



# KNPP REVIEW

KOZLODUY NPP REVIEW

ISSUE 6

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KOZLODUY NPP 35 YEARS CLEAN ENERGY

## THE CHALLENGES

### PLANNED OUTAGES IN 2009 - OBJECTIVES ACCOMPLISHED AND ISSUES RESOLVED



#### TSVETKO POPOV

HEAD OF MAINTENANCE DIVISION, EP - 2

*The proper and adequate high quality human performance during the processes of planning and implementation of maintenance activities is of considerable importance for the safe operation of the largest electric power generating utility in Bulgaria – the Kozloduy Nuclear Power Plant. The reliable operation of all equipment as well as the fulfilment of the production tasks as set before Electricity production -2 (the two 1000 MW Units 5 & 6) is the best way to prove that the Maintenance Division had successfully completed the activities during the outage.*

#### PREPARATORY ACTIVITIES

Prior to the planned outages at each of the two 1000 MW Units all necessary steps related to approval and verification of corresponding documents important for the implementation of the envisaged works were undertaken: such as schedules with regard to the scope of works, lists of technical decisions, programmes on operational control of primary and secondary circuit metals, etc. All documents concerning outages re-

quired by the Nuclear Regulatory Agency were developed. In addition all the possible preparatory works related to the forthcoming maintenance activities at Units 5 & 6 were completed. As it is the case in the latest years the technologically achievable maintenance works beyond the outage scope were also implemented in order to reduce the duration of maintenance activities and to make use of the human resources in a relatively better balanced way.



#### DURATION OF OUTAGES

The works envisaged for the 2009 outage at Unit 5 were actually completed within 42 instead of the 45 days as scheduled; this considered to be an undoubted success for EP-2 staff. As for

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Unit 6 outage – all scheduled works were completed strictly within the 50 days, as it was planned in advance. The difference in the duration of both outages was due to the different type and scope of works performed.

#### THE 2009 OUTAGE PECULIARITIES

It is well known no two outages can be very much alike. In addition to the wide variety of equipment combinations to be maintained, outages in recent years were combined with large-scale modernization measures. Though Units 5 & 6 Moderni-



#### PREVENTIVE ACTIVITIES AND MAINTENANCE OF EQUIPMENT

In addition to the main activities, related to the replacement of certain software and hardware complexes of safety systems and refuelling of the reactor core, more maintenance works were performed on the main circulation pumps, control of steam generators, maintenance works on turbine generators, exciters, replacement of circuit breakers and a lot more works, as envisaged in advance were also completed.

zation Program was fully completed on time, this by far can not revoke the necessity of additional measures to be implemented, funded by KNPP Investment program to further enhance level of safety or related to the extension of lifetime, availability of equipment and facilitate the power increase of EP-2.

Works within the outage window are always intense and staff not only from Maintenance Division but also from Operations, Engineering support as well as

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### FOUR DECADES INVESTMENT ACTIVITIES IN KOZLODUY NPP



*THE TEAM OF INVESTMENT DIVISION*

In December, 1969 the then Ministry of Energy and Fuels adopted a decision to establish the Investment Control Directorate – an enterprise, entitled to respond the growing demands with regard to provisioning and coordination of supplies, organization and control of construction works, installation of all equipment, commissioning of the nuclear plant, training of personnel, etc. Though existing under different names throughout the years, such as “Atomenergoinvest, Investment Directorate or Reconstructions and Modernizations Directorate the now Investment Division within the framework of Kozloduy NPP has always been responsible for the successful plan-

ning, development, implementation, performance and control of investment activities at the Plant. Among the greatest challenges for the teams of experts in all these years were the commissioning of each of the six KNPP Units, the construction of the Spent Fuel Storage Facility, Outlet canal-2, Units 5 and 6 Modernization Programme, the hospital and the Sports and Recreation Centre in Kozloduy as well as a great number of other industrial and civil constructions. All these achievements were made possible by the highly qualified tens of engineers, architects, technicians and economists, who have ever dedicated their enthusiasm and work to see their dreams come true.



