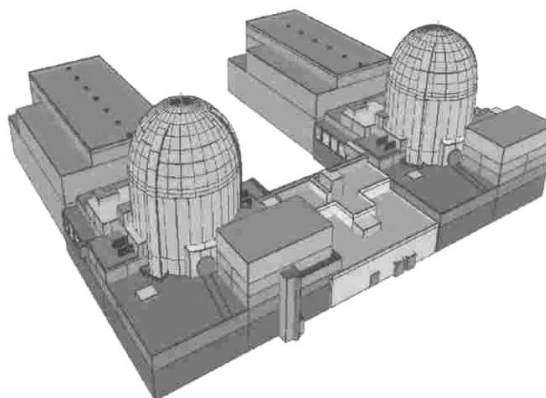




# NPES

A Publication of the Nuclear  
Power Engineering Section  
Department of Nuclear Energy  
International Atomic  
Energy Agency  
Vienna, Austria

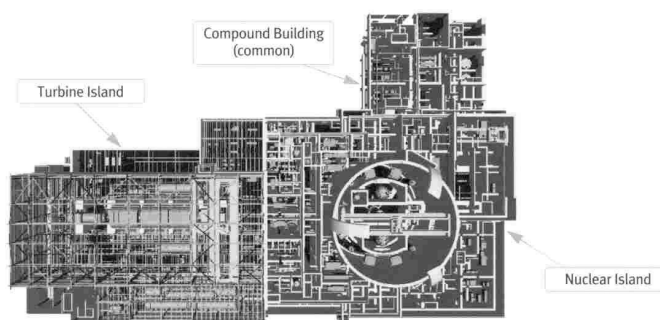


# NEWS LETTER

Vol. 4, No. 1

February 2003

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# Main Achievements in 2002

## (ENGINEERING & MANAGEMENT SUPPORT FOR COMPETITIVE NUCLEAR POWER)

Worldwide demand for electricity has grown continuously. In many countries, a number of nuclear power plants (NPPs) have already made a successful transition from a monopoly, cost-plus environment to a competitive market. Most existing NPPs are economic, particularly those which have had their capital investments depreciated or written-off. Well managed NPPs, with their low fuel costs and steadily declining operating and maintenance costs, are often among the least expensive power plants to operate. This advantage has been sufficient to encourage the utilities to invest in operational license renewal.

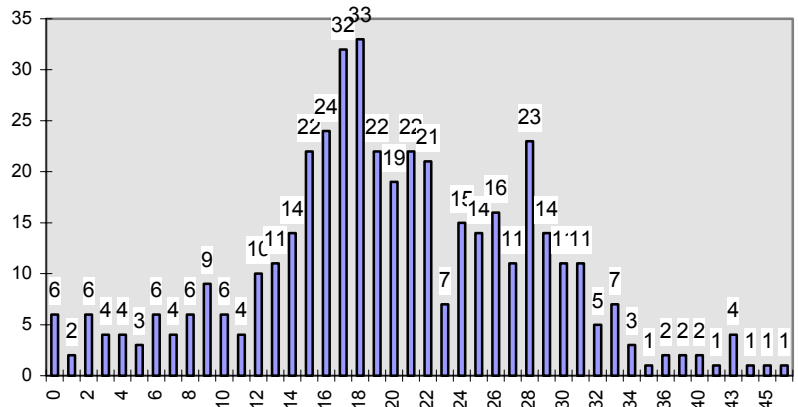
The liberalized or open market also rewards quick reactions and efficient operation of NPPs at low cost in some countries like the USA. In addition to that, 160 NPPs (more than one third of the world operating plants) have more than 25 years of experience, what has prompted consolidation in the nuclear industry, acquisitions, up-ratings and license extension applications rather than new construction as selected companies move to define themselves largely by the size and expertise of their NPP operations.

Covering the current needs of its Member States, the Agency has given priority to activities that support NPP life management license renewal and decommissioning as well as improving NPP overall performance, competitiveness

and incorporated management and economic analyses into all the projects and activities

A TECDOC on “*Cost drivers for the assessment of nuclear power plants plant life extension*” was published.

