40%. Since the reduction was not proportional among the initiator categories (as a large part of it came on account of internal fire risk contribution), significant shifting had occurred in the risk profile. Thus, the highest contribution to current CDF estimate comes from the seismic and internal events (more than 70%). The remaining portion is shared mostly by other external events and internal fire events.
This is the estimate of current plant risk and its profile. Plant modernisation and improvement as a permanent process

will continue and the insights from PSA and other risk estimates will be considered as a part of it. Broad seismical and geological research efforts were undertaken recently. The new knowledge gained from this will be used to re-evaluate seismic hazard and address seismic PSA study insights. Krško is currently undertaking extensive Periodic Safety Review (PSR). Any issue related to safety that may come out of it will be given consideration. Current risk profile assessed on the basis of PSA studies will be part of it. A set of appropriate corrective measures would be proposed to address issues identified. Proposed measures will be subjected to the process of prioritisation which will include diverse aspects of valuations of values of proposed measures, both individually and jointly.

More generally, could Slovenia indicate the main improvements brought throughout the plant modernisation program (in addition to steam generators replacement) carried out after application of the NPP KRŠKO PSA level 1 and 2?

See answer to the question No.1 on Article 18.

It is reported that the main programs used for the verification of the state of a nuclear power plant are ISI, periodical testing, surveillance program of reactor pressure vessel material and etc.

1. Which international standards or guides were referred to make these programs and to carry out them?
2. Are the evaluation results of these programs open to the public?

: NPP Krško has made different programs such as: ISI Program, Preventive Maintenance Program, Surveillance Testing Program, Erosion Corrosion Program etc. The NPP Krško follows US regulations and standards for the ISI program, i.e.: 10CFR50.55a, ASME Boiler & Pressure Vessel Code Section XI, Maintenance Rule, ASTM, ANS/ANSI, IEEE, NFPA as well as international standards (IAEA, ISO). NPP Krško follows NRC regulations (Bulletin No 87-01 and the NUREG-1344) for erosion corrosion program and INPO programs for preventive maintenance etc. Generally NPP KRŠKO follows US regulation and other international practices. The evaluation results of Krško NPP programs such us ISI, periodical testing, surveillance program of reactor pressure vessel material, etc., are not directly available to the public, but indirectly they are, through the regulatory inspection and reports, that are issued from them. Evaluation results are available to the Technical support organisation(s) for review and assessment.

How is guaranteed that the staff who monitor safety are not influenced by production needs?

The NPP Krško policy is that all individuals concerned shall constantly be alert to opportunities to reduce risks to the lowest practicable level and to achieve excellence in plant safety. The one of the most important objectives is to protect individuals, society and the environment by establishing and maintaining in nuclear power plant an effective defence against radiological hazard. Accident prevention is the first safety priority of NPP Krško. It is achieved through the use of reliable structures, components, systems, procedures and plant personnel who are committed to a strong safety culture. The staff who monitor plant safety (ISEG, Independent Safety Engineering Group) is not part of operating organisation responsible for plant operation. ISEG shall be responsible for maintaining surveillance of unit activities to provide independent verification that these activities are performed correctly and that human errors are reduced as much as practical. The ISEG shall function to examine unit operating characteristics, SNSA issuances, industry advisories, License Event Reports 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 revised procedures, equipment modifications, maintenance activities, operations activities, or other means of improving unit safety to the NPP KRŠKO board of Directors and Director General.

What arrangements are there to ensure that the station Safety Analysis Report is updated following plant modifications ?

NPP Krško has developed procedures to implement 10CFR 50.59 process and to proceed TS and USAR changes by the procedures. Each modification process is evaluated through the procedure which request checks if there is an impact to TS and USAR. If there is determined impact USAR change is required. Each modification screened is sent to SNSA, which decides if a formal licensing process will be performed.

Article 15

Could Slovenia indicate, in the framework of the preparation of the new nuclear legislation, when the new second level regulations derived from IAEA Safety Standard and EU Regulations, will be completed?
The second level regulations are foreseen to be completed in the period of 18 months after approval of the basic Law on Radiation Protection and Nuclear Safety in the Parliament. The law is expected to be in force in 2002.

