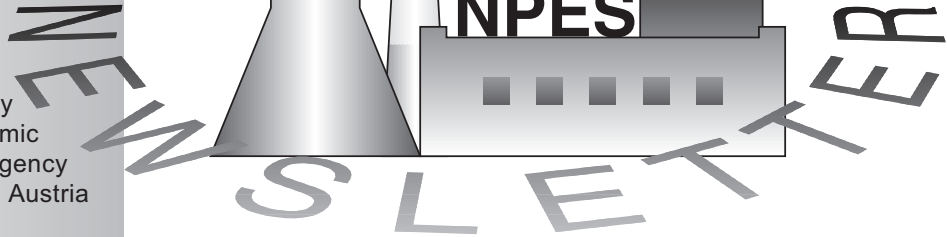




# NPES

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



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Vol. 01, No. 1

June 1999

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## **Areas of NPES Activities**

### ***Pro-active Response to the Changing Needs of Member States***

The Sub-programme implemented by NPES is a part of the IAEA Programme on Nuclear Power. The prioritization and focus of the projects/tasks have been continuously evolving to enable the choice of activities that are most responsive to Member States (MS) needs and having the greatest impact. The overall objective of this sub-programme, is to facilitate the establishment/strengthening of Member States' capabilities to plan and implement nuclear power programmes and to assess and contribute to a sustained improvement of nuclear power plant performance with due regard to safety, reliability and economic competitiveness.

The areas of activities under the sub-programme are briefly described below:

### ***Nuclear Power Programme Implementation***

This project addresses identification of policies and good practices with regard to planning and implementation of nuclear power projects, strengthening nuclear power project management and development of guidelines for upgrading and maintaining nuclear power plant personnel qualifications and competence through a systematic approach to training (SAT).

### ***Nuclear Power Plant Performance Assessment and Improvement***

Activities under this project are aimed at improvements in nuclear power plant operations management to achieve reliable, economic and safe operation of nuclear power plants. It also provides engineering tools to support operating experience analysis and help effective planning, decision-making and implementation of nuclear power programmes.

### ***Nuclear Power Plant Life Management***

Activities under this project are aimed at achieving reliable, economic and safe operation of nuclear power plants over the long term. The focus is on providing a forum for specialists to share experience and disseminating information through publications on technological developments and good practices that help plant life management.

### ***Nuclear Power Plant Control and Instrumentation***

This project addresses different issues of the utilization of modern technologies in instrumentation and control systems in NPP to improve plant performance and safety. The scope of subjects covers monitoring, control and protection systems, engineering aspects of human-machine interface, control rooms and training simulators.

### ***Effective Quality Management of Nuclear Power Plants***

This project was mainly intended to promote the overall plant safety, reliability and economic performance through successful management practices. The complete set of NUSS QA documents was reviewed, updated and published in 1996. Guidance was developed to facilitate recognition and use of good practices in quality management issues, applicable to senior and middle levels of management in both nuclear utilities and regulatory bodies. These tasks were completed in 1997. Further activities related to quality assurance and management are continuing with a high priority.

### ***Management of Delayed Nuclear Power Projects***

This project was initiated in 1997 as a short duration project to assist the management of delayed nuclear power projects. Identification of problems, exchange of experience and development of measures to maintain readiness for resuming project implementation when conditions permit were addressed under this project. This project was completed in 1998.

Two other projects started in 1999 are the following:

***Nuclear Power  
Programme Planning  
and Economic Analysis***

The objective of this project is to facilitate exchange of experience and assistance to Member States in nuclear power programme planning, feasibility studies and economic analysis including economic, financial and infrastructural aspects of nuclear power and cost/benefit analysis of NPP upgrading, plant life extension and decommissioning.

***Management of NPP  
in a Competitive  
Environment***

The objective is to assist the management of NPP organizations in identifying and implementing appropriate measures to remain competitive in a rapidly changing business environment. Emerging issues that require particular management attention include privatization of nuclear utilities, increasing deregulation of energy markets and fulfillment of quality requirements during the overall service life of NPPs including decommissioning.

***Support to Technical  
Co-operation (TC)  
Activities***

As per the directives of the “Agency’s New Strategy for Technical Co-operation”, the IAEA’s TC Strategy is to promote tangible socio-economic impact through technical co-operation with MS by contributing in a cost effective manner to activities addressing high development priorities of each country. During the period 1995-1998, more than 50 TC projects were supported by NPES. A further increase is foreseen in the scope and efficiency of support to TC activities as well as enhancing the current efforts at harmonisation/synergy between Regular and TC programme in areas such as:

- integrated approach to assisting Member States;
- carrying out activities under RB and TC budgets in conjunction; and
- interlinking regional and national TC projects on issues of common interest.