Number of Reactors by Age (as of 31 December 2002)



related to performance, including quality assurance (QA) programmes. The Agency also implemented and provided tools and databases to support all these areas and has used the Internet collaborative environment (Internet Virtual Offices) to facilitate collaboration and dissemination of information to experts in Member States involved in the projects.

In conjunction with other sections of Nuclear Energy Division a methodology to assess the cost effectiveness of plant modifications is being prepared.

### Strengthening national nuclear power infrastructure

The Agency is preparing a TECDOC on “*Infrastructure developments in Countries in Transition*” addressing the changes that have taken place and are needed as a result of the fragmentation of former integrated economic regions.

The objective of the document was to provide an understanding of the various cost elements and drivers in NPP life extension; to present cost data collected through a questionnaire sent to Member States and to discuss and identify the basis of the available cost estimates of different activities.

The Agency is preparing a document on the “*Impact of changing electricity supply environment on elements of nuclear power programme planning*” that will identify Agency guidebooks and areas needing updating to comply with the new environment.

### Improving NPPs Performance & Competitiveness

The long-term safe and efficient operation of NPPs requires that personnel possess and maintain the requisite knowledge, skills, and abilities, to do their jobs. Such knowledge includes not only the technical competencies

required by the nature of the technology and particular engineering designs, it includes the “softer” core competencies associated with effective management and leadership practices.

The Agency has a number of ongoing activities in the area of knowledge management, and training of NPP personnel. It includes management of human resources for NPP, a definition of core competencies to be maintained by an NPP operating organization, the effectiveness of NPP personnel training and others. One of the most important issues is an ageing nuclear industry workforce and transfer of knowledge to the next generation.

Training based on Systematic Approach to Training (SAT) eliminates or minimizes the competency gaps, which affect nuclear power plant safety and efficient power operation. A Co-ordinated Research Project (CRP) on **Information Management Solutions for SAT Applications** launched in 1999 as a part of the IAEA activities on NPP training and qualification was completed in 2002.

The Agency’s cooperation among the nuclear training centers in the European Region is being implemented throughout 2002 in terms of training center dossiers; a data base of available training tools, collection and sharing of benchmarking information, and posting of both planned experience/staff exchanges and the reports of completed exchanges.

**Quality Management / Quality Assurance**

The Agency support to Member States regarding application of safety, technological and engineering best practices with an extensive number of publications related with quality management/assurance (QA/QM), issued in the Safety Standards, Safety Reports, Technical Report and TECDOC Series.

A compilation shows about 40 titles of Agency documents on requirements and guidance related with the practical implementation of quality management measures addressing safety as the primary issue as well as reliability and economic issues. The top documents on the subject are the Safety Standards on QA, issued as Safety Series No. 50/C/SG-Q (1966), which includes a Code and 14 Safety Guides.

A major accomplishment in 2002 was the initial meeting to begin coordination of a strategy for the future harmonization of quality standards within the Agency with external organizations.

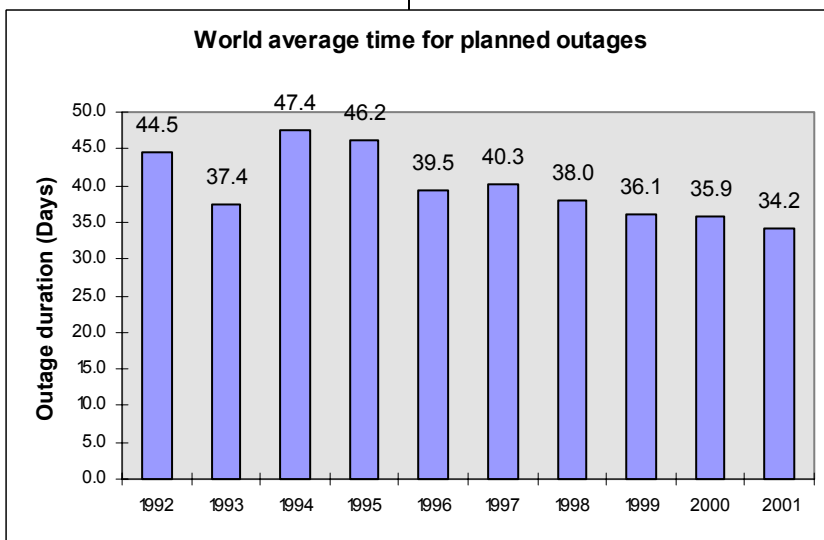
This revised approach to harmonization will recognize the relevance of QM/QA to the four areas of Nuclear, Radiation, Waste and Transport Safety and other activities as discussed in 2002 by the Agency’s Advisory Committees on Safety Standards (ACSS).