Could Slovenia provide some information on the relatively high releases of noble gas and iodine in 1996?
During the mid nineties the most critical components in the Krško NPP were both two steam generators and their maintenance, in order to enable a plant operation at full power. The tubes of Inconel 600 material are susceptible to stress-corrosion and tube plugging are required. Due to increasing number of tube indications and a new plugging criteria it was decided to unplug a greater number of tubes to either bring them back into service or to save them for further operation by installing sleeves. After the extensive steam generator tubes deplugging, 9 defective fuel rods in 8 fuel elements were found during fuel inspection. Removal of foreign material from the reactor vessel bottom in the outage 1996 showed fragments of chips from previous deplugging activities and few other chips. Material exclusion has been introduced with careful cleaning of steam generators channel heads. The "leakers" were removed from the core at the end of third cycle, two of them were removed earlier. In 1995 and 1997 detailed fuel examination was performed to identify leakers by sipping and by ultrasonic examination of the fuel. In 1999 a new in mast sipping system was installed, so that during each refueling the whole core is checked for leakers. In 1997 few elements with a new design of bottom nozzle, having debris filter were gradually introduced. By 2000 only fuel elements with debris filter are in the core. The total activity of noble gases released from the plant due to fuel leak was 25 TBq in 1995 and 13 TBq in 1996 and after correction actions being implemented the released activity dropped gradually during the following years down to 0.86 TBq in 1998. Iodine releases in I-131 equivalent activity are recorded to be at maximum 6.74E8 Bq in 1995, and after the corrective actions were implemented the activity was in 1997 1.55E8 Bq and in 1998 at usual level of about 5E7 Bq per year. The maximum activity was still very low comparable to the activity limit, i.e. 4 % of the limit for a year.

Could Slovenia give the results of the collective effective doses to all the workers involved in the steam generators replacement?
The overall dose due to steam generators (SGs) replacement was 1.57 manSv. Outside workers received 1.48 manSv (96% of this figure Consortium Siemens-Framatome), and the rest of the exposure 0.09 manSv belonged to the plant staff covering other activities such as welding of old SGs, etc.

Annex J indicates that, in recent years, the average individual and collective doses have shown a rising trend as a consequence of plant modifications, plant upgrade, and the modernisation program. This statement accompanies a figure which shows that the average individual dose has increased by a factor of two over the past four years. Were any dose goals or ALARA expectations identified for this work and how did the actual doses compare?
In the year 1998 the collective dose of Krško NPP was 1.25 manSv. Outage collective dose was about 1 manSv. The outage included sleeving, plugging and testing of tubes in old steam generators. In the year 1999 the collective exposure was 1.65 manSv. The main reason was extensive outage activities of Krško NPP, on the primary side - steam generator sleeving and plugging, maintenance of the valves requiring empty coolant loops, in-service inspection of RCP, welding of clamping of the primary coolant loops, testing of the component's snubbers. In the year 2000 the total collective dose was 2.60 manSv, outage collective dose was 0.71 manSv, SG replacement dose was 1.48 manSv. For the replacement itself the final dose was about 4% over the planned value. Higher than expected was the outage dose due to: additional painting of the SG cubicles, refueling during unexpected Co-58 activity concentration rise, more extensive valves maintenance requiring empty coolant loops. In this case the prediction were 50 % below final values. In the year 2001 the collective dose was 1.13 manSv. Work included 2nd RCP-ISI and first base line inspection of new steam generators tubes. The outage dose this year was 0.995 manSv and 10 % over the planned value. The rise was due to some unexpected work during the outage. NPP Krško clearly defined the specific target value of collective dose during outages. ALARA planning has been done for

each specific job.

In the article 15, radiation protection in the report, it is stated that the dose limit for workers is 50 mSv / year. Is it being planned to review or modify the correspondent regulation to lower the dose limit for workers as recommended in the BSS 115 from IAEA ?
The answer is yes. The new Law on Radiation Protection and Nuclear Safety has been drafted recently and it will be approved by the Parliament, hopefully in September of this year. The pending regulations will be issued by the Ministry of Health in the period of 9-18 months afterwards. However, in Slovenia the recommended value of 20 mSv/year has been strictly respected in practice.