***Future  
Directions***

Based on the recommendations of the PPAS evaluation of the sub-programme in 1998, an approved follow up action plan was presented at the PPAS evaluation of major programme 1 (MP 1) in 1999 and was strongly endorsed. The future objectives, structure, directions and scope of the sub-programme will be adjusted subsequent to the approval of the follow up action plan on the recommendations of the PPAS evaluation of MP 1. and will be fully implemented during the next budget cycle. Three main directions of activities are envisaged:

- nuclear power planning and implementation.
- optimization of NPP performance over plant service life.
- NPP life management.

Technical support to TC activities in all these areas will continue.

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***Main Results In 1998***

***PPAS Evaluation  
of  
Subprogramme  
A2***

An external evaluation of Subprogramme A.2 within the Agency’s programme performance assessment system (PPAS) was completed. The Review Team ***contacted thirty organizations in fourteen Member States (MS) plus the Nuclear Energy Agency (NEA) and the World Association of Nuclear Operators (WANO)*** to obtain their feedback on the Sub-program and its priorities. The Team concluded that the ***quality of Sub-programme products was suitable for their intended use and that most projects were in areas important to the MS.***

***Policy Issues for  
Introducing  
Nuclear Power***

A technical report, ***Choosing the Nuclear Power Option: Factors to be Considered***, provides information on political, governmental, economic, financial, technical and safety issues associated with planning and implementing a nuclear

## **Programmes**

### ***International Seminar on Nuclear Power In Developing Countries: Its Potential Role And Strategies For Its Deployment***

power programme. It highlights the main areas in which policies must be developed as well as the roles and responsibilities of the government, the plant owner and the national industry.

International Seminar on ***Nuclear Power In Developing Countries: Its Potential Role And Strategies for its Deployment***, Mumbai, India, 12-16 October 1998, was organized jointly by the Planning and Economic Studies Section (PESS) and the Nuclear Power Engineering Section (NPES). The seminar, hosted by India, was attended by 110 participants from 32 countries. The message from the developing countries represented at this seminar was that there is a considerable interest in nuclear power as part of their future energy strategy.

### **Strengthening Project Management**

Three technical documents were published in this area:

***Selection, Competency Development and Assessment of Nuclear Power Plant Managers*** provides guidance on more structured ways for the selection, competency development and assessment of NPP managers.

***Nuclear Power Plant Organization and Staffing for Improved Performance: Lessons Learned*** provides guidance on organization and staffing of NPPs for improved efficiency and effectiveness.

***Good Practices with Respect to the Development and Use of Nuclear Power Plant Procedures*** considers ways to reduce the burden of developing and maintaining their plant procedures system and addresses the entire spectrum of issues facing Member States in developing and using NPP procedures.

### **Training and Qualification**

A technical document, ***Selection , Specification, Design and Use of Various Nuclear Power Plant Training Simulators***, provides guidance on the significance of various types of simulators other than plant-reference, full scope simulators.

***Specialists' Meeting on Maintenance Training Centres*** was hosted by the EPRI NDE Center and Duke Power Company's McGuire NPP training center in October 1998, in Charlotte/USA to provide a forum for exchange of ideas and methods for training of NPP maintenance personnel. *The proceedings of the meeting are available upon request.*

A technical document, ***Experience in the Use of Systematic Approach to Training (SAT) for Nuclear Power Plant Personnel***, provides a detailed overview and analysis of world-wide experience on the introduction and use of SAT.

***IAEA World Survey on Nuclear Power Plant Personnel*** represents a unique compilation of important information on all aspects of NPP personnel training from 23 Member States and 129 training organizations. It provides an overview of all aspects of NPP personnel training in Member States.

### **Quality Assurance within Regulatory Bodies**

A technical document, ***The Application of Quality Assurance/Quality Management within Regulatory Bodies***, provides guidance on developing systematic approaches to quality within Regulatory Bodies and transparency in the performance of regulatory activities and facilitates the process of preparation of national reports under the Convention on Nuclear Safety.

**Management of Delayed Projects: Maintaining Readiness for Resuming Project Implementation**

**NPP Operations Management**

*More than 550 organizations access nuclear power plant status and operating experience through PRIS*

*Consolidating information on nuclear power infrastructure.*

**Control & Instrumentation**

Another technical document, *Quality Assurance Programmes Applied to Safety Related Software Used in Nuclear Power Installations*, assists managers, performers and assessors from utilities, technical support organizations, suppliers and regulatory bodies in the management and implementation of quality assurance programmes for software.

