



**A newsletter of the Division of Nuclear Power
Vol. 1, No. 2, December 2004**

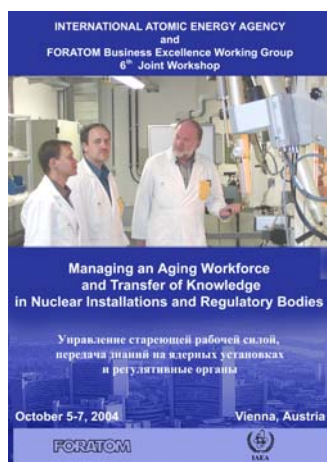
<http://www.iaea.org/OurWork/ST/NE/NENP/index.html>

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Division of Nuclear Power
Department of Nuclear Energy
IAEA
P.O. Box 100
A-1400 Vienna, Austria
Tel : +43 1 2600 22751
Fax: +43 1 2600 29598

The 6th IAEA-FORATOM joint workshop on *Managing an Aging Workforce and Transfer of Knowledge in Nuclear Installations and Regulatory Bodies*



A joint IAEA/FORATOM Workshop was organized on 5-7 October 2004 focusing on Managing an Aging Workforce and Transfer of Knowledge in Nuclear Installations and Regulatory Bodies. The primary objective of the workshop was to provide a forum for exchanging experiences and information on effective management of the Aging Workforce and Transfer of Knowledge in Nuclear Installations and Regulatory Bodies. The main emphasis was on common difficulties, possible solutions, and good practices directed to improve overall performance with due regard to safety.

The workshop focused on the exchange of practical experience from the represented Member States. There were 72 participants registered in the workshop.

The workshop was developed to have participants consider the following three key issues:

- **Strategy for managing an ageing workforce:**
- **Knowledge management:**
- **Managing an ageing workforce, regulatory aspects:**

An entire day was devoted to each of the key issues. The workshop included a total of 13 presentations and nine parallel working group sessions. Summaries of working group discussions were presented and discussed in plenary sessions held at the end of each day.

The workshop achieved its objectives. Participants returned back to their respective organisations with significantly increased knowledge about the management of ageing workforces and the transfer of tacit knowledge between generations of workers. The participants found the workshop very practical. The participants identified difficulties, good practices, and recommendations to the IAEA and FORATOM. Dissemination of this information within the Member States should assist both individuals and organisations in the areas of ageing workforce management and tacit knowledge transfer.

There are plans on the way to organize the next workshop, which will take place in Romania, 2006.

For further information please contact Mr. Pal Vincze: p.vincze@iaea.org

MESSAGE FROM THE DIRECTOR, Mr. A. OMOTO

Welcome to our second newsletter for 2004.

We have received many indications of satisfaction from people to whom we sent our first newsletter. We hope that information on our activities will continue to be useful, and the wider picture of our work will reach a broader audience than our activities usually reach.

Your feedback to this Newsletter as well as to our activities are always important for us. Among the many activities performed during the last few months I will only refer to a few.

The 6th joint IAEA/FORATOM workshop on Aging Workforce and Knowledge Transfer issues was held in October. The key problems were discussed and good practices were shared among the participants.

The Division is leading the “International Project on Innovative Nuclear Reactors and Fuel Cycles” (INPRO) which is yet another example of an area in which we are looking to the long term future of nuclear energy.

A series of INPRO meetings were held during the last three months to update the methodology document based on national and individual case studies, as part of the 1st half of phase IB (validation phase). The plan to move forward with the 2nd half of the phase IB (application phase) and possible phase II activities were also discussed. The results of these consultations will be presented to the Member States' Steering Committee in early December. The number of INPRO members now increased to 21.

The new Safety Standards on Management System continued to be discussed by Member States to improve the draft standards (DS338) by NUSSC and other committees.

Apart from these new developments, in this Newsletter we have tried to convey information on 7 Technical

Working Groups and INDAG, for desalination area, that advise on the specific activities to be carried out by the Division of Nuclear Power.

