



Activity Report

April-June 2001

Office of International Nuclear Safety and Cooperation - Dr. James Turner, Director
Improving the Safety of Soviet-Designed Nuclear Power Plants

Chornobyl replacement heat plant dedicated

Highlights

U.S. Ambassador Carlos Pascual and National Nuclear Security Administration (NNSA) officials, including Dr. James Turner of the Office of International Nuclear Safety, helped celebrate completion of the Chornobyl Nuclear Power Plant replacement heat plant facility during a June 29 dedication ceremony in Ukraine. The event marks completion of a four-year project managed by Pacific Northwest National Laboratory (PNNL) in cooperation with Ukraine. Dr. Lura Powell, Laboratory Director; Mike Kluse, Assistant Laboratory Director of the National Security Division; and Dan Couch, Manager of the International Nuclear Safety Program (INSP), and other INSP staff represented PNNL at the dedication ceremony.

Riaz Awan served as the U.S. Department of Energy (DOE)/NNSA project manager on the Chornobyl Replacement Heat Plant. The Project was highly dependent on U.S. and Ukrainian



U.S. Ambassador Pascual recognizes Riaz Awan, NNSA, for his role in completing the Chornobyl heat plant.

conformance to government-to-government agreements that provided relief from Value Added Taxes, Customs exemptions for U.S. project contributions, and Ukrainian technical support for the project. Mr. Awan worked with high-level Ukrainian government officials to ensure the effectiveness and application of these agreements on project matters. The Ukrainian contribution for the project also was delayed by Ukrainian legislative factors. Again, Mr. Awan worked with Ukrainian officials and enlisted the aid of even more senior U.S. and Ukrainian officials in pressing for timely availability of the contribution. The funding was ultimately provided with only a slight delay and the minimization of the delay is a direct tribute to the effectiveness of Mr. Awan's efforts.

Jim Hartley, a PNNL senior project manager with INSP, has lived in Slavutych, Ukraine, for the past two years to oversee construction of the \$40 million project. In October 1997, Ukraine and DOE entered into an agreement to provide plant heating needs for decommissioning activities on a cost-shared basis. Mr. Hartley was involved with a U.S. assessment of the site and its needs, which resulted in a decision to complete a partially constructed heat plant. Construction of the plant had been halted in 1991 because of lack of funding. Of the total completion cost, the United States is providing \$32.5 million and Ukraine is contributing \$7.5 million.

PNNL has worked closely with major project participants including the Ministry of Energy and Ukraine Energoatom, Ukrenergoprom (the designer), Yuzhteploenergomontazh (the general contractor), and EnergoPromInvest and Ukrenergomontazh (start-up/regulation test programs). NNSA was responsible for the overall project management and integration of the Ukrainian projects. Babcock & Wilcox provided field construction engineering services and technical oversight of construction for the replacement heat plant, and Morrison Knudson provided boiler expertise. The final Ukrainian State Acceptance Commission approval testing is scheduled for fall 2001, at which time U.S. involvement in the project will end.

While in Ukraine, the U.S. delegation attended the dedication of the South Ukraine Unit 1 full-scope simulator, toured the plant, and observed the equipment INSP has provided. The representatives met with plant officials to review INSP projects and discuss the potential for future cooperation. South Ukraine officials expressed their gratitude for U.S. assistance and noted it has improved plant safety.

Russia's first ISA completed at Leningrad

Meetings were held with the Ukraine State Nuclear Regulatory Committee, the Ministry of Fuels and Energy, and Energoatom. Also in attendance were Jim Cannon, DOE, and Sally Kornfeld, U.S. Embassy. Mr. Shebrov, Assistant Deputy Minister of Energy, stated, "All the programs done with the United States government and PNNL are very, very successful and significant to the nuclear safety of Ukraine." (*Rich Reister, DOE, 301-903-0234; Dan Couch, PNNL, 509-372-6415*)

At the end of June, the Leningrad Nuclear Power Plant celebrated completion of a major safety assessment. The Unit 2 in-depth safety assessment (ISA) is the first full-scope ISA to be managed and produced by the operating organization of a Russian nuclear plant. The ISA supports a western objective to "transfer western safety assessment technology to the Leningrad operating organization." The project assists in developing a documented safety design basis, a risk profile (supporting safe plant operation), and it satisfies a Gosatomnadzor (GAN) requirement for issuance of a long-term operating license.

