



KNPP REVIEW

KOZLODUY NPP REVIEW

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KOZLODUY NPP 35 YEARS CLEAN ENERGY

RENEWED LICENSES FOR UNITS 5 AND 6

The Chairman of the Nuclear Regulatory Agency **DR. SERGEY TZOTCHEV** officially granted the renewed licenses for the operation of Units 5 and 6 on 9th October 2009 to the Plant Executive Director **DIMITAR ANGELOV**. The Agency issued the licenses on October 2nd 2009, and they are valid until 5th November 2017 for Unit 5 and October 2nd, 2019 for Unit 6. The ceremony was held in the Information Center of the Plant and was attended by



NRA and KNPP representatives. The renewal of the licenses of the two Units is based on the required operational and organizational documents submitted to the NRA as well as the Periodic Safety Review. Kozloduy NPP is licensed

to operate the Units in compliance with the licenses provisions and the regulations of the Safe Use of Nuclear Energy Act, the relevant legal acts, etc. setting the priority to nuclear safety and radiation protection.

KOZLODUY NPP NON-RADIATION ENVIRONMENTAL ASPECTS PERMITS AND LICENSES



In the run of the two latest years Kozloduy NPP has been generating more than a third of the electric power in this country, making thus its considerable tribute to preserve the environment and protect future generations. The operation of Kozloduy NPP saves to people and environment the harmful impact of more than 20 million tons of carbon dioxide, nearly 1 million tons of sulphur dioxide, about 65 thousand tons nitrogen oxides and more than 40 thousand tons of ashes each year. An important element in the management of the environment is to observe the requirements of the legislation in force and especially the licensing regulations, regarding the non-radiation aspects of the environment.

NON-RADIOACTIVE WASTE MANAGEMENT by **PETAR PETROV**, KNPP Chief Ecologist

The operation of a nuclear power plant generates certain waste products such as: domestic, from construction sites, used oils, metals, electric or electronic equipment, luminescent or mercury lamps, batteries of all kinds, asbestos waste, paper, cardboard or wood, waste storage facility infiltrate, etc. In compliance with the Waste Management Act (WMA) all these have to be collected separately. In 1996 after the positive decision with regard to EIA the construction of the Non-radioactive Domestic and Industrial Waste Facility began and it was put in operation in the beginning of 2002. There non-radioactive solid domestic, non-usable industrial and small-sized construction wastes are stored. Hazardous and usable industrial wastes are temporarily stored at previously determined lots on site of the

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plant to be sold or submitted to licensed outsourcing organizations for further processing. A Programme has been developed on non-radioactive waste management as well as programs that envisage radiation and non-radiation monitoring on the Storage Facility. Non radiation monitoring on underground water in the area of the Facility is performed by an external authorized laboratory and in addition in 2009 Kozloduy NPP laboratories began to conduct parallel tests. The results obtained from the in-house monitoring are summarized and presented in the annual reports to be submitted to the Environment Executive Agency and the Regional Environment and Water Inspection.

USE OF WATER AND WATER SOURCES

Kozloduy NPP makes use of water from ground surface sources (the Danube River), from underground water sources as well as from the water supply and sewage system. Water from the Danube River is used to cool down certain equipment in the Plant and to produce chemically de-

salted water. The Plant uses water under a permit in compliance with the Water Act (WA). There are 8 shaft wells for underground water used to supply the NPP.

For the use of underground water there are three permits in accordance with the WA.

In compliance with the WA Kozloduy NPP holds two permits related to the use of the Danube River and to discharge water into of the Main dike of the town of Kozloduy.

Control on use of water and water resources is performed by the Basin Directorate in the town of Pleven and the Regional Inspectorate of Environment and Water – the town of Vratsa.