Article 16

Due to the Krško NPP closeness to the highly populated Croatian territory (nearly 1,000,000 people in Zagreb with surroundings) Croatian authorities should be informed about any emergency class event as soon as possible, at the same time as the SNSA. According to National Plan this is not the case? What actions Slovenia plans to take to solve this problem? When will this be effectively assured?
Slovenia is supporting the regional co-operation of the emergency preparedness. In the framework of the "bilateral commission for harmonisation of emergency plans" the issue of prompt notification of the Croatian civil protection organisation, which is responsible for the protection of population in the area near the border with the Posavje region, should be addressed. The most effective means to achieve this goal should be found and implemented in the nuclear/radiological emergency response plans in both countries, Slovenia and Croatia.

Could Slovenia give more information on the respective role of the Technical Support Center and the Emergency Off-Site facility?
The TSC is on-site emergency centre located closed to the main control room. It is built in accordance with the uniform building code and is furnished with the ventilation and radiation control systems, communications, data systems, protection means, documentation and other equipment to enhance the habitability and working conditions for the personnel during the emergency. The TSC is activated in alert or higher emergency levels. The role of the Technical Support Centre is the following: • Managing, co-ordination and control of all emergency activities in the Krško NPP, • Assessment and analysis of the emergency situation in the Krško NPP, • Provides support to the Main Control Room personnel, • decision making about corrective actions in the Krško NPP, • co-ordination with the support organisations, • evaluation of emergencies and choosing the strategy for the emergency response, • giving instructions for the operational tasks, corrective actions and protective actions in the area of the Krško NPP, • performing the tasks of the Emergency Off-Site facility until it becomes operational. The Emergency Off-Site facility, when it becomes operational, takes over from the Technical Support Centre managing, co-ordination and control of all emergency activities in the Krško NPP. Beside that, the Emergency Off-Site facility performs the following tasks: • it provides engineering, technical, logistic and other support to the Technical Support Centre and other personnel in the Krško NPP, • co-ordinates the activities with the State Civil Protection Headquarters, Slovenian Nuclear Safety Administration and external support organisations, • classify the emergency and notify the authorities on the status and progression of the emergency, • assessment of radiological consequences and recommendation of protective actions for the population in the emergency planning area, • information of the public on the status and progression of the emergency.

Are there computerised support systems to predict an accident progression and to evaluate the anticipated radioactive doses around the plant from the meteorological data?
In the Krško NPP, there is a dedicated software for activity calculation in the core in real time. The data acquisition from radiation monitors and core temperature input provide for the evaluation of accidental source term. Based on menus of release pathways and release modeling, and meteorological prognosis, or on real time tower or sodar data, the release can be predicted and the dose in the environment can be calculated. Typical release categories are known from PSA

and can be also selected in dose projection.
For the time being in the Slovenian Nuclear Safety Administration there are not sophisticated state-of-the-art computerised support systems for such predictions. For the dose assessment the codes based on Gaussian dispersion model are used (e.g. Interras). With the financial support of the EU Phare program the start of pre-operational installation of RODOS system is envisaged in Slovenia until the end of 2002.

Is SNSA equipped with an emergency center? Are exercises planned with the involvement of the Croatian authorities?

: For the time being the SNSA does not operate a dedicated emergency response centre. During the emergency the SNSA rearranges the existing rooms and operates the accident projection group, the dose assessment group and public information & technical support group.
The forthcoming national nuclear emergency exercise in 2002 is planned to be Conduced also with the Croatian authorities.

Is the population living in the vicinity of the plant informed on the existence and the content of emergency plans?

The emergency plans are public documents, but more effort should be put into the information of the public in the emergency planning zone. A brochure with some basic facts about radiation, emergency planning, protective actions and actual evacuation routes is in preparation.

It is reported that one of the major changes in emergency preparedness scheme is introduction of the Emergency Off-site Facility, which is located in Ljubljana.