**Outage Optimization and Performance**

NPP outage management is a key factor for good, safe and economic nuclear power plant performance which involves many aspects: plant policy, co-ordination of available resources, nuclear safety, regulatory and technical requirements and, all activities and work hazards, before and during the outage.

As a follow-up to a series of technical documents related to good practices for outage management and cost effective maintenance, the Agency has produced a more focused technical report on NPPs outage optimization strategy.

Some countries have adopted outages strategies, which led to reduce refueling outage duration to 8 to 10 days, while



others spend 20 or 30 days and perform the major maintenance work during this time - different strategies with the same goals safe and improved operating performance.

In addressing the value of economic measures to optimise nuclear power plant safe performance, the CRP on National approaches to correlate performance targets and Operation and Maintenance (O&M) costs is under going analysis to set definition and classifications of nuclear economic indicators, within the context of regulation, competition and the economic requirements of constructing, operating and decommissioning nuclear plants.

Overall, the indicators are intended to have application in different regions throughout the world. In using the indicators, individual countries and member states should select from the list those economic measures that are best suited to their specific applications and financial requirements. In situations in which nuclear plants continue to operate in regulated monopoly markets, the more traditional measures that simply track the expenditure or accumulation of O&M and capital costs should continue to be the appropriate choice.

Preparation of a technical document on "**Optimization of NPP maintenance programme**" is close to completion. The key issues of the document are that maintenance optimisation is a process driven by imbalance between maintenance requirements and resources, and its main goal is to increase

component reliability and plant safety and availability.

### **Modernization of I&C System**

Most existing I&C systems in NPPs throughout the world were built with analogue equipment and relays that were designed 30 to 50 years ago. A majority of the plants are still operating with a substantial fraction of their original I&C equipment.

The document on **Information technology impact on NPPs** including six countries experiences provides the technical aspects of documentation using information technology for all plant phases throughout its life cycle, including design, procurement, construction, operation, maintenance, and decommissioning for both existing plants and new plants.

The research objective of CRP on **Solution for Cost Effective Assessment of Software Based I&C System** is to assess engineering solutions which will cost-effectively produce the information required to facilitate evaluations and acceptance of software-based I&C systems.

"**A harmonizing approach to achieve the basis for licensing digital I&C in NPPs**" is issued by a TECDOC with nine countries report and experiences. It is also believed that many benefits can be reached in resolving various issues of a technical and engineering nature, which presently are creating controversies in the licensing of digital I&C in NPP safety applications.

### **Optimisation of Service Life**

The outcome of session on "**Nuclear Power - Life Cycle Management**" of the Scientific Forum was reported to the Plenary of the Agency's General Conference where it was concluded that the Agency could act as a catalyst to enable the dissemination of experience in license renewal and decommissioning activities to all Member States.

The Symposium on **NPP Life Management** was held from 4 to 8 November 2002 in Budapest, Hungary. It was attended by 142 representatives from 32 Member States presenting 69 papers on the relevant issues.

This event played a role of a major forum summarising major developments and achievements in the field of NPP life cycle optimisation covering its technical, regulatory, economic and socio-political aspects.

A TECDOC on "**Good practices in ISI effectiveness improvement**" is under preparation the specific concept of which is to compare and contrast inspection qualification and risk informed ISI approach, define fields and the logistics of their interaction and to assess the impact of such concepts on the NPP life management.