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### DECOMMISSIONING

In November and December 2009 two groups of KNPP specialists paid a visit to UK's Winfrith and Harwell sites. The visits were carried out under Project 27 of Kozloduy Project Management Unit (Training and Development in Decommissioning) which is aimed at providing training materials for Kozloduy NPP Plc. and subsequent training and preparation of the personnel for the activities related to Units 1-4 decommissioning.

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from other divisions are usually involved as well. It is out of question that the outsourcing organizations and contractors did their best and added for the timely and high quality completion of the outages

#### **THE CHALLENGES WE FACE DURING OUTAGE 2010**

Before all we plan to entirely complete all the necessary improvements as far as the safety systems are concerned at Unit 5. Meanwhile certain maintenance works to



replace high pressure heaters at Unit 6 as a part of the major modernization activities are envisaged along with the routinely scheduled great number of technical decisions aimed at further enhancement of safety and reliability of power generation. All these activities shall be accompanied by large scale undertakings to improve operational state of equipment and conditions in all rooms and premises on territory of EP-2.

Last but not least I would like to take the opportunity to express the keen appreciation of the Plant Management and my personal gratitude to all KNPP staff and Contractors for their high performance during the outages and we all do believe we shall be able to keep pace with the best in the industry and comply with highest of standards through developing and continuously improving all elements in our very responsible and sophisticated everyday commitments.





## KOZLODUY NPP 35 YEARS CLEAN ENERGY

### EMERGENCY DRILL



*In the Emergency Management Center*



*The group for radiation control and the medical aid team acting on site in time of training*



The annual emergency drill was conducted in accordance with the plant Emergency Plan on November 19<sup>th</sup> 2009 on the territory of Kozloduy NPP in order to improve the preparedness of the emergency personnel to perform adequate activities in case of general accident. The overall organization of implementation of this training was done by Emergency Preparedness Department at the Safety and Quality Division with the assistance of Operational Activity Organization Section at EP-2 and the Full-Scope simulator (FSS-1000) personnel at the Training Center. The drill started with the activities of the FSS-1000 operations personnel following a preliminary scenario. The operators demonstrated fast and accurate identification and classification of the event in accordance with the Emergency Plan of KNPP. The communication with the Emergency Management Center and the governing team was also inspected as well as the off-site communication with all local, regional and national emergency services.



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#### IAEA TECHNICAL SUPPORT MISSION IN TRAWSFYNYDD

From 16-19 November 2009 the first WANO Technical Support Mission in a plant in the process of decommissioning was conducted in Trawsfynydd NPP-Wales, UK. The experts participating in the mission were from EDF-France, Grafenrheinfeld NPP-Germany, Kozloduy NPP - Bulgaria and one observer from Magnox North - company owner of the plant. The mission was held following an invitation of the plant management in order to assess the management and planning of activities in the areas Operations and Maintenance as well as their effectiveness in the process of decommissioning, projects management and their compliance with the world standards. Though it was the first international mission in the Welsh plant the hosts organization and commitment was very good.



A lot of reports with observations were written and good practices were found.

*RADELINA TRANTEEVA,  
Head Decommissioning Department*

#### IAEA REGIONAL MEETING



The regional meeting within the Project RER9095/9003 "Strengthening Safety Assessment Capabilities" was organized in Budapest, Hungary November 23-27, 2009 by the International Atomic Energy Agency, hosted by the Nuclear Research Institute at the Academy of Sciences of Hungary, and the subject – "Using Probabilistic Safety Analysis (PSA) and Risk in-

formed Decision Making Process". 36 specialists from 13 countries participated in this meeting—the USA, Great Britain, Finland, Hungary, Russia, Poland, Ukraine, Lithuania, Slovakia, Slovenia, the Czech Republic, Romania and Bulgaria. The main task of the meeting was to prepare a zero version of guidelines for integrated risk-informed decision making process in the format of IAEA documents (IAEA-TECDOC). By June 2010 the IAEA document – INSAG-25 – Integrated Risk-Informed Decision Making Process is to be issued. Some other documents were also

discussed (guidelines, instructions, procedures) as well as the requirements of PSA from the aspect of using it in RIDM; current status and problems of using PSA in RIDM in different countries. Further joined activities in this area were outlined.