1. How far is it from this Facility to the nuclear plant?
2. Could you explain the scale of this Facility and the numbers of the staffs working usually and in the case of emergency?
3. Are there any special features of this Facility?

The EOF is NPP Krško's off-site emergency facility. It is located app.100 km away from nuclear power plant (in Ljubljana city) close to the locations of the Republic of Slovenia Civil Protection Headquarters (CPHs) and Slovenian Nuclear Safety Administration (SNSA). This enables the effective coordination of the overall emergency response between NPP Krško and off-site authorities. The EOF is equipped with communications and data systems, documentation and means to enable effective response in emergency. The on-line technological, radiological and meteorological data are available in EOF. EOF is activated in site or general emergency level. The primary functions of the EOF are: - the entire NPP Krško's emergency management; - the co-ordination between the NPP Krško and the off-site authorities including the classification of the emergency, evaluation of the off-site radiological consequences, urgent protective actions, recommendations for the population in environment, off-site notifications and public information; - to assist the TSC in managing and mitigating the on-site emergency by providing management, engineering, technical and logistical support. The EOF is not in function and staffed in normal (non-emergency) situations, but only in case of emergency. There are 20 dedicated persons in EOF during the emergency.

Regarding the early notification of the occurrence of events, we consider that international and bilateral agreements in force between neighbouring countries provide reliable arrangements.
As far as information for the emergency planning is concerned, it should be considered that the degree of preparedness and the emergency features to be arranged are matters of national policy, which defines the level of risk to be protected against, and then the probability of the events to be included in the emergency plan, taking into account the effectiveness of the safety features of the single considered plant. For example, the Italian policy is to include in the national emergency plan transboundary accidents, taking into account sequences with severe core degradation.
It should also be considered that appropriate emergency response requires, besides early notification, information on the evolution of the event as soon as it becomes more precise. Moreover, also the level of this information depends to some extent from the degree of preparedness selected by the single State.
In the light of the above considerations, the provisions taken or planned for providing information complying with the article 16, clause 2, of the Convention should be clarified, as well as the practical procedures with which neighbouring countries can obtain data considered necessary. Such data could for instance include:

- Core inventories at equilibrium (which are not available, as they may strongly depend on the decision to load fuel of advanced design),
- Available Emergency Features (e.g.: in Containment Spray Systems, Hydrogen management systems) and their effectiveness, peculiar Severe Accident Management Systems' characteristics (such as containment purge and filtration devices),
- Results of probabilistic safety studies, if any.

Slovenia concluded three agreements on early notification and information exchange with three neighbouring countries i.e. Austria, Hungary and Croatia. In the framework of the aforementioned agreements the technical information is exchanged (i.e. data from the Final Safety Analysis Report or Updated Final Safety Analysis Report, Probabilistic Safety Analysis data - the Krško NPP performed PSA Level 1 and Level 2, Individual Plant Examination for External Events-IPEEE).

Article 17

: What is the current status of seismic assessment of the Krško NPP?
Actual field investigation lasted over a period of 1994-2000 were completed (including PHARE project which covered state of the art field geophysical investigation and data interpretation). As part of the Periodic Safety Review process the activity on integration of all new knowledge from that recent investigation (seismology, geology, geophysics), preparation of revised seismotectonic model and revision of Probabilistic Seismic Hazard Analyses for NPP Krško site was recently started and will be completed by the end of year 2002.

Since Krško NPP started operation before 1984, have Krško site characteristics and plant design been rechecked to determine whether they meet the „Conditions for the Siting of a Nuclear Facility"?
NPP Krško site characteristics and plant design are evaluated in the USAR (Updated safety Analysis Report), which is yearly updated. Last year NPP Krško started Periodic Safety Review program with intend to re-evaluate plant safety and also site characteristics.