### **Decommissioning**

The Agency is actively participating in the preparation of the study on: "**Decommissioning, Strategies and Costs initiated by OECD/NEA**". Through the efforts made by the Agency, contributions from 10 non-

OECD countries have been provided, giving the study an almost world wide dimension.

A TECDOC on "Decommissioning costs of WWER-440 NPPs" was published in which decommissioning costs were converted to and presented in a uniform way. It made cost figures comparable and contributed to better understand costs differences.

**Databases to support optimisation of NPP performance, service life and infrastructure**



The Agency released the Power Reactor Information System (PRIS) on different medias to more than 700 registered users in Agency's Member States and international organizations. At same time, part of the system has been made available in the Internet (<http://www.iaea.org/programmes/ne/nenp/npes/index.htm>).

The Agency has implemented the Nuclear Economic Performance International System (NEPIS) aiming to achieve the necessary optimization between economic and technical performance. The database consider all aspects of economic performance: functional and activity based costing, O&M costs and, safety, economic and operational indicators. The

Electric Utility Cost Group, USA, is working in co-operation with the IAEA.

**Country Nuclear Power Profiles**

The Country Nuclear Power Profiles have been consolidated as an authoritative compilation of information about the nuclear power infrastructures in participating countries, and to present factors related to the effective planning, decision-making, and implementation of nuclear power programmes that together lead to safe and economic operations.

Altogether 30 IAEA Member States having operating nuclear power plants as of 1 January 2002 as well as Italy, the Islamic Republic of Iran, Kazakhstan, Turkey, Vietnam and Indonesia contributed information to the document's major sections.

**Support to Technical Cooperation Activities**

In total, 42 technical cooperation projects have been supported by NPES staff Table 1 present figures on trained people during 2002.

Table.1. Trained People in 2002 through TC activities in NPES

Type of training attendees	Number
Training course	92
Workshop/technical meeting	388
Individual training by fellowship	40
Individual training by scientific visit	22
<b>Total</b>	<b>542</b>

The focal areas of the technical cooperation projects were:

- (1) Infrastructure development and preparation for the

first or a new NPP (in Africa, Asia and Europe);

- (2) Integrated approach to improve operations management to optimise NPP performance and service life including planning and management of decommissioning (mainly through regional projects in Europe, East Asia and Latin America);
- (3) Upgrading NPP personnel training and qualification in response to emerging needs (in all regions having NPP in operation) and
- (4) Engineering aspects of NPP life management programme (first of all in Europe and Latin America)

In 2002, in parallel with the daily backstopping of the TC projects, an additional effort was required from Technical Officers, i.e. to technically appraise the requests for 2003-04 submitted by the Member States.

Twenty-five project requests were appraised, out of which 18 were approved by the Board of Governors.

The synergy between the different programmes continued wherever possible, allowing that activities within

the regular and Technical Co-operation projects have been implemented jointly and its results disseminated widely to the Member States through technical documents, databases, reports and meetings proceedings.



# Technical Co-operation Activities

(to be implemented and supported by NPES in 2003-04)

## Regional East Asia and the Pacific:

- Management of change for competitive nuclear power performance (regional RAS) (Technical Officer (TO): Mr. P. Trampus)

## Regional Europe:

- Improvement of primary circuit component integrity (TO: Mr. P. Trampus)
- Optimization of NPP performance and service life (TO: Mr. R. I. Facer)

## Algeria:

- Evaluation of Mechanical characterisation of Irradiated Materials (TO: Mr. V. Lyssakov)

## Armenia:

- Strengthening ISI activity through Modern NDT method (TO: Mr. P. Trampus)

## Brazil:

- Modernisation of NPP control room and operator support systems (TO: Mr. K.S. Kang)
- Structural integrity analysis of nuclear reactor components (TO: Mr. V. Lyssakov)
- Systematic approach to training for Angra NPP (TO: Mr. T. Mazour)

