



# KNPP REVIEW

KOZLODUY NPP REVIEW

ISSUE 1

JANUARY-FEBRUARY 2009

KOZLODUY NPP 35 YEARS CLEAN ENERGY

## 2008 - A YEAR OF OUTSTANDING ACHIEVEMENTS



Kozloduy NPP Executive Director IVAN GENOV summing up 2008 highlights at the traditional Ledenika press conference, January 30th, 2009.

### OUR MISSION

Safe and efficient, socially beneficial environmental friendly electric power and heat production

### OUR IMAGE

The image of a reliable supplier of environmentally clean energy, secure and preferred partner inside the country and in Europe

### OUR MAJOR OBJECTIVES

Safe operation of the nuclear facilities throughout their technically justified lifetime in compliance with the licenses as granted by the regulatory bodies.  
Economically efficient and competitive power production to en-

*"The results of our review are excellent. We are impressed by the complexity and the amount of the activities implemented under the Modernization programme. I think you should be proud of what you've done. We have the experience of a large number of reviews at various plants and I can say that you are one of the best in the world."*

**MARCO GASPARINI -  
IAEA Team Leader at the  
Follow-up closing meeting**

sure financial stability and prosperity of the Company at the present day and in the future.

### MAIN PRIORITIES

- To ensure and continuously enhance the level of nuclear safety and radiation protection.
- Power production under conditions of ensured safety.
- To maintain and increase safety culture.
- To preserve the environment.
- Efficient and socially beneficial management combined with staff motivation.

*(Continued on page 2)*



# KOZLODUY NPP

## 35 YEARS CLEAN ENERGY

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### SAFETY

In 2008 a Periodic Safety Review (PSR) was carried out on Units 5 and 6 in accordance with IAEA methodology "Periodic Safety Reviews for NPPs in operation"

The analyses available for Kozloduy NPP Units 5 & 6 prove the high level of nuclear, radiation and evince technological safety is compatible to that of the best plants of the same vintage worldwide

The design and operating practice comply with the requirements of the national legislation and the international safety standards as recommended by IAEA

### IAEA FOLLOW-UP MISSION

The activities implemented have completely eliminated the non-conformities found in the past and significantly contribute to the improvement of units' safety.

### POWER PRODUCTION - THE RECORDS -

2002 - 20 221 718 698 kWh  
with 6 units

2006 - 19 493 218 570 kWh  
with 4 units

2008 - 15 765 105 200 kWh  
with 2 Units

2008 - record-breaking power production throughout the entire operational history of Units 5 & 6

Unit 5 – 7,858 billion kWh (by 10% higher than in 2007)

Unit 6 – 7,907 billion kWh (by 5.3% higher than in 2007)

Share of the power production in Bulgaria in 2008 ~ 35,2%

### LOAD FACTOR

(LF) - 89,74 %

Unit 5 – 89,46%; Unit 6 – 90,02%

UA7 – Unplanned Reactor Scram per 7000 hours – 0

Unit 5 - 0 ; Unit 6 - 0

### UNIT 6 - 12 YEARS

#### IN A ROW

#### WITHOUT

### UNPLANNED RE- ACTOR SCRAM

### 2008 OUTAGE CAMPAIGN

Plan according to schedule – 55 days for each unit

Report (from disconnection of the TG from parallel till its connection in parallel to grid)

UNIT 5 – 41 DAYS

UNIT 6 – 43 DAYS

### FINANCIAL STATUS

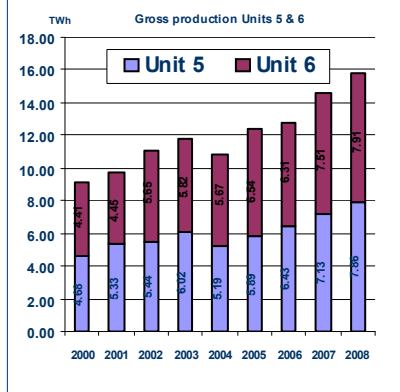
Electricity sold: 14 742 GWh - 115% of the indicators as set in the Business program (BP)

Revenues from electricity sold: 763 M BGL - 125% of the indicators as set in the BP

Operating profit: 108 M BGL - 284%

Accounting profit: 81 M BGL - 300%

In 2008 Kozloduy NPP contrib-



uted to the state budget 260.4 M BGL

Contributions to RAW and Nuclear Facilities Decommissioning Funds: - 78.8 M BGL

### HUMAN RESOURCES

Major objective: To retain staff employed and encourage development of personnel

Priorities under the conditions of Units 1 ÷ 4 being shutdown:

- To ensure employment of qualified staff, occupied with Units 1÷4,
- To ensure social protection for personnel, subject to redundancy due to the decommissioning of Units 1 ÷ 4,
- To retain the social status of Kozloduy NPP employees and their families.