Are there programs for site parameters surveillance in order to prove the suitability of the design bases in relation with those site factors with greater uncertainty?
Nuclear Power Plant Krško follows the US NUREG-0452 requirements for content and format of Technical Specification (TS). TS defines the Safety Limits (SL), Limiting Safety Systems Settings (LSSS), Limiting Conditions for Operations (LCO) and associated Surveillance Requirements (SR). Compliance with TS Surveillance Requirements through detailed plant specific procedures ensures that at a minimum, the assumptions (e.g. certain parameters with defined uncertainty) used in the safety analyses or/and design bases are met.

Article 18

Could Slovenia indicate if design evolutions have been performed since the plant construction (for example due to experience feedback or to PSA results)?
Does the design of the Krško plant include some specific features relating to severe accident management in order to reduce, as indicated in INSAG 12, the probability of large releases requiring short-term off-site response?

Following major design evolutions/implemented safety improvements have been performed since the plant construction either due to experience feedback or to PSA results:

- Three Mile Island Modifications (reactor vessel level indication system, post-accident sampling system, post-accident radiation monitoring system, safety parameter display system, main control room environment modification, high range hydrogen monitoring system, safety valve position indication)
- Instrumentation Improvements (seismic monitoring, additional radiation monitors, plant information system, mid-loop level indication, AMSAC (ATWS - Anticipated Transient Without Scram), Mitigation System Actuation Circuitry, Chlorine Monitoring System
- SBO (Station Black-Out) Study Action Plan (increase of DC battery capacity, nitrogen accumulators to provide backup pressure for air-operated valves, emergency lighting, communication system)
- PSA Driven Improvements (instrument air, review of power and instrumentation cabinets, valve support redesign, pressurizer control air separation)
- Fire Hazard Analysis Study Action Plan (cold shutdown capability from remote shut down panels, separation of ESW pumps and separation of CC pumps, separation of cables in the cable spreading room, installation of over 100 new fire doors)
- Major Equipment Exchange/Upgrade (steam generators replacement)
- Qualitative Safety Upgrade (USAR Review, organisational plan, regulatory compliance program, development of PSA and PSSA models, development of deterministic models, severe accident management guidelines)
- Installation of filters on ESW to prevent blocking of ESW heat exchangers

It is expected that also periodic safety review that is underway will provide us with insights regarding design evolutions. Nuclear Power Plant Krško has been designed in accordance with US 10 Code Federal Regulations Appendix A to Part 50 - General Design Criteria for Nuclear Power Plants. There is no comparison provided with requirements given in INSAG 12 "Basic safety principles for nuclear power plants (INSAG-3, Rev. 1)". The one of the main goals of the ongoing periodic safety review is a comparison of the plant against modern safety standards (also with INSAG 12) and to identify where necessary improvements would be reasonable and beneficial at justifiable cost.
Nuclear Power Plant Krško fully implemented Severe Accident Management Program based on WOG Generic material MUHP-2310. The change of the reactor vessel cavity design ("dry" to "wet"), recommended by plant specific PSA Level 2, is only one specific hardware modification coping with severe accident management. This change covered the removal of two check valves to assure the water entering from containment annular compartment into the reactor vessel cavity during severe accident sequence in order to prevent possible late containment failure during molten core concrete interaction (MCCI).

Will the regulatory body follow recent IAEA requirements (NS-R-1 „Safety of NPP: Design", NS-G-1 „Safety Assessment and Verification for NPP" and promote the implementation of technical measures of level 4 of defence-in-depth, namely prevention of core melt and mitigation of consequences?

The regulatory body will, within its competencies, promote the implementation of technical measures of level 4 of defence-in-depth, namely control of severe plant conditions, including prevention of accident progression and mitigation of the consequences of severe accidents, and within this scope also prevention of core melt and mitigation of consequences. As far as technical measures are concerned, the last introduced at NPP Krško has been the reactor wet cavity modification. Further measures are to be promoted by the regulatory body, but they are not yet determined. RAMP mission report, PSR results and new deterministic analysis tailored to this purpose will, together with existing documentation, be the foundation for the targeted promotion by regulatory body of additional technical measures, such as hydrogen control, release filtering etc.