Waste water and underground water is subject of monitoring under Kozloduy NPP Programme on in-house non-radioactive monitoring of emissions into water. Monitoring on the Non-radioactive domestic and industrial waste storage facility is performed in a similar way - by an outsourcing authorized laboratory, the KNPP laboratories also performing parallel tests since

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KOZLODUY NPP CELEBRATES ITS 35TH ANNIVERSARY



On September 4th, 2009 the first Bulgarian Nuclear Power Plant celebrated its 35th anniversary. Traicho Traikov - Minister of Economy, Energy and Tourism joined the celebrations on the day, accompanied by Milena Tsenova, Chair person of the Kozloduy NPP Board of Directors. Minister Traikov met Kozloduy NPP managers and trade union leaders at the Information Centre and made a walkdown to visit the main control rooms of 440 MW Unit 3 and the 1000 MW Unit 5.

The ceremonial meeting in the Culture House was at the same time a touching reunion for hundreds of the employees, experts and managers that have worked for the KNPP throughout the years, as well as for a great number of Bulgarian and foreign colleagues, partners and friends. Executive Director Dimitar Angelov expressed his gratitude for the wide public support for the Bulgarian Nuclear Power Plant and said: "Many a thousand are the people that have spent the most valuable and remarkable moments of their youth working for the Kozloduy NPP. 35 years is a period of time long enough for a team of such a Plant to become fully professional and gain deserved self-confidence. We can be proud of the efficient work done ever since 1974, from the very beginning 35 years ago, when the KNPP became commercial with the total amount of 472 509 252 MWh electric power generated, and the myriads of hours of dedicated and strenuous human labour. Regardless of all ups and downs that have accompanied the political

transition of the country and the world recession of the latest months these thirty five years - thanks to the motivation of personnel and the continuous strive towards further improvement of safety culture Kozloduy NPP has successfully built its respectable image and contributed to the development of best world practices. If, with regard to its main technical and economic indicators Kozloduy NPP exceeds the average world level indicators and nowadays occupies its deserved place among plants with similar reactors, it is undoubtedly due to the performance of the entire team of employees, possessing enormous human, scientific, technical and a variety of a lot more skills and abilities, individuals and teams that have demonstrated their professional expertise throughout the years."

Minister Traikov in person granted his congratulations to all power engineers and emphasized he was deeply impressed by the professional experience of the KNPP employees. In his speech Minister Traikov pointed out: "Thirty five years ago Bulgaria became a member of a big family that unites more than thirty countries around the world. Ever since we have been gaining valuable experience in the maintenance and operation of nuclear facilities to ensure reliable power supplies. This ranks the country among the leading producers of clean energy. In the years of the construction and operation of the six reactors, Kozloduy NPP has proved that it is able to ensure and contribute to the energy security of the country in an indisputable and safe way." The formal ceremony was attended by the Bulgarian Nuclear Regulatory Agency Chairman Sergey Tsochev, BNRA Vice-chairman Borislav Stanimirov, the Member of the European Parliament Vladimir Uruchev, MP Nikolai Kotsev, the General Consul of Russia in Rouse Mikhail Torshin, the Director of the Regional office of the US Department of Energy at the Embassy of the United States of America in Sofia Riaz Awan, the Mayor of Kozloduy Roumen Manoev and other distinguished guests..



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7th BALKAN CONFERENCE



From 8th to 4th of September the Seventh General Conference of the Balkan Union of Physicists was held in Alexandroupoulos, Greece. The title of the forum was "Modern aspects of physics with regard to the environment, technologies, human life and health".

The participants were from all Balkan states. The representatives of Kozloduy NPP were specialists from Electricity Production II Ani Valchkov – Reactor Physicist, Spaska Doichinova – Chief Expert In-core control and Katya Alexieva Secondary Circuit Diagnostics Engineer. There were also other participants from Bulgaria –the Bulgarian Academy of Sciences, Sofia University Kl. Ohridsky, the Southwestern University N. Rilsky– Blagoevgrad, the Technical University of Sofia, The technical University of Varna The University of Plovdiv P. Hilendarsky etc.