*Sc. D. EMIL KITCHEV  
Head, Risk Management Section*





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## WIN - BULGARIA ORGANIZES THE FOURTH THEMATIC NIGHT FOR YOUNG PEOPLE



“Nuclear Industry and Radiobiology” was the title of the night organized by WiN – Bulgaria. It was held on November 26<sup>th</sup> 2009 in Kozloduy.

The event was organized as a competition on Nuclear Energy and Radiobiology for high school teams. The participants this year were from six schools – three from Kozloduy, one from Belene and two from Sofia. The students demonstrated their knowledge about the history of radiobiology, the contribution of some leading scientists for its development and for its role in nuclear industry and people's life. The competition was organized in four rounds: introduction of the teams in the context of the subject, presentations delivered by each team, theoretical questions and arrangement of a thematic puzzle. After a challenged competition and a variable score in the individual rounds, the team of Hristo Botev Comprehensive School ranked first, followed by the students from the National School on Science and Maths - Sofia. The competition went on for more than two hours in an overcrowded hall. A special quiz was organized for the public and prizes were given to the

winners in the competitions for an essay, a drawing or a presentation on the subject.

Since 2005 WiN Bulgaria has initiated for the fourth time such an event, dedicated to the application of different sciences in nuclear industry: physics, IT, chemistry and ecology. These thematic nights have turned out to be the most successful events in the programme of activities of WiN Bulgaria and they are gaining more and more popularity among students which can be proved by the participation of one more school this year and by the support that we receive from the specialists and organizations in this area. Katya Minkova -the president of WiN-Bulgaria announced in her opening speech that for the next event we will have to make a preliminary qualification of teams. The KNPP Safety and Quality Director welcomed the participants too and said that the plant has organized a trip for all the participants and their teachers to the Bulgarian Academy of Sciences and the Research Reactor in Sofia. The event was attended by representatives of the Nuclear Regulatory Agency, the Bulgarian Atomic Forum (BULATOM), the State Enterprise Radioactive Waste and a lot of other organizations and sponsors.





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#### INTERNSHIP TRAINEES PRESENT PROJECTS

The Internship training programme for 2009 at Kozloduy NPP was finalized with the defense of the all 14 trainees' papers. The trainees, coming from various universities and specialties such as IT, Computer systems and technologies, nuclear power industry, physics, engineering physics, civil engineering, international trade relations, financial control, etc., had been allocated at the corresponding divisions of the Plant in order to



put to trial in everyday practice their university achievements and gain precious skills and experience. Leading KNPP experts in the matter mentored the trainees to develop their projects. All trainees defended their papers in a very convincing way, the discussions proved to be very useful and appeared to be a significant contribution for the fur-

ther motivation of the students and added to their strive to excellence. Thus, the Summer internship trainee programme at Kozloduy NPP once again gave good grounds to well educated young people to see their future in the prospects of one of the most advanced and respected industries in the world – the nuclear power generation.

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During the visits the participants were introduced to various aspects of decommissioning activities implemented on both sites and exchanged information with their colleagues.

A lot of issues were discussed during the sessions, namely decontamination, RAW management, dismantling and demolition activities, characterization and remediation of contaminated land etc.







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### SPORTS



The best sportsmen and sportswomen of Kozloduy NPP for 2009 - (from left to right) **YORDAN PETROV, MARIAN NACHALNISHKY – SPORTSMAN OF THE YEAR, SVETLANA DIMOVA, PAULA MARINOVA, KRASIMIR EMILOV, HRISTO TRIFONOV AND ANDREY MANOLOV**

***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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#### **BADMINTON CHAMPIONSHIP -**

conducted in November 2009 in Kozloduy  
with more than 75 participants from all over the  
country