These TWG activities are very important for the interface between the Member States and the Agency on specific technical areas. However, the respective information may not necessarily circulate well enough. We have opened web pages for each TWG to disseminate information on the TWG activities, and this Newsletter carries some relevant information on TWGs, too.

We are serving the Member States to assist excellence in operation of nuclear plants and to make nuclear power a continued viable option for sustainable development.

A major activity has been working with the Technical Cooperation Department to plan for the 2005-6 biennium of TC projects. We will be working to provide support and assistance to all TC regions, covering activities ranging from helping Member States to prepare for the introduction of nuclear desalination facilities or new nuclear power producing plants, to working with existing plants on maintaining good operation, managing changes within

the plant, and extending the operating license of the plants.

Recognising the essential need for public information about the key role that nuclear power will play in meeting the energy demands of the next century, and the environmental benefits that nuclear power can provide, the Division is also actively involved in preparing the Conference “Nuclear Power for the 21st Century” to be held in Paris in Spring 2005. This Conference

will facilitate a public discussion on the issue of nuclear energy and society involving experts and decision makers.

Again I would welcome comments or suggestions on any of the activities described in this Newsletter, or presented in more detail in the web site.

TWGs and INDAG under Division of Nuclear Power

Technical Working Group on Nuclear Power Plant Control and Instrumentation (TWG-NPPCI)
Technical Working Group on Life Management of Nuclear Power Plants (TWG-LMNPP)
Technical Working Group on Nuclear Power Plant Personnel Training & Qualification (TWG-T&Q)
Technical Working Group for Advanced Technologies for Light Water Reactors (TWG-LWR)
Technical Working Group for Advanced Technologies for Heavy Water Reactors (TWG-HWR)
Technical Working Group for Fast Reactors (TWG-FR)
Technical Working Group on Gas Cooled Reactors (TWG-GCR)
International Nuclear Desalination Advisory Group (INDAG)

Important WebSite links

Division Introduction : NENP home: <http://www.iaea.org/OurWork/ST/NE/NENP/index.html>

NENP Meetings: <http://www.iaea.org/OurWork/ST/NE/NENP/meetings.html>

Technical Working Groups (TWGs) and International Nuclear Desalination Advisory Group (INDAG):

<http://www.iaea.org/OurWork/ST/NE/NENP/twg.html>

Nuclear Power Plant Operating Performance and Life Cycle Management

Continuous Process Improvement of NPP Operation

A technical document on **Management of life cycle and aging at nuclear power plants: Improved I&C maintenance** TECDOC- 1402 was published, which provides the latest information on aging, obsolescence, and performance monitoring of those I&C equipment that are classified as safety equipment and/or safety-related equipment, are operated in harsh environments in nuclear power plants, and are important in plant life management not only for normal operation but also, and more importantly, for post-accident service. The TECDOC discusses the effects of aging and obsolescence of this equipment, and describes state of the art techniques and new procedures that can be implemented remotely while the plant is on-line to verify the performance, adequacy, and availability of these I&C equipment.



A technical meeting (TM) on **Increasing Instrument Calibration Interval through On-line Calibration Technology** was held on 27-29 Sept. at Halden, Norway to exchange technical information and lessons learned. 85 participants from 22 countries attended the meeting, which was hosted by the Halden Reactor Project. The papers and presentations are to be published on CD as working material. The technical meeting was followed by an advisory group meeting of selected experts preparing an extended technical document on **On-line Monitoring of Sensor Performance in Nuclear Power Plants**.

Integrated NPP Life Cycle Management

Consultants meeting on **Assessment of the software package for the international database on NPP concrete containment** was held on 30th August-1st Sept. at VIC. Due to poor quality of the submitted SW package, the second installment for SW was not paid and the service contract was terminated. Scientific secretary will re-issue the service request to complete the SW package.