### MEASURES TO RETAIN QUALIFIED STAFF

56 operators from EP-1 trained to work on Units 5 and 6,

Compensation was agreed within the CLC to retain key specialists until the BNRA grants permission for the de-

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# KOZLODUY NPP

## 35 YEARS CLEAN ENERGY

### THE RECIPE TO SUCCESS

- Highly qualified and motivated staff
- High safety level - a must for the existence of nuclear power production
- Optimization of production and maintenance - a factor to achieve competitiveness under market conditions
- Good organization and management of resources
- Fair relationships with partners

commissioning of the shutdown units,  
For new employment, priority given to existing staff,  
Improvement of qualification encouraged by additional leave for education and training, foreign languages courses, etc.

### SOCIAL ACQUISITIONS

Funding social amenities, culture, sports, recreation facilities: KNPP culture house - exhibitions, theatrical performances, fine arts schools, etc.  
Sports and recreational centre - outdoor and indoor pools, fitness hall, physiotherapy, etc.  
Holiday homes - Ledenika recreation centre and vacation village in Kranevo at the Black sea coast;  
Financing recreation and holidays;  
Additional health insurance for family members;

Financial aid;  
Additional voluntary pension and health insurance paid by the Employer;

### KNPP AND THE ENVIRONMENT

In 2008 Kozloduy NPP saved the harmful impact of:

- *over 22 M tons of CO<sub>2</sub>*
- *over 1 M tons of SO<sub>2</sub>,*
- 65 000 tons of NO<sub>x</sub>
- 43 000 tons of dust

### ASSESSMENT OF RESULTS:

- Excellent safety, reliability and operational indicators - leading position in nuclear industry.
- Record breaking production in the history of operation of Units 5 and 6 - 15 765 105 200 kWh
- High professionalism and good safety culture of personnel

- Reliable and preferred supplier of environmentally clean and cheap electric power in Bulgaria and the region
- Record breaking performance with regard to production, maintenance and investment programs - profit amounting to 107 M lv.
- Mitigation of environmental problems, social benefits, national prestige and security

### MAIN OBJECTIVES FOR 2009

- To fulfill the production program in order to maintain financial stability and to ensure Company's prosperity
- To maintain high level of safety
- WANO Peer review of Units 5 and 6, requested by Kozloduy NPP Plc management
- To broaden the presence within the free market
- To continue the campaign to re-start KNPP Units 3 & 4.





## KOZLODUY NPP 35 YEARS CLEAN ENERGY

### YOU DON'T PUT AWAY YOUR GUNS JUST BECAUSE THE BATTLE GROUND HAS GONE QUIET



During the recent gas crisis, the Bulgarian Government considered how best to reduce the impact of external actions on its people and its neighbours and decided, after a lot of thought and debate, to order the preparation of a restart at Kozloduy Units 3 and 4. I am sure this is a momentous decision for the energy sector of Bulgaria and its neighbours – unless of course that decision is reversed just because the gas, upon which Bulgaria and other European Union member States depend, is flowing again.

If such a reversal happens, it will surely increase the likelihood of a similar situation next January when Bulgaria will no longer have the cushion of Article 36 of the EU Accession Treaty. That famous paragraph that provides a 3 year opportunity to take emergency actions that might contravene the Accession Treaty obligations. Just as Santa Claus comes in December, we all know that gas crises arrive in January. A kind of energy epiphany.

But January 2010 is outside the 3 year opportunity to take treaty breaking actions without fear of reprisal. Keen observers of the politically motivated closure demand for the Kozloduy Units 3 and 4 will remember similar de-

mands at Bohunice in Slovakia and Ignalina in Lithuania, Neither of these two countries can now use Article 36 as they joined the European Union before Bulgaria.