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INTERATOMENERGO MEETING

The international association INTERATOMENERGO had a meeting in the seaside resort Golden sands from 20th to 24th of September. Nuclear experts from Russia, Ukraine, The Czech Republic, Slovenia, France and Bulgaria took part in it. Reports on present day issues related to the safe operation, modernization, decommissioning and construction of new nuclear facilities, were presented.

The reports on behalf of Kozloduy NPP were delivered by Lyudmil Nedelchev-Major Equipment Lifetime Chief Expert and Velimir Georgiev –Project Manager Decommissioning Division.

A presentation on the Belene Project was delivered too as the emphasis was placed on new solutions compared to the original design. Leading companies manufacturers of equipment for nuclear power engineering presented their best products.

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missioning etc. It is a good way of exchanging experience and information in these areas among experts from all over the world-Kurchatov's Institute, Gidropress, Russia; , The Ukrainian Scientific and Technical Centre on Nuclear and Radiation Safety; Dukovany NPP, Skoda JS for nuclear equipment, Nuclear Research Institute, The Czech Republic; VUJE Trnava, Slovakia; Paks NPP, the Research Institute on Physics of Elementary Particles KFKI, Hungary; the Corporation Fortum Nuclear Services and the Technical Research Centre VTT (Finland); the Concern on technical services and research TUV and the Research Center FZ Dresden (Germany), as well as the offices in Germany and the USA of the Swiss company for engineering services in the area of nuclear power engineering.



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AER ANNUAL SYMPOSIUM

The International Association Atomic Energy Research (AER) held its XIX Symposium in the seaside resort St.st. Konstanin and Elena, 21st-



25th September 2009. It was organized by the Institute on Nuclear Research and Nuclear Energy at the Bulgarian Academy of Sciences, Kozloduy NPP and The Bulgarian Nuclear Association. The specialist from the Reactor Physics calculations/analysis Department, Operations Division participate regularly in these symposiums with reports on the core characteristics calculations and control, refueling the reactors by using new types of nuclear fuel, calculations of the irradiated and spent fuel characteristics and validation of computer codes.

The experts from Kozloduy NPP who contributed to the Symposium were: Krasimir Kamenov - Head of RPhC Department and Danail Hristov and Alexander Kamenov – Physicists-process engineers.

The issues discussed at this annual symposium are related to the safety and accuracy of the reactor-physical calculations and computer codes, the strategies for VVER refueling with a new type of fuel, the fuel operation, transportation and storage of spent nuclear fuel, physical aspects of decom-

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CONFERENCE ON FUEL

The Institute on Nuclear Research and Nuclear Energy at the Bulgarian Academy of Sciences in cooperation with the International Atomic Energy Agency, organized the 8th International Conference on Operational behaviour, modeling and experimental maintenance of fuel for VVER reactors, 28th September-3rd October in the Bulgarian seaside resort Sunny Beach. Some of the main issues discussed during the meeting were: operational behaviour of nuclear fuel; enhancement of design and operational characteristics; modelling and experimental support of nuclear fuel; licensing and quality assurance of nuclear fuel.



There were reports by representatives of scientific organizations working on the development of nuclear power engineering, experts from nuclear power plants and enterprises, specialized in the manufacturing of nuclear power plants equipment. The participants were from Russia, Finland, Norway, Ukraine, Hungary, Bulgaria, the USA, Germany, Italy, Argentina, Indonesia and the Czech Republic.

Kozloduy NPP specialist Krasimir Kamenov presented a report on the Plant experience in this area.



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2009. Results from the monitoring performed are summarized in annual reports to be submitted to the Environment Executive Agency and the Regional Environment and Water Inspection-Vratsa.



STORAGE AND UTILIZATION OF CHEMICAL SUBSTANCES AND CHEMICALS

For the purposes of the electricity generation as well as for the support activities on site of the Kozloduy NPP various raw materials are being stored and made use of, including chemical substances and chemicals. The biggest amounts of those substances and chemicals are those used for the production of the chemically desalted water to maintain the water chemistry of the primary and the secondary circuit. The necessary conditions to store the amounts of oil products needed - gas, diesel, lubricants as well as hydrogen produced by in-house electrolysis installations to cool electric generators are provided on site. In accordance with the provisions of EPA Kozloduy NPP has been classified as an "enterprise of high risk potential" with regard to storage and use of chemical substances. After the required documents were submitted in 2008, the Company was granted a permit to operate such a kind of an enterprise. Control on these activities is performed by the Regional Environment and Water Inspection-Vratsa.