A technical report series on **Guidelines for Application of the Master Curve Approach to Reactor Pressure Vessel Integrity in Nuclear Power Plants (PC/4569)** was approved for publication. This TRS provides the Master Curve approach for assessing the fracture toughness of Reactor Pressure Vessel using a sampled irradiated material. This report provides a summary of Master Curve fracture toughness test results on small surveillance-type specimens of the IAEA Reference Material and other national steels from numerous laboratories throughout the world.

A technical document on **Surveillance Programme Results Application to Reactor Pressure Vessel Integrity Assessment in Nuclear Power Plants** was submitted to publication committee for publication. This TECDOC report has been developed under Co-ordinated Research Project (CRP) titled "Surveillance Programme Results Application to Reactor Pressure Vessel Integrity Assessment." This CRP is the fifth in a series of CRPs that have led to defining the most appropriate fracture toughness parameters using relatively small test specimens for assuring structural integrity of reactor pressure vessel materials.

A technical cooperation project on **Regional workshop for optimisation of Plant life management for Latin America** held on 6th – 9th July 2004 at Sao Paulo, Brazil for Latin America region. 45 participants from Brazil, Mexico and Argentina attended and presented plant life management activities.

A TM on **Recent Material and Related to Managerial Issues of Nuclear Power Plants is under planning**. The TM will be held on 15-18 Feb. 2005 at VIC. The purpose of TM is to provide an international forum to share recent technical knowledge and experience relating to material degradation issues, and to share lessons learned related to managerial issues. The discussion includes lessons from recent events, results from research programmes, experiences and practices, ownership and responsibility, managing operational experience and regulatory aspects. The TM is prepared in cooperation with NSNI.

Databases to Support NPP

A technical meeting on the **Maintenance and Operation of Power Reactor System (PRIS)** was held on 4th-7th Oct. at VIC to provide information about the current status of the system, its latest development and to get a feedback from PRIS users and data providers. 21 experts from 20 Member States participated in the meeting and work-group sessions. The TM meeting was structured to review and assess all parts of the system, including its structure, design characteristics, data gathering and dissemination processes and external modules. The recommendations were made with full agreement of all participants of the TM.

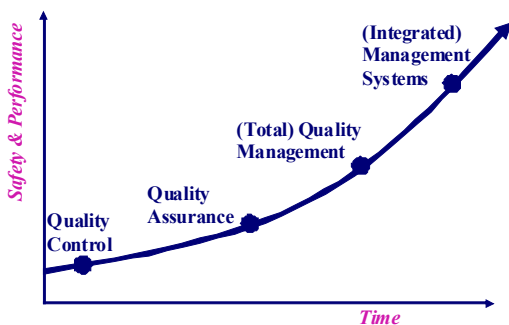
A consultants meeting was held at AECL, Mississauga, Canada, from 27 Sept. to 1 Oct. 2004 on Development of a computer model for the economic assessment of PLEX and an International databases on nuclear power plant life/licence extension costs. The purposes were to finalise the computer model for the economic assessment of PLEX and the accompanying user's manual following the beta testing feedback review and to review the final draft for the database structure, the list of definitions and database details, and draft the technical specification for the development of the new module of Nuclear Economic Performance Information System (NEPIS).

Improving Quality Assurance, Technical Infrastructure and Human Performance

Quality Assurance/Quality Management

The development of the Safety Standards on Management Systems was continued. The internal Steering Committee of Safety Standards requested to combine DS339 and DS338 into one safety standard, so DS339 became an appendix to DS338. The Safety Standard Committees approved DS338 to be sent to the Member States, for their review.

Evolution to Management Systems



A consultancy meeting was held in June with participation of NSNI on **Specific Safety Guide for Management Systems for Nuclear Facilities**. The CS created the framework for DS349 and agreed the time schedule for the development. The first draft will be prepared on the basis of the CS meeting results.