Only when such a cut in gas supplies does not provide a threat to the Bulgarian people and industry can it be said the crisis has passed.

Bulgaria must continue to take all measures to reduce its energy dependency, to meet its environmental targets and to reduce the effect of the global economic recession. Kozloduy Units

**TODAY THE GAS  
MAY BE FLOWING  
BUT THE CRISIS  
HAS NOT PASSED!**

3 and 4 must be put back in operation and kept in operation until alternate clean and independent generating capacity comes on line in maybe 6 – 8 years. Of course, I refer to the first reactor of Belene.

In regional terms, Bulgaria has been a profound energy partner, having exported electricity to every one of its neighbours over the past decade. That situation can be reinstated if only the Bulgarian Government holds its nerve, insists on the restart and maintained availability of Kozloduy Units 3 and 4. Of course, now is the time to exercise paragraph 36 – moreover, in the current and ongoing situation, I cannot see how anyone

can object. But whether that is done or not done, Kozloduy has the potential to reduce dependency, restrict the environmental damage from burning fossil fuels and to supply cheap, reliable and safe electricity to benefit both the Bulgarian economy and that of its closest trading partners.

On the technical side, I am confident that Kozloduy's world class management and staff will rise to the challenge, ensure, as always, the highest standards of nuclear safety and operation to provide, not only the solution to the ongoing energy insecurity problem, but also the bridge to the future of Belene 1, Belene 2 and even Kozloduy 7 and 8.

The European Union is made up of 27 Member States, each equal to the others. Could you imagine Germany, UK or France hesitating to safeguard the best interests of their people, economy or future development – especially in an election year?

Jon Coniam - Independent energy and environment consultant

(Continued from page 5)

lator precede those on the reference Unit itself. The objective is to check the algorithms of the newly implemented systems as well as to validate operational instructions and operator actions in various situations.

To introduce all modifications that have already taken place on the reference unit is a complicated, continuous and a very expensive process. Thus, for example the introduction of the entire Ovation system took us 13 months and one has to keep in mind that was only one of the numerous technical measures implemented.

Regardless of all challenges Kozloduy NPP successfully maintains the FSS and the reference unit in an integrated interdependent technological complex in order to ensure reliable, effective and safe operation of the plant..



# KOZLODUY NPP

## 35 YEARS CLEAN ENERGY

### FULL-SCOPE SIMULATOR TRAINING



**LYUBORMIR PIRONKOV** is Head of Personnel and Training Centre Division at Kozloduy NPP. He graduated from the Sofia Technical University where he later specialized in IT and Pedagogy. He has also specialized in Nuclear knowledge management at the Theoretical

Physics Centre in Trieste, Project management in "BluePrint". He has also a qualification in nuclear power plants personnel from Karlsruhe as well as in Management of the economy at the Open University. He has been working in the field of nuclear power since 1987.

#### SIMULATOR TECHNOLOGIES AND TRAINING - THE HEART OF THE MATTER

Simulators are special technical devices combining mathematical models of essential pieces of equipment, their operating states and processes and the relevant man-machine interface. The scope and accuracy of these two components define the level of adequacy ensured by the simulator installation. Simulator training is a specific type of practical training during which the real technological environment is being reproduced by the simulator according to the scope and functionality. Despite the almost exponential development of the IT sector the cost to build up and maintain a simulator model that is as authentic as possible still remains comparatively high. This is why such training is predominantly used for highly qualified personnel in public or industrial sectors featuring:

- activities of high public interest and directed to the mass consumer;
- utilizing expensive high-tech equipment;
- equipment which is continuously undergoing updates or modifications related to its design characteristics;
- a theoretical probability for accidents of significant negative consequences.

Experience shows that in these areas the role of the human factor is dominating and the level of personnel training should comply with highest requirements. If training is performed on operating equipment it creates potential risks of economic, material or human losses, which is in principle unacceptable. In addition, from an expert point of view, on-line training can be incomplete and under certain conditions even danger-

ous. Nowadays the real equipment is of extremely high reliability and actually does not allow the operations team to face all emergency situations which it has to be prepared for. It also appears impossible to adequately trace processes that are either too fast or too slow, nor is it possible to ensure replication of events, etc. Thus simulators prove to be not only a training tool but they are also the means that enable research and development activities, related to the real installed equipment.