The ISA project builds on the technology and experience of an earlier probabilistic and deterministic safety assessment (P&DSA) project, started in 1996. The ISA, which began in February 1998, has been a multilateral project involving participants from Sweden, Great Britain, Finland, Russia, and the United States. The ISA includes probabilistic, deterministic, engineering, and institutional assessments of the Leningrad facility and operating organization and is organized in accordance with the format and content of the GAN ISA outline.

To support the Leningrad operating organization's desire to improve the plant's safety assessment infrastructure and to provide direct management of the ISA project, the Leningrad facility established the Operational Safety Assessment Bureau, known as the Bureau. The Bureau is responsible for production of all ISA phases. Project production participants include a variety of Russian organizations managed by the Bureau.

Based on assessment results and insights and a desire to improve plant safety, Leningrad has implemented five near-term corrective actions to reduce the core damage frequency:

- 1) development of improved operator guidance during critical plant events,
- 2) increased testing of support system components,
- 3) improved frontline system component cooling,
- 4) diversification of coolant inventories and supply, and
- 5) reduction in the potential for system functional loss due to a single-component failure.

Taken as a whole, the P&DSA and the ISA have helped focus Leningrad's multiyear safety improvement program on the plant's most safety-significant activities. For example, the P&DSA demonstrated the need for Leningrad to retain its old service water system following installation of a new system. The plant has secured funding to install air-cooled motors to support the continued operation of its auxiliary feed-water system (a primary reactor protection system) during accident conditions. Also, emergency instructions describing the realignment of alternative coolant sources during abnormal and emergency conditions have been developed.

The ISA has provided a documented safety basis and organization to guide future safety-related decisions. Among the many direct benefits of the ISA was development of a new classification scheme for the plant's safety, support, and non-safety related systems. This scheme provides a more complete understanding of system and component importance in safe operations. Also, the plant will control and maintain a complete set of system design descriptions for all plant systems. These documents contain text and reference material that is important for maintaining system and design integrity.

The Unit 2 ISA project has had indirect benefits, as well. For example, the Bureau now includes a P&DSA and Safety Justification Laboratory that is responsible for all major ISA studies. The plant became the owner/manager of a detailed risk model that is being updated on a continuing basis to support the desire to achieve a living P&DSA capability at the Leningrad plant. *(Walt Pasedag, NNSA, 301-903-3628; Sam McKay, PNNL, 509-372-4059)*

Novovoronezh Unit 5 SPDS passes factory acceptance tests

During May, engineers from Data Systems & Solutions LLC (DS&S) and Western Services performed 43 tests on safety parameter display system (SPDS) hardware and software to verify that the system being built for Novovoronezh Nuclear Power Plant Unit 5 complies with technical specifications and plant-specific requirements. Following two weeks of testing at the DS&S facility in Delaware, Ohio, the Russian witness committee, which included representatives from Rosenergoatom, Gosatomnadzor, VNIIAES, CONSYST, and the Novovoronezh facility, accepted the test results.

Novovoronezh Unit 5, the world's first VVER-1000 reactor, began operations in 1980. The Unit 5 SPDS will be the third system installed at the facility. Previously, SPDSs were installed at Units 3 and 4, both of which are VVER-440 reactors.

Novovoronezh Unit 5 is scheduled for an outage in August, and the SPDS will be installed during the outage. Following reactor restart, the SPDS hardware and software, including the nuclear application programs, will be tested. This testing is expected to take place in late September or October. (*Rich Reister, NNSA, 301-903-0234; Frank Panisko, PNNL, 509-372-4472*)



Dr. Alpeyev of Gosatomnadzor testing the Novovoronezh Unit 5 safety parameter display system.

Russia

A PNNL technical specialist traveled to Moscow in mid-May for a meeting regarding the Russian reliability database (RRDB) project. The meeting was held with the Russian Research Institute for Nuclear Power Plant Operations, the RRDB contractor, to review deliverables provided under previous contracts. The review focused on Version 1 of the RRDB and its associated unified classifier system for components and component failures, and the computer specifications for the three pilot plants (Kola, Kursk, and Balakovo nuclear plants). Following the review both activities were found to be acceptable and plans were made for

***Russian reliability
database project
reviewed***

Novovoronezh and Bilibino staff trained in use of infrared technology

moving forward with the pilot-plant portion of the project, as well as with other NNSA-funded RRDB activities. (*Grigory Trosman, NNSA, 301-903-3581; Tye Blackburn, PNNL, 509-372-4092*)