In recent years there has been an upward trend in the application of process based management approach. A system of processes was identified within an organization, together with the identification of interactions between these processes. Many organizations have experienced significant cost improvement largely to better financial management and a common drive to reduce costs brought on by commercial pressures in the industry. Changes that focus on reducing costs by cutting staff and activities will eventually fail to produce any more benefit and may have a negative effect unless there is a methodology to identify process improvements. The continual improvement of the processes of organizations has led to enhanced safety performance and efficiency benefits such as cost reductions and improved cycle times.

Continuous process improvement is the ability to understand the processes which impact on the objectives of the organization, to measure processes efficiency, and to make changes to these processes based on factual information and knowledge.

As a response to these challenges the Agency initiated the development of a guidance document on the management of continuous process improvement based on current best practices. The first draft was prepared in a Consultant Meeting, held in September. The next draft is expected in March 2005.

The nuclear industry, as well as any other industry, faces an ever-changing environment. These changes take the form of government policy adjustments, open market demands, privatization with the demand for increased shareholder returns, regulatory and social pressures, and economical and political transitions.

When changes are planned, the utility should ensure that they are in line with their vision, mission, goals and values. Properly managed, these changes can enhance nuclear safety, plant reliability and cost competitiveness from design stage to decommissioning. As a consequence there is a need for an effective change process to identify, evaluate, plan, implement, monitor and learn to ensure that all changes have an improvement effect on safety and performance, and to ensure that the change achieves its objectives. The Agency published the TECDOC-1226 directed to provide a description of the basic principles for managing change in nuclear utilities. In Member States a considerable amount of experience was collected and this experience will be taken as a basis for revision of the TECDOC 1226. The first draft is expected in April 2005.

Effective Training to Achieve Excellence in Human Performance

A new activity on the personnel training, human resource management (HRM) and knowledge retention (KR) in support of NPP decommissioning has been launched. Dissemination of good practices is to be performed through developing a technical document that, in particular, will include actual examples from various countries and nuclear facilities. Final draft of the document is to be completed in 2005. Member States, operating organizations and specialized companies are invited to participate in the accumulation and dissemination of experience in the training, HRM and KR for NPP decommissioning. More detailed information is placed on the NPES web based Electronic Nuclear Training Catalogue (EN-TRAC).

A workshop in support of improvement of maintenance personnel training was performed in Ukraine at the Zaporozhzhie NPP (ZNPP) in October 2004 on the subjects: On-Job Training (OJT), Training of Occasional Instructors and Assurance of Competence of NPP Contractors. The representatives of the Ukrainian NPPs, operating organization and specialized maintenance training organization in conjunction with the IAEA experts (invited from Russia, Spain and the USA) have performed a very effective activity. Presentations - focused on practical aspects - conducted by the IAEA experts and ZNPP training managers were followed by demonstration of actual in-plant OJT, its evaluation by the IAEA experts and post-training debriefings. Similar services are possible for other Member States upon request.

Co-ordination of International Collaboration for the Development of Innovative Nuclear Technology

The IAEA's INPRO project is finalizing a TECDOC on the updated and validated methodology for assessment of Innovative Nuclear Energy Systems (INSS). The revised methodology is based on the results of 14 case studies performed by experts from 7 INPRO members and individual experts. The draft TECDOC will be submitted for consideration to the 7th Meeting



of the INPRO Steering Committee in December 2004. A TECDOC on Innovative Fuel Cycle Technologies: Status and Trends is under preparation by INPRO. This TECDOC will summarize the status of innovative nuclear fuel cycles and associated nuclear reactor developments and will provide guidance to Member States in selection of innovative nuclear energy systems (INS) for their assessment with the use of the updated INPRO methodology within the second part of INPRO Phase-IB. The TECDOC will be submitted for publication by the end of 2004.