A technical document on the subject provides guidance and practical examples on the necessary management actions to develop and preserve the capability to restart and complete delayed NPP projects. It addresses the following management issues:

- general management problems and measures
- retention of qualified man-power
- maintenance of quality specifications and safety conditions of partially constructed installations, structures and equipment on site
- fulfilment of current regulatory requirements and technological developments.

A technical document, *Evaluating and Improving Nuclear Power Plant Performance*, presents good practices at a few of the world's most productive plants, to provide a basis for improvement of nuclear power plant operations and productivity.

Based on the recommendations of 23 Member States, preparation of an *Nuclear Economic Performance International System (NEPIS)* has been initiated in co-operation with the Electric Utility Cost Group (EUCG), USA, to facilitate optimization between economic and technical performance.

In 1998, 290 organizations have accessed the *Power Reactor Information System (PRIS)* database through PRIS-PC via the Internet. The MicroPRIS, a subset of the database on diskettes was distributed to over 330 organizations in the Member States and 8 international organizations. Information on PRIS is available on the Internet at <http://www.iaea.or.at/programmes/a2/>

The 18<sup>th</sup> edition of *RDS No.2 - Nuclear Power Reactors in the World* was issued in April 1998. Its main charts and figures are also available in the IAEA web page at <http://www.iaea.or.at/programmes/a2/>

The publication, *Operating Experience with Nuclear Power Stations in 1997*, provides performance data and outage information of operating nuclear power plants in the IAEA Member States.

30 IAEA Member States contributed information about their nuclear power infrastructure to the publication, *Country Nuclear Power Profiles*. The document presents factors related to effective planning, decision-making, and implementation of nuclear power programmes that together lead to safe and economic operations.

*A Co-ordinated Research Project on Outage Coding System* was initiated to develop and implement an internationally accepted outage coding system for nuclear power plants.

A technical document, *Modernization of Instrumentation and Control in Nuclear Power Plants*, provides methodologies, guidelines, processes, concerns, and good practices to facilitate modernization of instrumentation and control

equipment in nuclear power plants.

Another document, *Specifying Requirements for Upgrades Using Digital Instrumentation and Control*, provides guidance on a systematic approach to developing comprehensive specifications that maintain a focus on the highest project risk areas.

The following meetings were held:

- Technical Committee Meeting (TCM) on *Diagnostic Systems in Nuclear Power Plants*, 22-24 June 1998, Turkey.
- Specialists Meeting on *Design and Assessment of Instrumentation and Control Systems in NPP Coping with Rapid Technological Change*, 6 - 8 October 1998, Garching, Germany.

## **NPP Life Management**

The second module of the IAEA International Database on NPP Life Management called *International Database on Piping of Nuclear Power Plants* was established. It is a material database containing data on material properties, inspection results and case histories for piping systems in NPPs. The software will be made available to all national recognized organizations willing to take part in the database.

A *Joint EC IAEA Specialists Meeting on Non-Destructive Testing Methods for Monitoring Degradation* was held at the Joint Research Centre of the European Commission, Petten, Netherlands, on the 10 - 12 March 1999. The purpose of the meeting was to provide an international forum for exchanging information among Member States on recent development, capability evaluation and validation tests and utility experience with NDT methods used to detect and monitor degradation. It was generally accepted that, while safety aspects were of paramount importance in NPP operation, the main motivations for activities in this area should be the remaining life assessment of plant components which fundamentally determines cost competitiveness of the electricity generation on long term basis.

Work was initiated on the preparation of a technical document, *NPP Life Management Programme*, identifying the main issues and providing guidance on practical measures related to the development and implementation of. life management programmes.

Specialists meetings were held on the following topics:

- *NPP Condition Monitoring and Maintenance*, 2-5 June 1998, Leon, France.
- *Strategies and Policies for NPP Life Management*, 28-30 September 1998, Vienna.
- *Behaviour of Core Internals*, 6-8 October 1998, Rez, Czech Republic.

## **Year 2000 Problem**

According to the Agency's *Action Plan for the Year 2000 Computer System Problem*, the NPES through its International Working Groups and a consultancy held in December 1998 provided recommendations to be taken into account in the contingency planning activities.