In June, technical specialists from PNNL and the U.S. firm Snell Infrared traveled to the Novovoronezh Nuclear Power Plant to train technical staff from Novovoronezh and Bilibino nuclear plants in the use of infrared cameras and in infrared technology. A total of nine staff members from Novovoronezh and one from Bilibino attended the weeklong training class. Overviews of the infrared camera and its operation, as well as infrared technology fundamentals, were provided. The infrared fundamental training provided the attendees a knowledge base to understand camera operation and correctly analyze the infrared images obtained. Additional hands-on training was conducted in the field where all class attendees had an opportunity to practice camera and survey skills. The images captured were then reviewed and critiqued in the classroom. In addition, training was provided on the use and operation of infrared analytical software. A follow-up visit is recommended within the next year to evaluate progress and provide extended instruction on camera use and program development. (*Grigory Trosman, NNSA, 301-903-3581; Ray Pugh, PNNL, 509-372-4076*)

Ukrainian reliability database progresses toward centralized system

Ukraine

Representatives from Energoatom; Khmelnytsky, Zaporizhzhya, and South Ukraine nuclear power plants; Information Technologies Incorporated, the primary Ukrainian reliability database (URDB) development contractor; and PNNL met to more clearly define goals for the URDB project. Discussions included Energoatom's eventual responsibility for the URDB after NNSA sponsorship ceases, at which time the URDB will evolve from a stand-alone plant application to a centralized system based on a nationally accepted standard. Energoatom's role, including the role of the Zaporizhzhya plant, is being developed and defined and will be promulgated in a new memorandum of understanding. (*Grigory Trosman, NNSA, 301-903-3581; Tye Blackburn, PNNL, 509-372-4092*)

ISA contract proposal reviews

In mid-April, a PNNL technical specialist met with Ukrainian Nuclear Electricity Generating Company (Energoatom) representatives to help evaluate proposals to select the Ukrainian integrating contractor for the NNSA-sponsored design basis documents project. The selection process provided Energoatom with feedback on input and score differences from other evaluators.

Representatives of Energoatom and PNNL also met to discuss the upcoming coordinating committee meeting and the host-country contractor selected by PNNL for Zaporizhzhya's design basis accident work. They discussed future indefinite deliverable/indefinite quantity (IDIQ) contracting for NNSA-sponsored ISA activities at all the Ukrainian nuclear plants. Discussions included input to the bidders' list and technical evaluation criteria from Energoatom and the plants.

In subsequent activities, a PNNL representative conducted a bidders' conference in mid-May to provide additional information about the IDIQ process to representatives from the utility, plants, and interested vendors. In mid-June, the PNNL representative met in Kyiv with specialists from the Ukrainian nuclear plants to mentor and proctor their technical evaluations of proposals on seven IDIQ contracts. These meetings solicited the plants' input to the contractor selection process and provided information to the plant representatives concerning the contracting process. Even though there was very short notice, all four plants sent a representative who was trained and subsequently participated in the evaluation process. (*Walt Pasedag, NNSA, 301-903-3628; Tye Blackburn, PNNL, 509-372-4092*)

Training managers meet at Energoatom conference

In April, representatives of Energoatom; the Engineering Technical Center (ETC); each Ukrainian nuclear power plant including the Chernobyl plant and the Chernobyl Shelter Training Center; the Main State Inspectorate (MSI); the Sevastopol, Odessa, and Kyiv Institutes; and PNNL participated in the Energoatom Training Managers Conference in Kyiv. Following are the important issues addressed at the meeting:

- Prioritized lists of project activities with current and future funding were developed for the simulator and training area.
- Items brought up by Energoatom for future consideration were analytical simulators for Zaporizhzhya Unit 3 and South Ukraine Unit 2, simulator plant process computer (PPC) upgrades if the PPCs are upgraded, and U.S. assistance for possible new simulators for Khmelnytsky Unit 2 and Rivne Unit 4.

- Topics addressed during the training conference included:
 - Three of the four nuclear plant training centers have licenses. Rivne currently does not have a license but is in the process of obtaining one now that its full-scope simulator and training facility are complete. The license should be issued this fall.
 - The status of training and simulators at each of the nuclear plants.
 - The status of the development of training material for 10 training center licensed job positions. One of each of the training center's biggest problems is the development of training material.
 - There was a considerable amount of open discussions between the training managers and the regulatory representatives.
 - The training managers and the MSI presented some performance statistics on events related to personnel error.