## Bulgaria:

- Re-training personnel involved in decommissioning Kozloduy NPP (TO: Mr. T. Mazour)
- Upgrading reactor pressure vessel surveillance programme for Kozloduy NPP (TO: Mr. V. Lyssakov)
- Planning and management of decommissioning Kozloduy NPP units 1 & 2 (TO: Mr. P. Trampus)
- Development of WWER-440 full scope replica control room simulator for Kozloduy NPP (TO: Mr. A. Kossilov)
- Energy and nuclear power strategic planning (TO: Mr. M. Condu)

## Czech Republic:

- Evaluation of radiation damage attenuation in WWER reactor pressure vessel and core internals (TO: Mr. V. Lyssakov)

## Egypt:

- Human resource development for nuclear power project preparation and project management (TO: Mr. M. Condu)

## Hungary:

- Licensing renewal of Paks NPPs operation (TO: Mr. R. I. Facer)

## Islamic Republic of Iran:

- Strengthening owner's function for Bushehr NPP project (TO: Mr. R. Clark)

## Korea:

- Upgrading technical capabilities of nuclear power training (TO: Mr. P. Trampus)

## Mexico:

- Modernisation of the preventive maintenance programme of the Laguna Verde NPP (TO: Ms. R. Spiegelberg-Planer)
- Integrity assessment and life extension of Laguna Verde NPP (TO: Mr. V. Lyssakov)
- Structural integrity programme of reactor pressure vessel and internal from Laguna Verde NPP (TO: Mr. V. Lyssakov)

## Morocco:

- Pre-project activities for first NPP (TO: Mr. M. Condu)

## Pakistan:

- Installation of advanced reactor surveillance and diagnosis system for Chasma NPP (TO: Mr. K.S. Kang)

## Romania:

- Technical support for the improvement of Cernavoda NPP operation management (TO: Mr. R. Clark)

## Turkey:

- Public awareness of nuclear energy and comparative energy studies (TO: Mr. T. Mazour)

## Ukraine:

- Improvement of NPP maintenance personnel training system (TO: Mr. A. Kossilov)
- Support for decommissioning of Chernobyl NPP (TO: Mr. P. Trampus)
- Action Plans for nuclear power lifetime management (TO: R. I. Facer)
- In-service inspection and plugging of WWER-1000 steam generators (TO: Mr. P. Trampus)

## Vietnam:

- Technical Support for training in nuclear engineering at the Hanoi University of technology (TO: Mr. R. I. Facer)



A group photo in Iran TC project review meeting (Dec. 12 2002 at Agency)

## Recent Publications

### 2002

<b>TRIS-406:</b> Developing an Economic System to Enhance Nuclear Power Plant Competitiveness	
<b>SRS No.22:</b> Quality Standards: Comparison between IAEA 50-C/SG-Q and ISO 9001:2000	
<b>Technical Documents (TECDOC)</b>	
<b>1284</b>	Information Technology Impacts on NPPs Documentation
<b>1305</b>	Safe and Effective Nuclear Power Plant Life Cycle Management towards Decommissioning
<b>1309</b>	Cost Drivers for the Assessment of Nuclear Power Plant Life Extension
<b>1315</b>	Nuclear Power Plant Outage Optimisation Strategy
<b>1322</b>	Decommissioning costs of WWER-440 nuclear power plants
<b>1327</b>	Harmonization of the Licensing Process for Digital Instrumentation and Control Systems in NPPs
<b>1328</b>	Solutions for Cost Effective Assessments of SW based I&C
<b>1335</b>	Configuration Managements in Nuclear Power Plants (2003)
Country Nuclear Power Profiles, CD-ROM, 2002 Edition	
Nuclear Power Reactors in the World, Reference Data Series No. 2	
Operating Experience with Nuclear Power Stations in Member States in 2001	
No. NS-G-2.8 Safety Guide: Recruitment, Qualification and Training of Personnel for Nuclear Power Plant	
Summary Session 1: Nuclear Power Life Cycle Management, Scientific Forum during 46th IAEA General Conference	

### 2001

<b>Technical Documents (TECDOC)</b>	
<b>1204</b>	A Systematic Approach to Human Performance Improvement in Nuclear Power Plants: Training Solution
<b>1209</b>	Risk Management: A Tool for Improving Nuclear Power Plant performance
<b>1226</b>	Managing Change in Nuclear Utilities
<b>1230</b>	Reference Manual on the IAEA JRQ Correlation Monitor Steel for Irradiation Damage Studies
<b>1232</b>	Assuring the Competence of NPP Contractor Personnel