## **Grid Performance and its Impact on Nuclear**

A technical document, *The impact of Year 2000 Problem on Electricity Grid Performance and Nuclear Power Plant Operation*, addresses establishment and

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Technical Co-  
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Activities**

implementation of methods and procedures for sharing information on diagnostic and corrective actions carried out in Member States on grid instabilities and their impact on nuclear power plant operations. It identifies specific actions to be taken in connection with the Year 2000 problem and expected infrastructure failures.

In the framework of the TC regional project *RER/4/020 on 'Advanced NDT of Primary Circuit Components of WWER NPPs'*, a **Pilot Study** to investigate the practical aspects of using the IAEA guidelines on In-Service Inspection (ISI) qualification was organised. The concept of the Pilot Study was a 'simulation' of the qualification process through assistance to establish qualification for a real NPP component, using real ISI organisation, and in a real regulatory environment. As NPP component, the reactor pressure vessel shell weld of the unit 5 of Kozloduy NPP, Bulgaria, was selected, the inspection was ultrasonic testing (UT).

The following workshops/training courses/executive meetings were organized:

- Between 18 and 22 January 1999, a **Regional Workshop** was held in Zagreb, Croatia, and the interim Technical Specification, the inspection procedure, target flaw size calculation as qualification objective and regulatory requirements as basis for the qualification process were presented and discussed. During and after the workshop, 'outstanding' information were identified and requested from the team members to provide them to a **Technical Meeting** which was held in Sofia, Bulgaria, from 26 to 28 May. At this meeting, representatives of the Bulgarian Nuclear Regulatory Authority, Kozloduy NPP, INETEC, Croatia, OKB GIDROPRESS, Russian Federation, EPRI, USA, as team members were present. In addition, representatives of the recently established Bulgarian Qualification Body and that of Izhorski Zavod, Russian Federation (manufacturer of the reactor pressure vessel of unit 5), attended at the meeting. Participants agreed on the Pilot Study tasks and schedule.
- Regional Workshop on *Upgrading and Modernization of Instrumentation and Control of WWER 440/213 NPPs*, was organized jointly with Operational Safety Section in Prague, Czech Republic and with the co-operation of the State Office for Nuclear Safety (SONS) from 3-6 March 1998.
- Regional Workshop on *Organization and Management of the Technical Support for NPP Operation*, hosted by the Bohunice NPP, at Piestany, Slovak Republic, from 30 March - 03 April 1998.
- Regional Workshop on *Flaw Discrimination and Sizing Methods and Techniques*, hosted by TECNATOM, at Madrid, Spain, from 20 to 24 April 1998.
- Workshop on *On-line Testing of Nuclear Plant Temperature and Pressure Instrumentation and Other Critical Plant Equipment*, held at Trnava, Slovak Republic, 25 - 29 May 1998.
- Workshop on *Planning and Management Support for NPP Personnel SAT-based Training Programmes*, held at PAKS NP, Hungary, 8 to 12 June 1998.
- *Interregional Training Course on Training and Qualification of NPP*



*Personnel and Management Responsibilities*, 28 September-16 October 1998, Karlsruhe, Germany and Madrid, Spain.

- *Regional East Asia and Pacific Workshop on Co-operation Among the RCA Member States in the Region on Nuclear Power Planning and Implementation*, Taejon, ROK, 23-27 November 1998.
- Regional (Europe) Training Course on *Modernization of Instrumentation and Control in Nuclear Power Plants*, 16 November to 4 December 1998, hosted by the Karlsruhe Research Centre (FZK), Centre for Advanced Technological and Environmental Training (FTU), Karlsruhe, Germany.
- The 8<sup>th</sup> Executive Meeting on *Co-operation in Nuclear Power Management*, 7 to 11 December 1998, Embalse NPP, Córdoba, Argentina.
- *Regional Workshop on Ageing and Life Management of Nuclear Power Plants*, 28 September-2 October 1998, Helsinki, hosted by the Finnish Radiation and Nuclear Safety Authority.
- Regional Training Course on *Nuclear Power Plant Maintenance*, 26 October-13 November 1998, Spain and Hungary, hosted by CIEMAT and Paks NPP.
- Regional workshop on *Optimization of Nuclear Power Plant Maintenance*, 2-6 November 1998, hosted by the Narora Atomic Power Station, India.