While in Kyiv, the PNNL representatives also visited Energotraining, which is the manufacturing facility where the Rivne 2 control panels are being manufactured. The final shipment of wiring materials has arrived at Energotraining and the panels are scheduled for completion in July. (*John Yoder, DOE, 301-903-5650; Joe Cleary, PNNL, 509-372-4094*)

Training simulators turned over to Rivne and South Ukraine plants

The Rivne Unit 3 full-scope simulator was formally turned over to the plant's training organization on May 17, and on June 26, the full-scope simulator developed for South Ukraine Unit 1 was turned over to the plant. U.S. firm GSE Power Systems was the primary contractor, and Russian and Ukrainian subcontractors were involved in the construction and installation of the equipment. PNNL was the overall project lead for NNSA.

Plant-specific, full-scope simulators, used for operator training in the United States since the early 1980s, were not used at Soviet-designed reactors in the Ukraine until 1993, when Ukraine's first simulator was installed at the Zaporizhzhya nuclear plant. Since then, NNSA's program has installed four simulators in Ukraine. A full-scope simulator uses full-sized physical replicas of actual control room panels complete with equipment such as switches, controllers, indicators, and recorders. Each simulator is designed to replicate a specific plant control room and is used to train reactor operators and supervisors on handling both normal and off-normal plant operations. PNNL Director, Dr. Lura Powell, attended the turnover ceremony for the South Ukraine simulator. (*John Yoder, DOE, 301-903-5650; Joe Cleary, PNNL, 509-372-4094*)

Operational safety issues discussed at SPDS conference

South Ukraine Nuclear Power Plant and Westinghouse jointly hosted the SPDS conference May 22-24 at the South Ukraine facility. Representatives from all the Ukrainian nuclear plants and from plants in Russia and Bulgaria participated in the conference. Three of the most significant operational safety issues identified at the conference were:

- The VVER-1000 SPDSs in Ukraine have not been accepted for commercial operation and the regulator's plans for putting them into operation is not clear.
- The plants requested additional training on how to interpret the results displayed by the SPDS. They received SPDS "functionality" training but need additional training support to allow them to more effectively use the information.
- The plants not currently involved in the emergency operating instruction (EOI) program have concerns about how to fully use their new SPDS without EOIs. Each of the plants represented at the SPDS conference very much want to be included in the EOI program.

(John Yoder, DOE, 301-903-5650; Joe Cleary, PNNL, 509-372-4094)

Training material transfer continues at Khmelnyskyy and Rivne

In late May, a two-week working session was held at Rivne Nuclear Power Plant to continue the transfer of the Control Room Turbine Operator (CRTO) training program to the Khmelnyskyy and Rivne nuclear plants. During this visit, training and technical specialists from the U.S. firm Sonalysts Inc. and ETC worked with training specialists from the Khmelnyskyy and Rivne plants to modify and transfer existing CRTO training material for implementation at each site. *(John Yoder, DOE, 301-903-5650; Don Draper, PNNL, 509-372-4079)*

Rivne ISA project status reviewed

A project coordinator from Argonne National Laboratory (ANL) traveled to Kyiv in mid-June to participate in an ISA project meeting with project management and technical staff from Rivne Nuclear Power Plant and project participants from Energorisk, the International Chernobyl Center/Safety Analysis Laboratory (ICC/SAL), and the U.S. firm Scientech Inc. Energorisk's progress on their limited-scope Level 1 Probabilistic Risk Assessment and Design Basis Analysis task orders continues to support August 2001 as the analysis completion date for both tasks. Progress on the Internal and External Hazards Data Collection task orders also continues. Prior to the meeting, Rivne staff had completed a "verbal translation" of the Russian-language Rivne

Quality assurance at Ukrainian nuclear plants discussed

Unit 1 EOIs. Following the formal ISA project meeting, representatives from ANL, ICC/SAL, Rivne, and Scientech met for the rest of the week to initiate ICC/SAL work under the EOI Analytical Justification-Phase I task order. *(Walt Pasedag, NNSA, 301-903-3628; Charles Dickerman, ANL, 630-252-4622)*

In early June, a PNNL representative met at Energodar with representatives of the Quality Assurance (QA) organizations at Zaporizhzhya, South Ukraine, Rivne, and Khmelnytsky nuclear power plants. The PNNL representative selected 9 of 25 QA elements for discussion during one-on-one interviews. Based on these interviews, he will prepare a report that summarizes the progress of QA implementation at each site. The PNNL representative also met with a representative of British Energy to discuss continued cooperation on Ukraine QA activities and with the Energoatom quality director and his staff to discuss the interviews and progress on project tasks. Energoatom is preparing proposals for consideration by their internal coordinating committee and the U.S.-Ukraine Coordinating Committee, including a request for a new project to support development of their corporate information system. Funding for the new project will be sought from multiple sources, including the United States. *(Walt Pasedag, NNSA, 301-903-3628; Lief Erickson, PNNL, 509-372-4097)*