<b>1252</b>	Integrated Information Presentation in Control Rooms and Technical Offices at NPPs
<b>1259</b>	Nuclear Power Programme Planning: An integrated approach

### 2000

<b>TRIS-397:</b> Quality Assurance for Software Important to Safety	
<b>TRIS-396:</b> Economic Evaluation of Bids for Nuclear Power Plants	
<b>Technical Documents (TECDOC)</b>	
<b>1140</b>	Effective Handling of Software Anomalies in Computer Based Systems at Nuclear Power Plants
<b>1147</b>	Management of Ageing of I&C Equipment in Nuclear Power Plants
<b>1170</b>	Analysis Phase of Systematic Approach to Training for NPP Personnel
<b>1182</b>	Quality Assurance Standards Comparison Between IAEA 50-C/SG-Q and ISO 9001:

### 1999

<b>TRIS-384:</b> Verification and Validation of Software Related to Nuclear Power Plant Instrumentation and Control	
<b>TRIS-387:</b> Modern Instrumentation and Control for Nuclear Power Plants, A Guide Book	
<b>Technical Documents (TECDOC)</b>	
<b>1063</b>	IAEA World Survey on Nuclear Power Plant Personnel Training
<b>1066</b>	Specification of Requirements for Upgrades Using Digital Instrument and Control Systems
<b>1078</b>	Technical Support for Nuclear Power Operations
<b>1090</b>	Quality Assurance within Regulatory Bodies
<b>1095</b>	The Impact of the Year 2000 Issue on Electricity Grid Performance and NPP Operation in Bulgaria, the Russian Federation and Slovakia
<b>1098</b>	Evaluating and Improving Nuclear Power Plant Performance
<b>1110</b>	Management of Delayed Nuclear Power Plant Projects
<b>1123</b>	Strategies for Competitive Nuclear Power Plants

**NOTE:** *TECDOCs are free publications that can be provided to institutions and individuals of IAEA Member States upon request, subject to availability.*



## From Former Section Head

Dear Colleagues and Friends,



In the life it often happens so that at certain time our train stops at a station and after that continues in a new direction. Such moments are very important because when people stop they start to re-evaluate what they have achieved and how they will continue.

The completion of eight years professional service at the Agency on the 7th January 2003 is certainly one of these stations in my life that was very enjoyable, especially my interactions with all of you.

I consider it a privilege to have known you and I thank each of you for all your kindness and cooperation. I would like to express my deep appreciation for the friendship, understanding and support you have extended to me during my service in the Agency. I will miss you all.

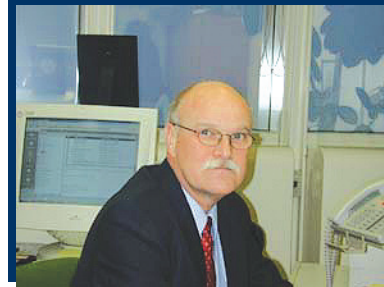
My very best wishes will always be with you. I hope you attain the success you deserve in your professional and personal endeavours. I hope to have the opportunity to see and to work with you again!

All the best!

**Gueorguiev, Boris**

## From New Section Head

Dear Colleagues,



As we transition to a new year and new section head we can begin knowing that Boris left us with a programme built on many

successes and lessons learned. We all wish him the best for the future.

Our mission will continue to be the support of our customers, the Member States, to improve NPP performance and competitiveness and optimisation of plant service life by encouraging the utilization of proven engineering and management practices without compromising safety.

The New Year, 2003, shows us facing many challenges and changes. Due to the extraordinary talent of the staff of the nuclear power engineering section, I know that we will face those challenges and transition into 2004 continuing our strategy of teamwork and continuous improvement.

Let us remind our customers within the Member States that we are prepared to listen to them about their needs and to support their efforts in improving their overall operation throughout the entire NPP Life Management process.

