

## KOZLODUY NPP REVIEW

**CLEAN ENERGY** 

September-December 2008

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# FOCUS EXCHANGE OF OPERATING EXPERIENCE

#### VESELIN NIKOLOV, Head of section, Operational experience and selfassessment indicators

Nuclear power engineering can serve as a magnificent example of self-perfection founded on its own operating experience (OE) accumulated throughout the years. This industry has

developed complete systems for control of activities and subsequent analysis, aiming at continuous improvement. This can be achieved in an atmosphere of transparency the entire professional com-

munity in the world making use of the databases created so far. There is a system in place for training seminars, technical deliberations and meetings for renewal of documentation concerning all areas of interest. Special attention is paid not only to operation and maintenance of equipment but also to human performance in relation to its continuous improvement. Information with regard to good practices as



NUCLEAR POWER ENGINEERING CAN SERVE AS A MAGNIFICENT EXAMPLE OF SELF-PERFECTION FOUNDED ON ITS OWN OPERATING EXPERIENCE (OE) ACCUMULATED THROUGHOUT THE YEARS

well as the problems arising in the industry is timely distributed.

Exchange of information, related to nuclear utilities takes place in various ways. The main bulk of information, regarding operational deviations in plants worldwide is exchanged via WANO (World Association of Nuclear Operators) channels.

Ever since 1989, (when the Association was established to enhance safety and reliability of plants), operation of nuclear utilities has been changing for the better thanks to efficient internal communication as well as to the exchange of information, proving nuclear to be a

reliable source of energy and a significant factor for the environmental protection.

The OECT (Operating Experience Central Team) established with WANO, analyzes the in-

formation and distributes the conclusions made amongst the members, thus enabling common issues and trends to be pinned down. In latest years there is the tendency the amount of events reported and published to be growing, totalling more than a thousand a year now.

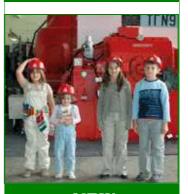
Types of information used to exchange operating ex-

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### NEW WEBSITE



#### **GENERATION FOR 2008**

UNIT 5 ~ 7 858 000 000 kWh UNIT 6 ~ 7 907 000 000 kWh TOTAL – 15 765 105 200 kWh

## **FOCUS**

perience

The types of information published on the WANO page include:

- SOER (Significant Operating Experience Reports) these combine several similar significant events at different plants. Together with plant representatives the OECT performs in-depth analysis of the causes and compiles a joint document, containing recommendations that need to be reviewed within the Peer Reviews.
- SER (Significant Experience Reports) related to one significant event at different plants. Together with plant representatives the OECT performs in-depth analysis of the causes. This results in a document with the recommended corrective actions in it and a training course.
- Hot topics information, collected with regard to a hot for that particular moment topic or a trend manifested in a specific type of problems that have arisen in certain plants "Control of reactivity", for instance.
- JIT Just in Time operating experience for selective instructions. Those are published WANO documents, containing selected information on operational

violations in several plants with similar events. The objective is personnel to get familiarized with the existing risks and the possible consequences of errors as well as to emphasize the necessity to implement various methods to reduce their probability.

• EAR - Event Analysis Report, ETR effort is made so that operating experi-(Event Thematical Report and MER ence (either external or internal) is col-(Miscellaneous Event Report – these are published within 4 weeks after the event grated within the well constructed multiand are actually the initial information level self-assessment and feedback datafor the other types of reports that have to base of the system as established at be prepared. Kozloduy NPP. The system itself as well

Information on OE can also be obtained from other sources, such as the IAEA (International Atomic Energy Agency and its data base - IRS (Incident Reporting System), reports from national regulatory bodies or equipment vendors. Good practices in the industry are being spread via the information channels of OECD (Organisation for Economic Cooperation and Development) and NEA (Nuclear Energy Agency) as well. The seminars and technical meetings, the WANO technical support program and our participation in the peer reviews contribute to a great extent to the enhancement of safety culture, improvement of

violations in several plants with similar operational indicators and in the prevenevents. The objective is personnel to get tion activities with regard to issues that familiarized with the existing risks and have already occurred elsewhere.

> After information is processed at the various consecutive stages operating experience is included to be a part of the everyday activities performed. Every effort is made so that operating experience (either external or internal) is collected, accumulated, analyzed and integrated within the well constructed multibase of the system as established at Kozloduy NPP. The system itself as well as the results of these activities deserved a series of positive comments, including international appraisal. This has resulted in the high assessment of the safety level of the units in operation. The downtime due to events or maintenance activities has been reduced to the minimum, this indicator ranking Kozloduy NPP among the best in the world. These are the results of the effort put forth by all Kozloduy NPP experts and their broad knowledge of all technical improvements and good practices worldwide.