The meeting of an ad hoc group of INPRO members convened at IAEA in October 2004 has defined objectives and trends of activities for the remaining part of INPRO Phase-IB and for INPRO Phase-II. In line with them, the remaining part of INPRO Phase-IB is to facilitate assessments of INSSs by MS (nationally or jointly) using the updated INPRO methodology as stated in the IAEA General Conference Resolution GC(48)/RES/13(TAB F) of September 2004, to define and model INS deployment scenarios taking into account strategies considered by MS, and to identify possible frameworks and implementation options for collaborative R&D for INS development which could be performed during Phase-II. Also in line with these recommendations, INPRO Phase-II that is projected to start in mid 2006 could focus on R&D oriented activities, institutional and infrastructure oriented activities, and on activities for further development of INPRO methodology. These suggestions will be brought for further consideration to the 7th meeting of the INPRO Steering Committee Meeting.

A plan of activities for the Coordinated Research Project (CRP) on Small Reactors without on Site Refuelling (2004-2007) has been established. This CRP has the goal of increasing the capabilities in IAEA Member States to achieve progress in the development and deployment of Small Reactors without On-Site Refuelling by formulating major requirements and increasing international co-

operation for the development of key enabling technologies for such reactors, including long-life cores and passive safety features and systems. Small Reactors without On-Site Refuelling are the reactors which have a capability to operate without refuelling and reshuffling of fuel for a reasonably long period consistent with the plant economics and energy security, with no fresh and spent fuel being stored at the site outside the reactor during its service life. Such may offer a

solution for implementation of adequate safeguards in scenario of large-scale global deployment of nuclear energy, as will be essential for providing long-term energy security to many developing and industrialized countries in an environmentally benign way.

The CRP on Identification of competitive technological options for Small and Medium Sized Reactors (SMRs) for 2006-2009 has been approved. The CRP will provide a forum for the analysis and development of technological options for SMRs to reduce their costs and to increase their proliferation resistance. The CRP will also provide for dynamic systems simulations of SMR deployment in selected countries or regions for a given scenario of energy growth and the consideration of Multilateral Nuclear Fuel Cycles.

The final report of a Technical Meeting on "Innovative Small and Medium Sized Reactors: Design Features, Safety Approaches and R&D Trends" of June 7-11 2004 will be published as IAEA TECDOC early in 2005. The TECDOC will address 30 innovative SMR concepts and designs and several proposals for INSSs based on such reactors.

On 15-19 November 2004 the IAEA will convene a technical meeting on the "Definition of Plant Safety Design Options to Cope with External Events". This meeting will provide a forum for the designers of advanced Nuclear Power Plants (NPPs) on the state-of-the-art in the development, design and demonstration of safety features for the protection of plants with evolutionary and innovative reactors from the impacts of external events. One of the objectives of the meeting is to assist the designers in the definition of a consistent strategy regarding plant protection from extreme external events, in particular through bringing to their attention the recently updated IAEA Safety Guides and other publications on relevant issues. The meeting will be convened in close cooperation with the IAEA's Division of Nuclear Installations Safety (NSNI).

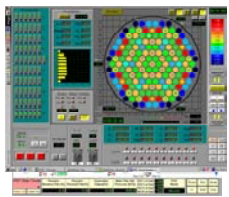
Technology Developments and Applications for Advanced Reactors

Technology Advances in Water Cooled Reactors for Improvement in Economics and Safety

The following summarizes recent progress in activities conducted within the frame of the Department of Nuclear Energy's TWGs on Advanced Technologies for LWRs and HWRs.

The **6th International Conference on Nuclear Reactor Thermal Hydraulics, Operation and Safety (NUTHOS-6)** was convened in cooperation with the IAEA in Nara, Japan, from 4-8 Oct., 2004. Nearly 300 participants attended the conference from 24 countries. The IAEA's Division of Nuclear Power and the Division of Nuclear Installation Safety contributed funds to support increased participation of experts from developing countries.

Planning is underway for a collaborative assessment of **Advanced Applications of Water-Cooled Reactors**. The objective of this activity is to identify opportunities and challenges for water-cooled reactors to capture a substantial share of prospective applications beyond electricity production, including seawater desalination; district heating; steam for heavy oil recovery; hydrogen production; and high conversion of fertile material to fissile material. A TM on this topic will be convened in 2005.