#### SIMULATOR APPLICATION IN NUCLEAR PLANTS

Nuclear power production is a good example that demonstrates the necessity and the advantages of simulator technology where it is widely applied in the form of training and in the development of technical devices.

The simulators at the NPP are mainly designated for initial and continuous training of control room operations staff. They are also used in the stage of the initial training of other groups of personnel as well as for training of students of relevant university specialties.

Simulators also present the possibility to:

- Analyze events that have occurred at the reference unit or at other similar units;
- Analyze the behavior of the unit during transients;
- Analyze and validate design modifications;
- Validate operational documentation;
- Analyze terms of reference related to future modifications of the reference unit.

There are different criteria to classify simulators depending on their technological or functional parameters. From the point of view of regulatory requirements full-scope simulators (FSS) are of greatest interest. In their case the mathematical model of behavior should correspond to that of the reference unit in all design modes during normal operation, transients (reactor stop and start-up) emergency conditions (including heaviest design accident). The simulator man-machine interface should be an exact copy of that of the reference unit. The requirements of the applicable standards define the level of correspondence of the model to the prototype unit periphery.

#### REGULATIONS RELATED TO FSS TRAINING IN NPPS

Since nuclear technology has features of a

global character the regulations on its use are defined at three different levels:

- International standards and regulatory documents, universally accepted national standards and good practice;
- National normative documents;
- Normative documents at the corporate level, related to the specific utility.

In this country those issues are considered within „The Regulation on the conditions and arrangements for professional qualification acquisition and arrangements for issuing a license for specialized training and qualification certificates for using nuclear power" and "Guidelines to licensing Full-scope Simulators for NPPs" of the Nuclear Regulatory Agency (NRA). The NRA regulations refer to the licensing requirements and the operation of such a simulator to the ANSI/ANS-3.5 American Standard.

On October, 5th, 2006, Kozloduy NPP, through the Training centre Division was granted a license to perform specialized training on nuclear facilities as well as to issue authorized certificates to operate ionizing irradiation sources.

#### TRAINING OF KOZLODUY NPP STAFF ON THE FSS

According to the regulations in force the senior operations staff is subject to simulator training 10 to 60 days initially and depending on their position 5-10 days as a continuous form of training.

In order to ensure simulator training effectiveness all instructors at KNPP simulator have been appointed from among the most competent, qualified and experienced leading either current or ex operators.

#### Simulator to be maintained in correspondence with the state of the reference unit after accomplishment of the Modernization program of EP- 2

This process is continuous and practically all modifications implemented at the reference unit should be reflected for the simulator as well.

In this respect the modification of the FSS during and after the implementation of Units 5 and 6 Modernization program is a very serious challenge. The great number of technical measures required special organization of the works in order to ensure the on-time implementation of modifications simultaneously with the execution of the obligatory training program. Whenever possible and justified the modifications on the simu-

(Continued on page 4)



# KOZLODUY NPP

## 35 YEARS CLEAN ENERGY

### WiN BULGARIA



WiN is a non-profit international organization of women in nuclear established in 1993. It has more than 2500 members in 68 countries and provides professional and correct information to the public. WiNners are devoted to open, person-to-person communication about nuclear energy, they build bridges between the industry and the public. WiNners' effective communication is due to the balanced integration of emotion and reason when informing people because communication about nuclear energy and safety has to be simple, factual, open and honest. WiN Global meets annually and WiNFO is released quarterly.

*WiN is  
Engaging the public with a  
Message that  
Connects and  
Communicates*

January 2009

Dear Katya Minkova, President WiN-Bulgaria, and Members of the WiN Bulgaria, Managing Committee,

*I was honored to receive your invitation to join the members of WiN Bulgaria during your February Workshop and Annual Meeting. As President of Women in Nuclear Global I am excited to hear of the progress you are making in the Bulgaria Chapter of Women in Nuclear. The meetings you are currently participating in are another step forward in a global effort begun any years ago to use nuclear technologies and radiation applications for purposes that would positively benefit humankind and engage young people in working towards sustaining our environment.*

*The WiN global pin with the smiling atom is a true symbol of the events taking place in your country and around the world on the uses of nuclear technologies and radiation applications. WiN members are bridge builders using open, honest, factual, and simple communication to engage the public with a one on one message that connects and communicates positively on understanding the benefits of the use of nuclear technologies,  $E=mc^2$ .*