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## **NPES Forthcoming Activities**

**9-13 August 1999**  
**Vienna, Austria**

Consultancy meeting to prepare an extended outline of the new technical document on *Assuring the Competence of NPP Contractor Personnel*. A technical document that will provide assistance to utility and NPP managers and other industry organizations on the assuring the competence of NPP contractor personnel. The primary objective of the document is to help plant management and training professionals define the required technical and professional competencies for contractor personnel, to provide methods and tools for competencies assessment and evaluation. The documents will also includes national/utilities' experience (case studies) in the subject area. *Scientific Secretary: A. Kossilov*

**1-3 September 1999**  
**Vienna, Austria**

Consultancy Meeting to review the first draft of a technical document directed to:  
1) provide guidance on the approach to policies and the development and implementation of *Plant Life Management Programmes* based on existing experience; 2) provide an overview of plant life management practices world-wide.  
*Scientific Secretary: N. Pieroni*

**6-10 September 1999**  
**Ulsan City, Korea,**  
**Republic of**

Regional Asia Workshop on *Human Resource Management with Emphasis on Training and Licensing*. The purpose of this workshop is to transfer experience concerning human resource management of nuclear power plant (NPP) personnel. Particular emphasis will be given to the training and licensing of NPP personnel. It is expected that participants, through appropriately applying the good practices described during this workshop can improve the performance of NPP personnel in

their organizations. *Technical Officer: T. Mazour*

**13-17 September 1999**  
**Vladimir, Russia**

Specialists Meeting on ***Erosion/Corrosion of Nuclear Power Plant Components***. The meeting is organized within the framework of the IAEA International Working Group on Life Management of Nuclear Power Plants. The meeting will serve as an international forum for the discussion of recent results in studies of degradation processes of NPP primary and secondary circuit components. The meeting will address topics of materials behavior and selection, water composition control, hydraulic assessments, specific NDE scheduling, critical aspects of data in case of experiments and their quality assurance and transferability to the NPP cases, mitigation measures and their impact on plant life and ageing management, strategies for component life management. *Scientific Secretary: V. Lyssakov*

**28-30 September 1999**  
**Vienna, Austria**

Consultancy meeting to finalize the draft background document for the database specification and filing structure of the ***International Database on Steam Generators***. This document will serve later on as a basis for the software development for the Database. *Scientific Secretary: V. Lyssakov*

**4 - 7 October 1999,**  
**Vienna, Austria**

Consultancy to discuss ***Determinant Causes for Reducing Outages***. The objective of the meeting is to discuss strategies to reduce outage duration and how they were worked out and to assist in the preparation of the final document on “Good Practices for Optimizing Outage Duration”. The document is intended to outline main issues to consider when optimizing outage duration, which measures can be taken for its optimisation and avoiding outage extensions. *Scientific Secretary: R. Spiegelberg- Planer.*

**4-7 October 1999**  
**Vienna, Austria**

Advisory Group Meeting to review a draft technical document on ***Training of NPP Personnel on Human-Factor Related Competencies***. Experience has shown that technical competencies related to an NPP and its processes are not enough to ensure performance to established international standards, and professionalism of NPP personnel. Experience has also shown that these human factors competencies (called “soft skills” in some Member States) have not always been fully addressed in many NPP personnel training programmes, primarily because of a focus on technical competencies. In the environment in which nuclear utilities are moving towards, there is an increasing need for training of NPP personnel in areas such as: communication, team building, management and supervision, leadership, and analytical methods. *Scientific Secretary: T. Mazour.*

**4-7 October 1999**  
**Vienna, Austria**

Consultancy meeting to develop a new technical document on ***NPP Configuration Management Throughout Plant Life-time***. The purpose of this technical document is to define the various aspects that needed to be considered in the development and implementation of a configuration management system. These aspect include design, procurement, methods/tools, human factors, cost/benefit, implementation. In addition, examples are included from various countries which have implemented such systems and the lessons learned during this implementation. *Scientific Secretaries: V. Kotyza and A. Kossilov*

**11-13 October 1999**  
**Vienna, Austria**

Consultancy Meeting to develop a programme for the new CRP on ***Mechanism of Nickel Effect in Radiation Embrittlement of Reactor Pressure Vessel Materials*** with the main objective to determine mechanism and quantify the deteriorating nickel content effect (up to 1.8% mass) in radiation embrittlement of RPV steels of Ni-Cr-Mo-V and Mn-Ni-Cr-Mo types. *Scientific Secretary: V. Lyssakov*

**11 - 13 October 1999,  
Vienna, Austria**

Consultancy to discuss and review ***The Country Nuclear Power Profiles***. The objective of the meeting is to consolidate information about the nuclear power infrastructures in Member States with nuclear power plants in operation and under construction, 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. It should also cover aspects and questions coming from the last Advisory group held in May 1999.