Ukrainian VVER safety assessment projects reviewed

In late June, a specialist from ANL chaired a meeting with Energoatom, the State Scientific and Technical Center for Nuclear and Radiation Safety, the Ukrainian nuclear power plants, and other Ukrainian organizations. The purpose of the meeting was to reach agreement on an updated working schedule for ISA tasks for Ukrainian VVER reactors. Representatives from Brookhaven National Laboratory (BNL), the U.S. Nuclear Regulatory Commission, and Gesellschaft für Anlagen und Reaktorsicherheit mbH (GRS) also participated in the meeting. In general, the Ukrainian representatives agreed with the proposed draft schedule and signed a protocol to that effect. The new schedule accounts for new contracts that will soon be established for probabilistic and deterministic analyses. A major focus of the meetings was the establishment of a process for performing peer and regulatory reviews for ISA reports. The meeting participants agreed with a general approach that maintains the independence of the peer and regulatory reviews, but allows the possibility for the regulatory review team to receive, for information only, reports that have yet to be peer reviewed. The final regulatory review must consider the peer-reviewed reports submitted by the nuclear power plants.

Armenia plant physical security project scope defined

Subsequent meetings were held with representatives from BNL, GRS, ANL, and Engineering Technologies and Developments (ETD), the Ukrainian company that performs the peer reviews for ISA products. GRS and ETD are proceeding with separate reviews of the South Ukraine Unit 1 level-1 internal event probabilistic risk assessment (PRA). The reviews are identifying some technical issues and questions related to the quality of the PRA. ETD is planning to issue a final report that incorporates the GRS findings by the end of 2001. A meeting to discuss the peer review findings and disposition of reviewer's comments by the power plant is planned for mid-January 2002. *(Walt Pasedag, NNSA, 301-903-3628; Mark Petri, ANL, 630-252-3719)*

Armenia

A PNNL technical specialist met with representatives of the Armenian Ministry of Energy and Armenia Nuclear Power Plant in late April to finalize agreement on a protocol that describes the scope of the Armenia Physical Security Project. The protocol addresses project implementation and management, needs assessment and prioritization, regulatory interfaces, host country contributions, the potential contractual mechanism, and confidentiality. A tour of the Armenia nuclear plant was arranged so project participants could observe the existing status and needs of physical protection systems on the site. The meeting participants agreed that the following prioritized areas would be included in the project scope:

- service water system
- access control system, including personnel badging system and physical barriers
- detection, alarm, and surveillance system for internal vital areas
- central alarm station
- communications system
- training and procedures
- external perimeter upgrades.

The Armenia plant will manage the project functions for the Armenian side including coordination with the Ministry of Energy. *(Grigory Trosman, DOE, 301-903-3581; Andrei Glukhov, PNNL, 509-375-3961)*

Safety analysis code training provided

Technical specialists from the Idaho National Engineering and Environmental Laboratory conducted a RELAP5/MOD3.2 training workshop in Yerevan, Armenia. The training was held in the offices of the Armenian Scientific Research Institute for Nuclear Power Plant Operation, and included eight participants from the host organization and five participants from the Armenia Nuclear Power Plant. The purpose of the workshop was to provide further training in the use of the RELAP5/MOD3.2 code in performing reactor safety analyses.

The workshop was designed for intermediate RELAP5 users, those with a working knowledge of the code, and included both lectures and hands-on exercises. The primary focus of the workshop was on performing plant design basis analyses. For the exercises, a VVER-440/213 plant model was used that included small and large break loss-of-coolant accidents, steam generator tube ruptures, and anticipated transients without scram. Lectures addressed input model development; analysis and input model quality assurance, documentation, and configuration control; and provided additional details on some of the code features. Consultations with individual users were held to address their specific questions or problems. Follow-up interactions with the users are expected as the plant input model is developed and transient analyses are performed. *(Walt Pasedag, NNSA, 301-903-3628; Mark Petri, ANL, 630-252-3719)*