I look forward to working with you in 2003.

Sincerely,

**Russ Clark**

## Staff Members of the Nuclear Power Engineering Section

<b>NENP Division</b>		<b>NPES Section</b>				
	Mr. Poong Eil Juhn		Mr. Russell Clark	Mr. Tom Mazour	Mr. R. Ian Facer	Ms. Rejane Spiegelberg-Planer
	<i>Division Director</i>		<i>Section Head/ QA&amp; QM</i>	<i>Human Resource Management</i>	<i>Infrastructure and Performance</i>	<i>Outage Management &amp; Operation</i>
						
Mr. Andrei Kossilov	Mr. Ki-Sig Kang	Mr. Vjatcheslav Lyssakov	Mr. Peter Trampus	Mr. Marius A. Condu	Mr. Sung Kuk Cho	
<i>Training and Qualification</i>	<i>Instrumentation and Control and HMI</i>	<i>Plant Life Management</i>	<i>Maintenance and Operation</i>	<i>Pre &amp; project Activities and Economic Analysis</i>	<i>NPPs Country Profiles</i>	

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Mr. Ki-Sig Kang	Ki-sig.Kang@iaea.org	22796
Mr. Sung Kuk Cho	S.K.Cho@iaea.org	22885

## Forthcoming Meetings in 2003

### February

1. Prepare technical proposal for the development of software for e-catalogue of training services and issues in the nuclear industry; update NENP/NPES website, Mr. Kossilov, Vienna, 2-7.
2. Steam generator problems, repair and replacement, Mr. Lyssakov, Rez, Prague, Czech Republic, 4-6.
3. Remaining life assessment of NPP Systems, Structures & Components, Mr. Lyssakov, Vienna, Austria, 18-20.
4. Co-ordinate a CRP on surveillance programmes results applications to RPV integrity assessment, Mr. Lyssakov, Vienna, 24-26.
5. Prepare a technical document on good practices in in-service inspection (ISI) effectiveness improvement, Mr. Trampus, Vienna, 24-26.
6. Elaboration of the program for the new CRP on "Bias Terms for Master Curve Applications", Mr. Lyssakov, Vienna, 27-28

### March

7. RCM on evaluation of radiation damage of RPV using the Agency database on RPV materials, Mr. Lyssakov, Vienna, 3-5.
8. Corrosion, Fatigue and other Load-Time Dependant Degradation Mechanisms other than Irradiation", Mr. Lyssakov, Stretton, UK, 11-13.
9. Database and Guidance on Effective Management of NPP I&C Modernization Projects, Mr. Kang, Helsinki, Finland, 31 Mar – 4 April.
10. Planning meeting for a Conference entitled "50 years of nuclear electricity - the next 50 years" Mr. Facer Vienna.

### April

11. Redirection of task to Prepare a TECDOC on Quality Assurance/Quality Management for Decommissioning Activities in NPPs, Mr. Clark, Vienna, 7-11.
12. National Approaches to Correlate Performance Targets and O&M Budget, Ms. Spiegelberg-Planer, Vienna, 7-10.

### May

13. Country Nuclear Power Profile, Ms. Spiegelberg-Planer and Mr. Cho, Vienna, 5-8.
14. Develop recommendations on impact I&C ageing and obsolescence on NPP life assurance and life extension, Mr. Kang, Vienna, 5-8.
15. IAEA/FORATOM Meeting and Workshop, Continuous process improvement, Mr. Clark, Vienna, 13-15.
16. Exchange information on national NPP control and instrumentation programmes, Mr. Kang, Vienna, 19-21.
17. Management strategies and approaches for the reduction of capital costs including construction and start up experience of evolutionary water-cooled reactors (1), Mr. Condu, Vienna, 28-30.

### June

18. Development of Instructors for Nuclear Power Plant Personnel Training, Mr. Kossilov, France, 2-6.

19. Management strategies and approaches for the reduction of capital costs including construction and start up experience (1), Mr. Condu, Vienna, 16-18.
20. Definition of Core Competencies to be Maintained by an NPP Operating Organisation, Mr. Mazour, Vienna, 30- July 4.
21. Methodology for NPP Inventory Management, Ms. Spiegelberg-Planer, Vienna, 2-6

### August

22. Development of a Computer Model for the Economic Assessment of NPP Life Extension, Mr. Condu/ Jalal, Mississauga, Canada 25 – 29.