*Scientific Secretary: R. Spiegelberg- Planer.*

**11 - 15 October 1999,  
Vienna, Austria**

Consultancy meeting to prepare a technical document on ***Integrated Approach to Planning of Nuclear Power Programmes*** and to develop terms of reference for a more comprehensive activity for providing direct services to requesting Member States in the subject area. The document will provide comprehensive guidance to executives and managers on the integrated planning process that considers all the factors necessary for successful implementation of a nuclear power programme taking into account the structural changes in the energy sector during the last decade. *Scientific Secretary: M. Rao*

**18-22 October 1999  
Vienna, Austria**

Consultancy meeting to prepare an extended outline of the new technical document on ***Information Technology Impact on the Design Process and Plant Documentation***. The document will provide through recommendations and guidance on how the modern computer technologies can be utilized in the design process and plant documentation to improve configuration management at NPP, reliability of data, quality of personnel work and through these to improve plant operational performance and safety. *Scientific Secretary: A. Kossilov*

**19-21 October 1999  
Vienna, Austria**

Advisory Group Meeting to prepare a technical document on application of ***Quality Assurance in the Detection, Prevention, Disposition and Removal of Suspect and Counterfeit Items***. A suspect item is one in which there is an indication that it may not conform to established specifications or standards. A counterfeit item is a suspect item that is a copy or substitute without legal right or authority to do so or one whose material, performance or characteristics are knowingly misrepresented by the vendor, supplier, distributor or manufacturer. Suspected/counterfeit items (S/CI's) pose immediate and potential threats to the safety and contractor workers, the public and the environment. *Scientific Secretary: N. Pieroni*

**26-28 October 1999  
Taejon, Republic of  
Korea**

Specialists' Meeting on ***Human-Machine Interface for Off-normal and Emergency Situations in Nuclear Power Plants***. The main objective of the meeting is to provide an international forum for the presentation and discussion of up-to-date practices and methodologies useful for the design of HMI for off-normal and emergency situations in NPP. It will provide an opportunity to exchange experiences on HMI from a variety of positions and solutions developed in different countries and utilities under differing circumstances. Operational experience on HMI for off-normal and emergency situations is of utmost interest in this Meeting. *Scientific Secretaries: M. Dusic and A. Kossilov*

**8 - 10 November 1999,  
Vienna, Austria**

Consultancy to implement the ***Nuclear Economic Performance International System - NEPIS***. This consultancy is intended to disseminate terminology and definitions and start data collection for NEPIS in all the world regions based on the findings of the Pilot Project which established NEPIS.

*Scientific Secretary: R. Spiegelberg- Planer.*

<p><b>8-12 November 1999</b> <b>Vienna, Austria</b></p>	<p>Research Co-ordination Meeting on <b><i>Scientific Basis and Engineering Solutions for Cost Effective Assessments of Software Based I&amp;C Systems</i></b>. The main purpose of the project is to facilitate exchange of information and provide practical guidance in the design process of computer-based instrumentation and control systems for NPP which allow to implement the most cost-effective assessment process. <i>Scientific Secretary: A. Kossilov</i></p>
<p><b>17-19 November 1999</b> <b>Vienna, Austria</b></p>	<p>Research Co-ordination Meeting (final) of the CRP <b><i>Assuring Structural Integrity of Reactor Pressure Vessels</i></b>. The meeting will address final results obtained during the past three years of the CRP activity and discuss the draft final report on the CRP. <i>Scientific Secretary: V. Lyssakov</i></p>
<p><b>November 1999</b> <b>Vienna, Austria</b></p>	<p>Research Coordinated Meeting on <b><i>National Approaches to Correlate Performance Targets and O&amp;M Budget, Including Upgrading and Lifetime Extension</i></b>. The purpose of the new project planned to be established in 1999-2000 is to discuss and analyze national approaches to correlate performance targets and O&amp;M costs with the objective to identify major economic performance indicators. The development of economic performance indicators will allow management to identify more clearly where and how costs are being incurred and sharpen its judgement to determine whether adjustments would improve plant competitiveness of. All Member States with operating nuclear power plants are invited to participate in the research project. The first meeting, planned to end of 1999, should discuss the project activities and implementation. <i>Scientific Secretary: Ms. R. Spiegelberg-Planer.</i></p>
<p><b>November 1999</b> <b>Vienna, Austria</b></p>	<p>Consultancy Meeting on the preparation of a document on <b><i>Cost Inputs for a Detailed Economic Assessment of NPP Lifetime Extension</i></b>. The reactors starting operation in the nineteen-sixties to eighties will reach the end of their planned life in the foreseeable future, since the design life is typically between 30-40 years. Utilities operating such reactors have now to consider whether they will replace the plants reaching their planned end of life or refurbish the plants and extend their lifetime. The decision is quite complex, involving a number of issues, but usually starts with analyzing a number of economic factors. The document objective is to facilitate exchange of experience and assistance to developing MS in nuclear power program planning and economic analyses of nuclear power plant life extension. It is a joint work of NPES and PESS of the Department of Nuclear Energy. At this meeting the terms of reference should be adopted or amended and a detailed table of contents of the document should be prepared. <i>Scientific Secretary: M. Condu</i></p>
<p><b>29 November to 1 December 1999, Vienna, Austria</b></p>	<p>Consultancy to <b><i>Assess Developments on PRIS</i></b>. The objective of this meeting is to assess developments and improvements in PRIS, its services and publications. <i>Scientific Secretary: R. Spiegelberg- Planer.</i></p>
<p><b>Activities under Technical Co-operation programme</b></p>	
<p><b>13-15 September 1999</b> <b>Sofia, Bulgaria</b></p>	<p>Workshop on <b><i>Year 2000 Issue: Interface Between Electricity Grid Performance and NPP Operation</i></b> will be organized in the framework of the TC regional project for Europe RER/4/011. The purpose of the workshop is to allow an exchange of experience between representatives of electricity grid authorities and NPPs on their interfaces in readiness for the Year 2000 problem. <i>Technical Officers: B. Gueorguiev and I. Ianev</i></p>