*I would ask your forgiveness for my tardiness in responding as you had requested. I had hoped that I might be able to change my existing travel schedule but I am disappointed to inform you that I was not successful and will not be able to accept your invitation.*

*I extend my warmest wishes on behalf of all of the world wide members of WiN and look forward to your article on your meetings for the March 2009 Edition of WiNFO. All the best for successful and productive meetings.*

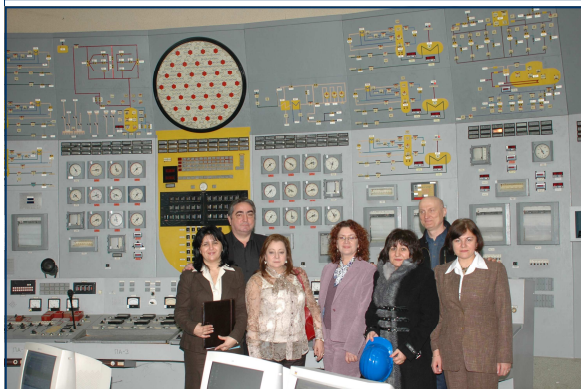
Warmest regards,

Cheryl L. Boggess

5th President Women In Nuclear Global

[boggesol@Westinghouse.com](mailto:boggesol@Westinghouse.com)

## ROUND TABLE ORGANIZED BY WiN



The WiNners in Bulgaria are about 100 ladies, in three different sections in the towns of Kozloduy, Sofia and Belene. There is also a Secondary school section established in Kozloduy. The WiNners aim is to promote nuclear

technologies to the public. On February 5th 2009 in the Cultural House of the town of Kozloduy a round table was conducted under the subject: "Nuclear Energy in the Hands of Youth" on the initiative of the Bulgarian organization of WiN Global and Kozloduy NPP. More than 80 people took part in it- from 4 countries, 11 organizations and three schools. The special guests at the event were the President of WiN -Hungary-Mrs. Ludmilla Kiss

and the representatives of WiN - Slovakia- Mrs Marianna Manchikova and WiN-Romania Mrs Minadora Apostol Mr. Ivaylo Hristoskov-associate professor at the Faculty of Physic, Sofia University, Mr. Svetlin Filipov - from the department of Thermal and Nuclear Power Engineering at the Technical University, Sofia and Mr. Hristo Todoriev from the College on Power engineering and Electronics at the Technical University, Sofia. The students were representatives from the WiN youth section. The presentations delivered at the round table covered the subjects WiN, Bulgaria and the future of nuclear power, nuclear power and the young generation - training



## KOZLODUY NPP 35 YEARS CLEAN ENERGY

### TECHNICAL SUPPORT MISSION OF WANO- MOSCOW CENTER

From 16 to 20 February 2009 a Technical Support Mission was conducted in Kozloduy NPP on the subject Programmes and Methodologies for Supporting the Equipment Qualification in WWER Reactor NPPs.

The technical support missions (TSM) organized by WANO are conducted on a voluntary basis to assist the members of the organization in finding effective solutions for the existing problems or in upgrading the different technological processes. These missions strengthen the relations between the members of the association in terms of practical support and mutual aid. TSMs are conducted as workshops, conferences and meetings where experience and good practices are exchanged.

The mission in Kozloduy NPP covered the following areas:



- Contemporary regulations in the field of equipment qualification;
- Programme for equipment qualification;
- Qualification data base – mandatory and advisory information;
- Qualification methodologies;
- Qualification maintenance;
- Compensating measures for the detected non-conformities; check their efficiency.

These experts who took part in the mission were Stepan Kiose - Deputy Head of the Production and Technical Department, Ig-

nalina NPP, Pavel Heralecký - Engineer EEZ a.s., Temelin NPP, Czech Republic, Victor Klochko - Chief of Life Management Department State Enterprise “National Nuclear Energy Generating Company “Energoatom”, Ukraine, Nikolay Steklov – Coordinator Advisor at WANO Moscow Centre. The Bulgarian coordinator was Vladimir Popov - Head of Lifetime Management Section in EP-2.