Management and supervisory skills training held at Armenia nuclear plant

In response to an identified need to strengthen management skills, a four-day seminar on management and supervisory skills was conducted at the Armenia Nuclear Power Plant May 21-25. This workshop was previously presented to directors at the Armenia facility, as well as at nuclear plants in Russia, Ukraine, and Bulgaria. This second presentation of this workshop is at the request of Armenia plant management. The workshop focused on individuals who are in management and supervisory positions and consisted of instruction in basic management skills, including communication, decision-making, teamwork, motivation, leadership, human factors, and organizational structure. In addition to presenting the seminar materials in the workshop, a training expert from Human Performance Analysis Corp. worked with Armenia plant training personnel to help them understand the materials. *(John Yoder, DOE, 301-903-5650; Don Draper, PNNL, 509-372-4079)*

Transfer of electrical operations training program initiated

A working session was held June 4-17 at the Armenia Nuclear Power Plant to initiate transfer of the electrical operations training program to the site. This session was the first of three working sessions that will be held to facilitate transfer of the program. During the first session, participants reviewed electrical operations training material developed for other Soviet-designed reactors with a view toward adapting the material for specific application at the Armenia facility. A training specialist from Sonalysts Inc. helped training specialists from the Armenia plant understand existing electrical operations training material and assisted them in identifying material that could be appropriately modified and transferred. (*John Yoder, DOE, 301-903-5650; Don Draper, PNNL, 509-372-4079*)

Development of electrical maintenance training program initiated

Bulgaria

Over a two-week period in May, a U.S. training specialist from Sonalysts Inc. worked with technical and training specialists from the Kozloduy Nuclear Power Plant on the initial phase of a pilot training program in electrical maintenance. Three working visits are scheduled for this activity. During this visit, the task analysis for the electrical maintenance pilot training program was initiated and materials previously developed by other Soviet-designed reactor sites in the area of electrical maintenance were reviewed. Previously developed training materials will be modified as appropriate for application to the Kozloduy plant. Plans for upcoming working visits also were discussed. As part of the final trip, a pilot implementation of the program will take place. (*John Yoder, DOE, 301-903-5650; Don Draper, PNNL, 509-372-4079*)

Human factors and energy technologies discussed at conference

A two-day conference on “Human Factors and Energy Technologies: Challenges of the 21st Century” was held May 28-29 in Lednika, Bulgaria, and at the Kozloduy Nuclear Power Plant. The purpose of the conference was to provide a forum for the exchange of information between individuals working within or having interest in the energy sector of Bulgaria. The conference was dedicated to the fifteenth anniversary of the United Technical College of the Technical University of Sofia and the tenth anniversary of the Kozloduy Training Center.

Participants included trainers, technical specialists, and managers from the Kozloduy nuclear plant and training facility; university lecturers, technical specialists from research institutions, representatives of the Bulgarian Ministry of Education and the State Agency of Energy and Energy Resources; and the U.S. firm

Simulator instructor training held at Kozloduy

Human Performance Analysis Corp. The activity focused on assisting in the development of improved training methods and training expertise within Bulgaria and provided a forum for the United States to share information on support provided to the Kozloduy Training Center as well as to obtain information regarding ongoing activities at the training center. Participants made presentations on the topic of human factors and energy technologies and shared information in discussion sessions. *(John Yoder, DOE, 301-903-5650; Don Draper, PNNL, 509-372-4079)*

A two-week working session was held in June at the Kozloduy Nuclear Power Plant to provide simulator instructor training skills to simulator instructors at the Kozloduy Training Center. This two-week training workshop was developed previously for use at both Russian and Ukrainian nuclear plants. Training specialists from the Kozloduy nuclear plant, Russia, and the U.S. firm Sonalysts Inc. provided instruction. Topics covered in the course included professionalism, communications, conflict management, teamwork, observation skills, critiquing, scenario development, and practical exercises. *(John Yoder, DOE, 301-903-5650; Don Draper, PNNL, 509-372-4079)*

Training managers meet at Paks nuclear facility

Hungary

An International Atomic Energy Agency (IAEA)-sponsored meeting for training managers of Soviet-designed reactors was held at the Paks Nuclear Power Plant in early April. Representatives from Hungary, Ukraine, Russia, Lithuania, Slovakia, the Czech Republic, Romania, Bulgaria, IAEA, and the United States attended. The purpose of the meeting was to provide a forum in which managers could exchange information on training program activities ongoing in countries where Soviet-designed reactors are currently operating. In addition, the meeting provided an opportunity for training managers to network and make contacts within their professional community.

During the meeting, the training managers made presentations related to their ongoing training activities. Participants from the IAEA and the United States also made presentations about their respective activities in this area. *(John Yoder, DOE, 301-903-5650, Don Draper, PNNL, 509-372-4079)*