Article 19

Severe Accident Management Guidelines (SAMGs) have been introduced in 2001. When will these Guidelines be fully implemented?
The Krško plant developed the SAM strategies and guidelines based on the Westinghouse Owners Group (WOG) generic strategies and guidelines. NPP KRŠKO fully implemented SAMGs (SAG-17.001, rev.0) in November 1999. NPP KRŠKO specific SAMGs have been reviewed internally (during its development and rev. 0 issue) and externally (twice by Westinghouse). This revision was validated in spring 2001 at exercise specially set-up and performed on NPP Krško full scope simulator, and afterwards evaluated by Westinghouse Also, NPP Krško SAMGs have been subject of the first IAEA RAMP (Review Of Accident Management Programs) mission held at NPP Krško on November 19-23 , 2001 (RER/9/061). NPP Krško is processing the revision 2 of SAMGs based on new revision of generic material and WENX 00-29 (validation report). Revision 2 will be issued at the beginning of April 2002.

Following PSA studies on shutdown modes, have the Technical Specifications been modified?
PSA studies were input for several plant modifications which consequentially cause some TS changes. Shutdown mode PSA has not caused any TS change.

The report states that there is a requirement that the operating staff should be familiar with the contents and objectives of the Technical Specifications. What kinds of measures are taken to satisfy this requirement? Is there a specific documentation, or a staff training program?
Education and training requirements are outlined in the Krško NPP document USAR, Chapter 13.2. The process is further detailed in the administrative procedure Training and Qualification of the Krško NPP Personnel. Further administrative procedures cover specific areas, such as the Licensed Operator Training Program, the Non-licensed Operator training Program, the Health Physics Training Program, etc. Training programs encompass the TS objectives and their content. The training focuses on development of operators' skills to use TS. The use of TS is also part of the training on plant specific simulator. The operators' understanding of TS and their requirements is also checked as one part of the plant operation exam.

Could Slovenia give more information on the capability of the Aging Management Program to predict and detect degradations?
NPP Krško has just started to develop comprehensive Aging Management Program within PSR program. At first phase AMP will be developed containing SSC scoping and screening. In the next phase aging evaluation will be performed as defined in the program.

Are the full sets of Abnormal Operating Procedures and Emergency Procedures reviewed by SNSA?
The Krško NPP has developed and applied a full set of Abnormal Operating Procedures (AOP), Emergency Operating Procedures (EOP). The AOPs and EOPs have been reviewed by the SNSA and the TSOs.

Are the accident management guidelines event-based or symptom-based? Is the plant simulator capable to simulate severe accidents?
EOPs and SAMGs are symptom based. The full scope plant simulator is capable of simulating severe accidents (the simulator's own code is for this purpose coupled to MAAP code).

The regulation for incident reporting (Off.Gaz.SRS 12/81) seems to be rather old. Is this regulation sufficient with respect to detailed reporting criteria, classification of events/ incidents /accidents, time limits for reporting, format of the report? Are the events classified according to INES and is Slovenia participating in the IAEA IRS? Is a national „INES officer" in charge of classification and eventually reporting of an event to IAEA?
The regulation for accident reporting (off.gaz.SMS 12/81) is rather outdated and a new regulation is in preparation which will besides the NPP cover also reporting from other users of radioactive sources. Since October 1990 Slovenia

has been participating in the IAEA INES as a part of the former Yugoslavia and since September 1992 as an independent state. The INES national officer is in charge of rating and reporting the events. Slovenia participates in the IAEA IRS with a separate IRS national officer.

Does Slovenia evaluate the events from NPPs according to the INES scale? If so, is there a committee to evaluate them?

Slovenia is a member of the IAEA INES reporting system. Events from the NPP are rated in accordance with the INES scale and reported to the IAEA. There is no formal committee established to evaluate the event rating. The rating is done by the INES national officer and discussed with a licensee and internally in the SNSA.

What actions and programs are implemented by the operator to extend the planned lifetime, and how are those programs discussed with the regulatory body?

Original design lifetime for the Krško NPP is 40 operation years and will be expired in the year 2023. The regulatory body follows the worldwide practice and approaches in connection with life extension process. Up to now there is no discussion to extend the planned lifetime of the Krško NPP.