A memorandum was signed at the final meeting. WANO experts submitted a draft report from the mission with the results and recommendations. From 16 to 20 February, 2009 a Technical Support Mission was conducted in Kozloduy NPP on the subject Programmes and Methodologies for Supporting the Final Report will be submitted a month later.

### INTERNATIONAL WORKSHOP

The laboratories of the Radiological monitoring (RM) with the Kozloduy NPP each year join the inter-laboratory comparisons, carried out by organization such as the International Atomic Energy Agency, the German Radiation Protection Service, the World Health Organization etc. At the end of 2008 they for the first time took part in the comparisons within the frames of the “Environmental Proficiency Test” (competency test), organized by the National Physics laboratory of Great Britain. Three water samples of unknown content of man-



made and natural alpha, beta and gamma radionuclides were sent to be analyzed. The uniqueness of this comparison lies in the fact that actually all the radiologically important man-made alpha, beta and gamma radionuclides had been

covered - something that has never been done so far.

January 26 -29, 2009 Lyubomir Popov, Head of Radiochemistry lab as well as Valentin Avramov, Head of Radioactivity measurement of the RM, Kozloduy NPP took part in a business meeting to discuss the results of the inter-laboratory comparison to determine alpha, beta and gamma radionuclides during control of liquid emissions from nuclear power plants into the environment. Their meeting was organized by the UK National physics laboratory in

*(Continued on page 9)*



## KOZLODUY NPP

### 35 YEARS CLEAN ENERGY

#### FULL SCOPE SIMULATOR-1000 – A CONTINUOUS PROCESS OF DEVELOPMENT AND IMPROVEMENT



Ivan Kashev graduated from the Technical University in Sofia in Micro-electronics. Ever since 1993 he has been working at Kozloduy NPP and in 1995 he joined the simulator team right at the beginning of its development and construction in 1995.

Since 2008 he has been the Head of the Engineering support section.

The full scope simulator - 1000 for Kozloduy NPP Units 5 and 6 was commissioned on February 25th, 2000. At this same time on the unit-prototype the start of the extensive Modernization program of 212 different measures with regard to a great number of elements and systems was planned. This defined the need of the first modernization of the FSS-1000 to actually begin before its final commissioning.. A part of the modernization programme to address the training priorities non-compliances has been funded by the US Department of Energy (US DOE). Since that time Kozloduy NPP has invested in continuous update and modernization of the simulator.

The activities related to the elimination of the non-compliances with the reference unit are being performed by a highly qualified team of Bulgarian experts. The responsibility to perform the modernization has been contracted to the American company GSE Systems, which develops the design and the instrumentation of the FSS-1000. The changes are being implemented not only within the time limits of the training sessions, but also in windows scheduled for major changes in the FSS-1000 configuration.

With the financial support of US DOE the following activities have been implemented:

- Replacement of the computer information system (КИС) by a new one, based on Westinghouse platform – Ovation;
- Replacement of the existing configuration control system based on Ingress software by a new one based on Microsoft Access;
- Installation of an addi-

tional diesel generator in the electrical part model and replacement of the main generator KAI-24 circuit breaker by the new HEC-7 generator circuit breaker, introduced at Unit 6;

- Replacement of the computer servers, transformation of the simulator software, replacement of the input-output system to operate on the new platform, integration of all periphery systems, etc.;
- Replacement of the instruction station with a new Java based virtual machine and a PC platform;

*Keeping the simulator in compliance with the reference unit is a continuous process of development and improvement and since nuclear power is an everlasting strive after perfection it will apparently be a major commitment of the FSS-1000 team in the future as well.*

- Update of the existing models of the feedwater and main steam systems by new ones founded on the TOPMERETT two phase fluids modeling instrument, etc. ;

Among the modernization projects implemented to bring the simulator to compliance with the changes in the reference unit, carried out and financed by Kozloduy NPP are:

- Installation of a model of the modernized system for in-core reactor control systems (ICMS-M) – accomplished in 2007;

- Installation of a model of the newly implemented cold overpressurization protection system - introduced in 2007;
- Implementation of a model of the modernized neutron monitoring system – accomplished in 2008;
- Development and implementation of a model of the modernized systems for SCRAM/PP and the control rod drive control system – accomplished in 2008;
- Implementation of a model of the Expanded Safety Parameter Display System – ESPDS. The ESPDS was introduced to the reference unit by stages in the period 2008 – 2009, and before it was introduced to the real Unit it was instituted on the FSS-1000;
- Implementation of automated turbine control system (ACYT Ovation) model and control of the processes (YKTC Ovation) system as well as improvement of the Ovation computer information system. The introduction of those systems is in its final stage and not after long the completion tests and acceptance tests shall be performed to prove FSS-1000 complies with all the standards with relation to the reference unit.