### September

23. Disseminate lessons learned with respect to methods for authorizing of control room operators. Mr. Kossilov Vienna.
24. Implementation of Nuclear Economic Performance Information System, Ms. Spiegelberg-Planer, Vienna.

### October

25. Develop a standardized set of outage indicators for outage optimization, Ms. Spiegelberg-Planer, Vienna, 6-9.
26. Develop recommendations and exchange of experience on the impact of modern technology on NPP I&C systems, Mr. Kang, Beijing, China, 13-16.
27. Lessons learned regarding an ageing nuclear workforce and transfer of knowledge to the next generation, Mr. Mazour, Vienna, 20-23.
28. Maintenance and operations of PRIS database and its products, Module 1: DB: maintenance & distribution of PRIS products. Ms. Spiegelberg-Planer, Vienna, 20-23
29. Harmonisation of IAEA and ISO standards on quality assurance/management. Mr. Clark, Vienna.
30. RCM on "The Role of Ni-Mu-Si Synergies in RPV material irradiation embrittlement", Mr. Lyssakov.
31. Contribution of non-OECD country data to the expected update in 2003-2004 of a 1998 edition of a report on "Projected Costs of Generating Electricity", Mr. Condu, Paris, France.
32. Updating of Agency guidebooks for nuclear power programme planning to comply with the new environment, Mr. Facer, Vienna.

### November

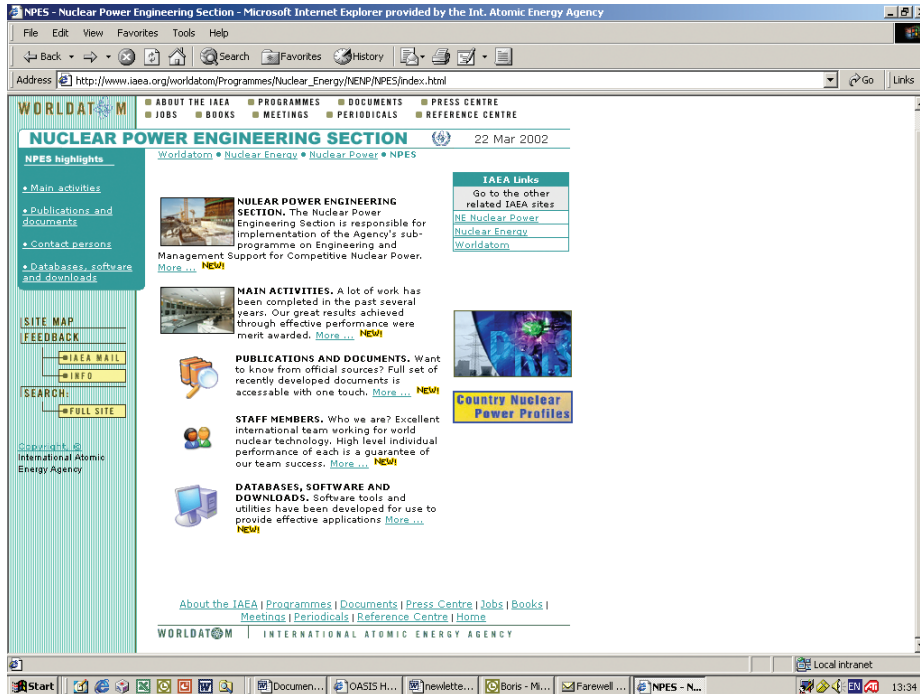
33. RCM on Bias Terms for Master Curve Applications, Mr. Lyssakov.

### December

34. Develop recommendations on impact I&C ageing and obsolescence on NPP life assurance and life extension, Mr. Kang, Paks, Hungary.
35. Management strategies and approaches for the reduction of capital costs including construction and start up experience(2), Mr. Condu, Vienna.

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