The **Workshop on NPP Simulators for Education** is being convened ICTP, Trieste, Italy from 8-19 Nov. 2004. The simulators operate on personal computers and simulate the performance of a

number of reactor types (a BWR, a conventional PWR, a PWR with passive safety systems, a WWER, and a CANDU). The purpose is to provide training tools for university professors and engineers involved in teaching topics in nuclear energy.

The **1st RCM on Natural Circulation Phenomena, Modelling and Reliability of Passive Safety Systems that Utilize Natural Circulation** was convened at IAEA-HQ, Vienna from 2-5 Nov. The objectives of the CRP are to facilitate improved understanding of natural circulation phenomena, to identify relevant experimental databases, to examine the ability of current computer codes and models to predict natural circulation and related phenomena that affect the system reliability, and to develop and apply methodologies for determining the reliability of passive systems. The scope includes natural circulation as a way to remove core power of water-cooled reactors under normal operation (start-up, nominal and shutdown) and accident conditions, and to provide cooling of the containment. Work is conducted through Research Agreements and Research Contracts with institutes from Argentina; Czech Rep.; France; Germany; India; Italy; Japan; the Netherlands; Rep. of Korea; Russia; Spain; Switzerland; USA.

The first RCM provided each participating organization the opportunity to present its research plans and progress, and to discuss the CRP Integrated Research Plan with emphasis on testing and code benchmarking needs.

To foster collaboration in **Techniques for HWR Pressure Tube Inspection and Diagnostics**, the IAEA is conducting a CRP with the objective to examine inspection and diagnosis techniques for characterization of Pressure Tubes during their service lifetimes. The participating institutions are from Argentina; Canada; China; India; Rep. of Korea and Romania. In phase 1 of the CRP, a round-robin series of tests on pressure tube samples with intentional flaws are being performed using techniques and equipment that are applicable to in-service inspection for flaw characterization. Comparison of the results from the different groups will identify the most effective and accurate methods of flaw characterisation, and define areas of future R&D. The CRP has been extended until the end of 2005 to allow participating institutes to complete the round robin flaw characterization tests and to perform new measurements on determination of oxide layer thickness and hydrogen concentration.

IAEA TECDOC-1395 "**Inter-comparison and validation of computer codes for thermal-hydraulics safety analyses for HWRs**" has been published. The document presents comparisons of computer predictions against data from AECL's RD-14 thermal-hydraulics test loop for a LOCA experiment. The following organizations participated in the ISP: AECL, Canada; CNEA, Argentina; BARC, India; Cernavoda NPP, Romania; the Korea Institute of Nuclear Safety, Rep. of Korea; and Univ. of Pisa, Italy.

Technology Advances in Fast Reactors and Accelerator Driven Systems (ADS)

The Technical Meeting on **Utilization of MONJU for International Cooperation in Fast Reactor R&D**, hosted by the Japan Nuclear Fuel Cycle Development Institute (JNC) will be held in Tsuruga, Japan, from 1-2 December 2004. Participants from all Member States which had and/or are having fast reactor programmes will discuss the prospects for using MONJU as a tool for international collaboration in the field of fast reactor R&D. The TWG-FR Scientific Secretary was invited to participate in the **Workshop on Sub-critical Neutron Production** hosted by the Eisenhower Institute and the Univ. of Maryland (11-13 Oct. 2004). The subject of the workshop was the application of sub-critical neutrons to transmutation of actinides. Review papers on the state of development of neutron production by accelerators, fusion devices, and fast neutron reactors were presented, and discussions were held on how these technologies can be used to contribute to solving problems of storage and non-proliferation presented by current and future nuclear reactors. The workshop was

attended by members of the fission, accelerator and fusion communities who concluded that the potential of current fusion technology to utilize the actinides for generating energy and destroying long-lived fission products calls for a greater international effort in the area of fusion driven sub-critical fission systems. The participants recommended that a series of steps be carried out by the technical community leading to a proof-of-principle. The workshop strongly recommended that



Chinese Experimental Fast Reactor (CEFR) under construction, 2004. (Credit: CIAE)

the fusion community work closely with other technical communities to ensure that a wider range of technical solutions is available to solve the spent fuel problem. It was agreed to convene a follow-on workshop, possibly under

Agency aegis, in April 2005.