In addition to the so far implemented modernizations Kozloduy NPP is currently contracting and planning other considerable changes regarding the FSS-1000 such as the critical parameters monitoring system (CPMS) already implemented on the reference Unit 6, scheduled to be accomplished by the end of 2009 and enhancing the thermo hydraulic and neutron physical model of the steam generating installation. It is envisaged that the changes in Unit 6 safety systems models shall be implemented in 2010.

Keeping the simulator in compliance with the reference unit is a continuous process of development and improvement and since nuclear power is an everlasting pursuit of perfection it will apparently be a major commitment of the FSS-1000 team in the future as well.







## KOZLODUY NPP 35 YEARS CLEAN ENERGY

### ANNUAL PRIZE FOR POWER ENGINEERING – 2008

Kozloduy NPP has been given the annual prize for power engineering – 2008 in the deregulated market category for its leading presence and position on the electricity market in Bulgaria. This nomination is announced for the first time this year. The patron of the event was the Minister of Economy and Energy Petar Dimitrov and the prizes were under the motto – Environment protection.

The contribution of Kozloduy NPP as the first company officially registered on the liberalized market in the category Producer. The first deal was concluded on 18 September 2004. Since then the nuclear power plant has supplied 13,5 TWh of electricity at unregulated prices within the contracts signed with eligible customers and within the quotas determined by the SCEWR. Due to the competitive price and reliable operation achieved KNPP has proved to be a reliable secure supplier and preferred partner. The aforementioned results along with the four years of experience on the liberalized market of electricity are the reasons for being in the leading position in this segment of the Bulgarian market for electricity.



*(Continued from page 6)*

education and future careers in the nuclear power field, environment protection and on building bridges between the industry and the public and on communicating people from the human perspective. In conclusion after the discussions at the round table a Memorandum was signed including suggestions and ideas about better communication, improvement and optimization of the relations between Kozloduy NPP and the other organizations.

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Teddington. Representatives of more than 70 labs that have been a part of the inter-laboratory comparison attended the meeting. Nearly half of the participants were from UK while the rest of them had come from the Netherlands, Norway, Greece, Spain, Belgium, Romania etc. The assessment of the results obtained from samples from different countries was carried out on basis of three different criteria, this being an extremely conservative approach. Thus the result is considered "acceptable" only in case it complies with the

requirements of all three criteria simultaneously. Otherwise it is considered "questionable" or is rejected.

With respect to alpha and beta spectrometry we can with certainty assert the laboratories of the RM at Kozloduy NPP rank among the leading analyzing radioactivity labs in Europe. Taking into consideration the fact that these kind of analyses are exceptionally labour consuming and complicated for routine performance this further increases the significance of the achievement. In the area of gamma spectrometry the results are also above the mean results, thus

again demonstrating the high quality and accuracy of the analyses conducted at the Kozloduy NPP.

Within the framework of the programme the Bulgarian participants visited a couple of laboratories of the British hosts where studies are being carried out in the field of radioactivity. KNPP experts have been able to familiarize themselves with the laboratory equipment as well as to professionally discuss the aspects of the inter-laboratory comparison with their colleagues and leading scientists in the industry.



## KOZLODUY NPP 35 YEARS CLEAN ENERGY

### ARTS



*The actors at the plant Culture House are bringing two new plays on the stage for the first time in its history.*

### SPORTS



KNPP skiers ranked first in the slalom race and the giant slalom at the First Open Ski Festival in Semkovo organized by the Bulgarian workers' federation.

Taekwon-do team with 12 medals at the Republican tournament and were attested by the vice president of the International Taekwon-do Federation and the Bulgarian Taekwon-do Federation.



**WE ARE ON  
THE WEB!**

[www.kznpp.org](http://www.kznpp.org)

### CONTACT US

We look forward to hearing your views.  
Please feel free to contact us.

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