<p><b>27 September - 1 October 1999</b> <b>Trillo NPP, Spain</b></p>	<p>The second Executive Meeting under the TC regional project RLA/4/016 will bring together plant superintendents and senior members from nuclear utilities in Argentina, Brazil, Cuba, Mexico and Spain. The objective is to discuss and share experience on <b>Management Issues Related with Cost Reduction and Performance Improvement in NPP</b>. Specific topics include the management strategies to maintain the nuclear option, and the utilities' responsibilities resulting from fulfilment of the Convention on Nuclear Safety. <i>Technical Officer: N. Pieroni</i></p>
<p><b>6-10 September 1999</b> <b>Bratislava, Slovak Republic</b></p>	<p>Workshop on <b>Optimisation of In-Service Inspection Programme of Primary Circuit Components</b> will be organized in the framework of the TC regional project for Europe RER/4/020 on <i>Advanced NDT of Primary Circuit Components of WWER NPPs</i>. <i>Technical Officer: P. Trampus.</i></p>
<p><b>25 October - 19 November 1999</b> <b>Karlsruhe, Germany</b></p>	<p>Interregional training course on <b>Nuclear Power Plant Control and instrumentation</b>. The objective of the course is to give an overview of the main concepts and designs of control and instrumentation systems for nuclear power plants, particularly with regard to their safety functions and reliable operation. The course will cover the main design features and requirements of I&amp;C systems. There will be adequate coverage of those actions which would be taken in planning, design, procurement, inspection, commissioning and testing, start-up and commercial operation of I&amp;C systems in order to achieve safe and reliable operation of NPP. Classroom training will be complemented with a number of technical visits to NPP, electrical grid facilities, manufacturers of I&amp;C equipment. <i>Technical Officer: A. Kossilov.</i></p>
<p><b>22-24 November 1999</b> <b>Vienna, Austria</b></p>	<p>Technical Meeting on <b>Strengthening NDT infrastructure for assistance to Central and Eastern European Countries in the field of In-Service Inspection of NPP components</b>. The objective of the meeting is to exchange the basic information on ongoing and planned technical assistance to Central and Eastern European countries in the field of ISI, and to discuss the need, principles and practical procedures for an information exchange mechanism between major donor countries and organizations. <i>Technical Officer: P. Trampus.</i></p>
<p><b>22-26 November 1999</b> <b>Angra-2 NPP, Brazil</b></p>	<p>Management Workshop on <b>Experience on Delayed Nuclear Power Plant Projects</b>. The experience gained during the finalization of the erection and commissioning of the Angra-2 NPP project will be presented by host experts and discussed. The external experts will present the current status and problems in their current delayed NPP projects. Actions that could be implemented to co-operate/benefit through joining efforts and exchanging experience/information/services will be sought. Envisaged participants are senior managers involved with delayed NPP projects. <i>Technical Officer: N. Pieroni.</i></p>
<p><b>29 November - 3 December 1999</b> <b>Ignalina NPP, Lithuania</b></p>	<p>Workshop on <b>Experience with Full Scope Simulator for NPPs with RBMK Types Reactors</b>. The workshop will be organized jointly by the IAEA and US DOE in the framework of the IAEA TC project LIT/0/003 on Systematic Approach to Training (SAT) for NPP Personnel. <i>Technical Officer: A. Kossilov</i></p>
<p><b>29 November - 3 December 1999</b> <b>Ljubljana, Slovenia</b></p>	<p>Regional Workshop on <b>Human Resource Management</b>. This IAEA workshop, under the TC project RER/4/011-Improving NPP Operations Management, is being hosted by the Josef Stefan Institute, Ljubljana, Slovenia, for senior managers of NPP's, Utilities and nuclear safety regulatory authorities. <i>Technical Officer: M. Rao</i></p>