# OPEN TO THE WORLD

#### WANO PROFESSIONAL FORUM

riod 14-16 October 2008 processes in NPPs thus a workshop was organ- contributing for their ized in the training Cen- better management. The ter of KNPP by WANO participants were from Moscow Center under Balakovo NPP, Kursk the heading Using of NPP, Leningrad NPP, assessment indicators in sky NPP, Zaporozhe the decision –making NPP, Paks NPP, Boprocess in NPP. It was hunice NPP. Roseneraimed at exchanging goatom, VNIIAES etc. information and experience in this area and

Within the pe- analyzing the status of for self- Rovno NPP, Khmelnit-



### INTERNATIONAL MEETING ON DECOMMISSIONING



MENERGO. Nuclear ex- ternational perts from Bulgaria, Rus- sioning sia, Ukraine, and the grammes.

The international Czech republic visited meeting on decommis- Kozloduy NPP site. They sioning issues was held in had a site tour, meetings Varna from 22nd to 29th and discussions about the September. It was organ- decommissioning process ized by the Russian com- for the closed units in INTERATO- KNPP and the related indecommisfunding

#### SIXTH BULGARIAN BULGARIAN-RUSSIAN WORKSHOP ON EXCHANGE OF EXPERIENCE

The sixth technical Bulgarian-Russian workshop was held from 29th September to 2nd October and it was related to the use and implementation of the new generation of nuclear fuel for reactors type WWER -1000. The traditional seminar was hosted by Kozloduy NPP. The Bulgarian participants were from KNPP, BNRA, INRNE and BAS. The Russian participants were from Rosenergoatom, Kurtchatov Institute, TVEL Corporation, Gidropress etc.

Eighteen reports were delivered during the forum. The subjects of the reports were related to the status, development and improvement of the fuel assemblies manufacture technology, operational experience from the use of WWER -1000 nuclear fuel etc.



# **NEWS**

### KOZLODUY NPP PART OF THE BULGARIAN ENERGY HOLDING



comply with the requirements of the European and national transition to operational holding.

legislation. The strategic goals are to become the main fac-On September 18th, 2008, tor in the energy sector for this region, to achieve higher the decision of the Economy efficiency and quality of energy services, optimize costs and Energy Minister was and introduce new modern mechanisms to attract investannounced for establishing ments. The operational goals are related to improvement of the Bulgarian Energy Hold- the results of the consolidated group of companies and are ing Plc., (BEH Plc.) . The aimed at transparency and good management practices, imstructure of BEH includes provement of regulation, activities efficiency and effective-Kozloduy NPP Plc, Maritz- ness, increasing the investment potential; enhancement of East TPP 2 Plc, Maritza- human resources quality. The restructuring model ap-East Mines Plc, Bulgartrans- proved by the council of Ministers has two phases: first gas Plc., Bulgargas Plc, Bulgartel Plc and the National Elec- BEH Plc. will be structured as a financial holding within tricity Company Plc. The holding was established in pursu- which the companies remain independent legal entities, ance of a decision of the Council of Ministers of the Repubbeing completely operationally independent, having indilic of Bulgariadd. February 13th, 2008 for consolidation of vidual licenses issued and subject of activity. The separate energy companies. The aim is to maintain and develop the companies shall be a hundred per cent property of the holdcompetitive advantages of Bulgarian Power engineering, its ing company and shall be directly subordinated to BEH Plc. position on the regional and European energy market and The second phase shall include strengthened integration and

#### FOUR YEARS ON THE LIBERALIZED ELECTRICITY MARKET

August 2008 KNPP has provided within the contracts conjor part of the electricity is supplied for the regulated market.

cluded with eligible consumers and traders and within the quo-On September 18th, 2008 Kozloduy NPP celebrated four years tas determined by the SCEWR 11 742 375MWH of electricity on the liberalized market of electricity. KNPP was the first at unregulated prices. The annual share of the net effective officially registered commercial participant—Producer Cate- electricity sold at the deregulated market in the country has gory. Since the opening of the market in 2004 by the end of grown from 5,8% in 2005 to more than 30% in 2008. The ma-

### RADIOECOLOGICAL MONITORING MEETING

A four-day forum on radioecological monitoring was conducted . The participants were from the Ministry of Environment and Waters, Bulgarian Nuclear Regulatory Agency, National Center on Radiobiology and Radiation Protection and Kozloduy NPP. Some of the issues discussed were report on the implementation of the programmes for radioecological monitoring, radiochemical and instrumentation methods for analysis, compliance of the available methodology, instrumentation and work

force with the requirements of the EC recommendation in Euratom 2004/2. The status and the perspectives for development of the National Automated system for continuous control of the radiation background have been also discussed. In result of the sampling and the data from the comparative studies the following conclusions were made: there are no negative trends compared to 2007; the radioactivity of the environment components studied is within the natural radiation background; the results received from the independent monitoring performed by KNPP, NCRRP and MEW are almost one and same; all organizational and technical events necessary for the radiation monitoring of releases into the environment have been undertaken in Kozloduy NPP in order to meet the European require-





# **VISITS ROUND-UP**

#### PARTICIPATION IN WANO PEER REVIEWS

The Bulgarian Nuclear power plant representative in the team of experts for Tianwan NPP WANO Follow-up Peer Review was Mr. Stoyan Genov, Deputy Head PMU, Decommissioning Division. The aim of this review was to assess the changes made after the pre-start peer review in May 2006.