Collaboration with NAPC has been initiated in a project to **generate application cross-section libraries for various code systems used in the analysis of ADS**. As a first step, a TM having the objective of defining the library specifications will be convened jointly with NAPC in Vienna (15-17 Dec. 2004).

The progress made in the Agency's initiative to **preserve fast reactor data and knowledge** was documented in a brochure (including a CD-ROM) prepared in collaboration with INIS for distribution at the 48th IAEA General Conference. In 2003/2004, a first focus of the initiative's activities was concentrated on the preservation of knowledge related to the German experimental fast reactor KNK-II. The brochure briefly describes the context of the initiative and gives an introduction to the content of the CD-ROM.

Technology Advances for Gas Cooled Reactors

The biannual international conference on High temperature Reactors (HTR-2004) was held in Beijing, China (Sep. 22-24, 2004). Organized by the European HTR-TN network in cooperation with the Agency and hosted by Tsinghua University, the conference attracted over 100 participants from various countries.

Also held in Beijing on the week following the conference, was an IAEA workshop on safety demonstration and market potential of High-Temperature Gas cooled Reactors (HTGRs). The workshop was also hosted by Tsinghua University and over 60 participants attended, including representatives from several developing countries, who were interested to know about HTGR technology. A technical tour of the INET institute was arranged during the last day of the workshop and included a safety demonstration test conducted at the

HTR-10 test reactor, as well as a visit to the fuel and other test facilities. In the demonstration test, a helium circulator stop was initiated at 30% power and control rod scram was deactivated, to simulate an Anticipated Transient Without Scram (ATWS). Due to consequent core heat-up and the negative effect of temperature on reactivity, core power decayed down to a safe level, as expected, balancing passive heat removal at the heat sink boundary.

A research coordination meeting of the CRP on "Advances in HTGR fuel technology" was recently held at the VIC (Oct. 18-22, 2004) and work progress was discussed on various tasks of the project. For more information, please visit our website at www.iaea.org/htgr.

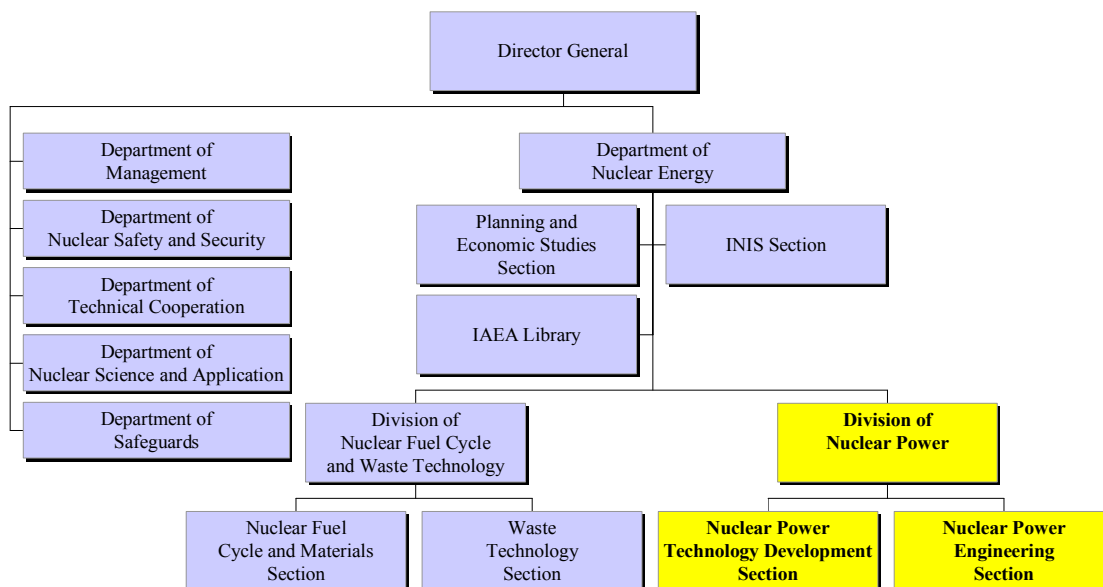
Support for Demonstration of Nuclear Seawater Desalination