**February 2000**  
**Hungary**

Regional Europe Workshop on ***The Impact of Privatization and Market Deregulation on NPP Operation***. Participant nominations will be solicited from Member States in the European Region around in the Fall of 1999.  
*Technical Officer: T. Mazour.*

**19-30 June 2000**  
**Saclay, France**

Interregional Training Course on ***Management for Excellence in Nuclear Power Plant Performance***. The purpose of the course will be to present and discuss main problems and solutions in NPP management taking into account the challenging requirements imposed by the increasingly competitive environment, including: 1) key management issues affecting performance in the nuclear industry; 2) typical symptoms that may indicate significant problems; 3) possible solutions to the problems; 4) good management practices that contribute to improved overall performance. *Technical Officer: N. Pieroni*

## **Recent Publications**

### **1997**

- IAEA-TECDOC-919 ***Management of Procurement Activities in a Nuclear Installation***, January 1997
- IAEA-TECDOC-922 ***Performance Analysis of WWER-440/230 Nuclear Power Plants***, January 1997
- IAEA-TECDOC-928 ***Good Practices for Cost Effective Maintenance of Nuclear Power Plants***, February 1997
- RDS-2/17 ***Nuclear Power Reactors in the World (April 1997 edition)***
- IAEA-TECDOC-952 ***Advanced Control Systems to Improve Nuclear Power Plant Reliability and efficiency***, July 1997
- STI/PUB/1051 ***Operating Experience with Nuclear Power Stations in Member States in 1996***

### **1998**

- IAEA-TECDOC-995 ***Selection , Specification, Design and Use of Various Nuclear Power Plant Training Simulators***, January 1998
- IAEA-TECDOC-1016 ***Modernization of Instrumentation and Control in Nuclear Power Plants***, May 1998
- IAEA-TECDOC-1024 ***Selection, Competency Development and Assessment of Nuclear Power Plant Managers***, June 1998
- STI/PUB/1050 ***Choosing the Nuclear Power Option: Factors to be Considered***
- RDS-2/18 ***Nuclear Power Reactors in the World (April 1998 edition)***
- Country Nuclear Power Profiles***, March 1998
- IAEA-TECDOC-1052 ***Nuclear Power Plant Organization and Staffing for Improved Performance: Lessons Learned***, November 1998

- IAEA-TECDOC-1057 *Experience in the Use of Systematic Approach to Training (SAT) for Nuclear Power Plant Personnel*, December 1998
- IAEA-TECDOC-1058 *Good Practices with Respect to the Development and Use of Nuclear Power Plant Procedures*, December 1998
- 1999**
- IAEA-TECDOC-1063 *IAEA World Survey on Nuclear Power Plant Personnel Training*, January 1999
- IAEA-TECDOC-1066 *Specification of Requirements for Upgrades Using Digital Instrument and Control Systems*, January 1999
- IAEA-TECDOC-1078 *Technical Support for Nuclear Power Operations*, April 1999
- RDS-2/19 *Nuclear Power Reactors in the World (April 1999 edition)*
- IAEA-TRS-384 *Verification and Validation of Software Related to Nuclear Power Plant Instrumentation and Control*, 1999
- IAEA-TECDOC-1090 *Quality Assurance within Regulatory Bodies*, June 1999
- IAEA-TECDOC-1095 *The Impact of the Year 2000 Issue on Electricity Grid Performance and Nuclear Power Plant Operation in Bulgaria, the Russian Federation and Slovakia*, June 1999
- IAEA-TECDOC-1098 *Evaluating and Improving Nuclear Power Plant Performance*, July 1999

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Nuclear Power Engineering Section Newsletter

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A-1400 Vienna, Austria

Printed by the IAEA in Vienna  
August 1999

99-02289