Mr. Georgi Valtchev, Chief Expert, Radiation Protection was invited by WANO -Moscow Center to take

part as an expert in Higashi-dori NPP resentatives from WANO Centers in Atlanta, Paris and Moscow.

WANO Peer Review Programme being one of the fundamental programmes of the organization, continuously proves its effectiveness by providing exchange of information, experience and good practices both for the experts and the plant reviewed thus enhancing safety and reliability of NPPs operation.



### KNPP SPECIALISTS ON A STUDY VISIT IN UK PLANTS

Ten experts from Kozloduy NPP took part in a workshop in the United Kingdom from 10th to 16th of November 2008. The purpose of the meeting was to gain experience in decommissioning and RAW management. This visit was organized by VT Nuclear Services that is KNPP consultant through the project management, funded by the KIDSF. The UK government policy related to decommissioning, RAWcharacterization, treatment and storage was explained.

The Bulgarian experts learned more about the practices in the laboratories for characterization of low and intermediate RAW and methods of their conditioning on Sellafield site. They visited also the National Repository for low radioactive waste.

A day of the visit was spent on Hunterston site, Scotland to learn more about the decommissioning project there The repository for temporary storage of intermediate RAW is located on the same site. The Bulgarian experts had a unique opportunity to get inside, before its commissioning.



### **KOZLODUY NPP REVIEW**

# **NEWS**





# Macedonian students visited KNPP

On November 21st 2008 students and professors from the Electrical Engineering and Machine Faculty at the State University "St. Cyril" in Skopje, the Republic of Macedonia visited KNPP.



### KNPP OPEN DAY

The second open day for 2008 was on 11th October . 462 people from many different towns in Bulgaria visited KNPP site. There were also visitors from Great Britain and Italy. During the tour they saw 440 MW Units 3 and 4 and the 1000 MW Unit 5 guided by experts and specialists from the plant. They showed great interest in the aerosol sampling and control measurement performed in the mobile lab by the specialists from the Environmental Monitoring Department as well as in the demonstrations of the fire Protection service .

More than 40% of the visitors were led by their parents. We were glad to meet these little children and students who had come to see the plant and learn more about nuclear power because it proves the trend that more and more young people show interest in NPP operation.



"We will be glad if these visits become a tradition because our students show keen interest in this high technology for electricity generation. I believe that the development of nuclear power engineering shall contribute for the economic growth in the region and the world."



### **NEWS**

### **EMERGENCY TRAINING**

The annual emergency training was held on December 4th on the plant site in accordance with the requirements of KNPP Emergency plan. It was aimed at reviewing the preparedness of the emergency response personnel for organizing and coordinating the activities of KNPP emergency response teams and the other external in companies in case of a radiation accident. The plan included a drill of the activities of the emergency response teams and the other staff in case of fire in the trench spent fuel at SE RAW.

During the drill the accident management and personnel protection activities of the emergency response team were demonstrated. The internal and external communication with the regional and national specialized structures was successfully carried out from the Accident Management Center. The activities and the coordination of each team will be analyzed in order to optimize the



Coordination of activities from the Accident Management Center

overall emergency activities.

The training was monitored by the parliamentary commission on the disasters and accidents.





#### **BULGARIAN NUCLEAR ASSOCIATION CONFERENCE**

The Bulgarian Nuclear Association has organized its annual conference as a part of the Nuclear Energy for people cycle under the heading *Safety of Nuclear Facilities and Environment*. The conference was held on November 13th -14th, 2008 in Sofia with 112 Bulgarian and foreign scientists, experts and specialists participating. These are some of the main subjects that were discussed: preparation of work force for the nuclear area, safety culture, radiation and environment, alternative energy resources and nuclear power engineering. Twenty three reports were presented. A round table was conducted on the subject: *Reviving of the young generation interest in nuclear science and nuclear industry*.



### **KOZLODUY NPP REVIEW**

### CONTACT US

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

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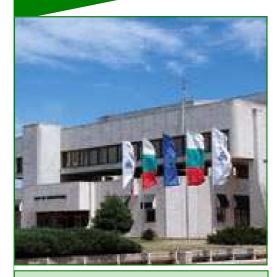
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# WE ARE ON THE WEB!

www.kznpp.org



KNPP TOURIST CLUB



# **SPORTS**



KNPP TEAM –WINNER AT THE GAMES FOR POWER ENGINEERS IN ALBENA



THE TAEKWON-DO TEAM AT THE TOURNAMENT IN SERBIA



FIRST SPORT GAMES WITHIN THE BULGARIAN ENERGY HOLDING