The CRP on **Optimization of the Coupling of Nuclear Reactors and Desalination Systems** ended last year. The studies from the participating institutes outlined details of optimum coupling of SMRs (PWR, PHWR, fast reactors, heating reactors and floating reactors) with desalination systems, based on thermal, membrane and hybrid processes. The final draft of the TECDOC was prepared and sent for publication.

Progress reports were received from the CSIs of the CRP on **Economic Research on, and Assessment of, Selected Nuclear Desalination Projects and Case Studies** and reviewed. The third RCM is planned for May 2005. Improvement in the DEEP software is in progress and a new version will be released in early 2005.

Under the inter-regional TC project INT/4/134 on nuclear desalination, three activities were taken up. The final draft of the "**Preliminary economic feasibility of nuclear desalination in Madura Island**" and the "**User requirement document**" prepared by BATAN and KAERI were reviewed. These reports are now ready for submission to the Government for decision. An International Workshop on **Techno-economic aspects of nuclear desalination** was held on Sept. 27-30, 2004 at Jakarta. 45 participants attended the workshop. The Tundesal project between France and Tunisia for the La Skhira site also made progress. The Summary and the Pre-Feasibility Study (PRF) report were prepared and are being reviewed. Expert missions were provided for the Pakistan National project of setting up a demonstration desalination plant at KANUPP. Work is continuing on the project EGY/04/046 for the simulation of nuclear desalination plant.

A Technical Meeting on "Integrated Nuclear Desalination Systems" is to be held at Kalpakkam on Dec. 13-16, 2004. The experiences of the existing and planned demonstration projects from the Member States will be shared in the meeting.



Recent Publications

Year 2004

IAEA-TECDOC-1411	Use of Control Room Simulators for Training of NPP Personnel
IAEA-TECDOC-1406	Primary Coolant Pipe Rupture Event in Liquid Metal Cooled Reactors
IAEA-TECDOC-1405	Operational and Decommissioning Experience with Fast Reactors
IAEA-TECDOC-1402	Managemant of Life Cycle and Ageing at Nuclear Power Plants: Improved I&C Maintenance.
IAEA-TECDOC-1400	Improvement of In-Service Inspection in Nuclear Power Plants
IAEA-TECDOC-1399	The Nuclear Power Industry's Ageing Workforce: Transfer of Knowledge to the Next Generation
IAEA-TECDOC-1395	Intercomparison and validation of computer codes for thermohydraulic safety analysis of heavy water reactors.
IAEA-TECDOC-1393	International Outage Coding System for Nuclear Power Plants
IAEA-TECDOC-1392	Development of Instructors for Nuclear Power Plant Personnel Training
IAEA-TECDOC-1391	Status of Advanced LWR Designs: 2004
IAEA-TECDOC-1390	Construction and Commissioning Experience of Evolutionary Water Cooled Nuclear Power Plants
IAEA-TECDOC-1389	Managing Modernization of Nuclear Power Plant Instrumentation and Control Systems
Reference Data Series 2/23	Nuclear Power Reactors in the World, Reference Data Series No. 2
n/a	Operating Experience in NPP in Member States in 2003
n/a	Country Nuclear Power Profiles 2003 Edition