GREENHOUSE GASES EMISSION

During the process of electricity generation the nuclear plant does not actually produce greenhouse gases. As an indispensable part of the Units' safety systems Kozloduy NPP uses diesel generators and diesel pumps to be automatically actuated in case of emergency power cut. In normal operation the diesel generators and pumps are in the standby mode and are being started for functional tests for an hour once a month, according to schedule. During their operation the diesel engines the gases exhausted into the atmosphere contain carbon dioxide and though the amount of those emissions is insignificant, the diesel generators are included by MEW in the green house gases trade scheme and in the National Plan related to the distribution of greenhouse gases emissions quotas trade. The reason is their total installed capacity - about 85 MW thus coming into the scope of Appendix № 4 of EPA. In 2008 Kozloduy NPP submitted the necessary documents to obtain the permit for emission of greenhouse gases. Greenhouse gases emissions are subject of monitoring according to plan that is an integral part of the Permit. Quarterly and annual reports are regularly prepared to be verified by an authorized company and submitted to the Environment Executive Agency.



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ENGLISH LANGUAGE CERTIFICATES

THE REPUBLIC OF
BULGARIA
EUROPEAN SOCIAL
FUND 2007 – 2013
AGENCY ON EM-
PLOYMENT
KOZLODUY NPP

On October 12th,
2009 Kozloduy NPP

Executive Director

Dimitar Angelov presented with certificates
KNPP employees that had successfully
passed the English language exam in June



to complete the lan-
guage courses at the
KNPP, co-financed
by the Human Re-
sources Development
Programme of the
European Social
Fund. The scores

achieved at the final exams were very good
at the average and the certificates are re-
cognized on territory of the European Union.

OPEN DAY AT KOZLODUY NPP



October 17th 2009 was the second for this
year Open Day for Kozloduy NPP. The
technology and further details in nuclear
power production were thoroughly ex-
plained to all more than 410 visitors to the
site, coming from all over the country.
There were some the foreign guests as
well who took advantage of the opportu-
nity to see the control rooms and turbine
halls of the 440 MW Unit 2 and the 1000
MW Unit5.

FEEDBACK

*PATRICK FOCHAS, France,
Chief engineer, Danube Bridge-2*

*“Today I had the chance to visit the nuclear
power plant on the Open day to see it from the
inside. I got familiarized with one of the four
units of the earlier generation, being cur-
rently decommissioned. I think the other two
1000 MW units that are of considerably later
and up-to-date design are efficient and oper-*



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ate at full power.

I had the opportunity to take part in the construction works of some 900 MW nuclear reactors in China and I am professionally interested in nuclear power plants. We really need nuclear power – handled properly, with all safety measures in place, observing the recommendations of the International Atomic Energy Agency it will enable us to overcome the ecological problems of our contemporary world. “

**NIKOLA ALEXANDROV,
Pensioner, Bulgaria**

“What I saw today made me feel remorseful that at the time this vast plant was under construction I did not happen to come here and join all these people who made their dream come true. I am happy now to see this Plant myself for I have only seen it on TV so far. It is quite different now, that I have my personal impression of this extraordinary facility I can tell stories not only to my grand children but also to the guys in the pensioners' club in Kovatchitsa. This Plant I can call a miracle of technology and we, Bulgarians can only regret the early closure of Units 1 to 4. I would like to come back and visit the Plant again some day.”

DAVID KOSTOLOY

Geologist, Australia

“I was deeply impressed by the Kozloduy NPP - this is a huge electric power generation enterprise. It was my first visit to a nuclear plant ever and it was of enormous interest for me. Everything is on a very large scale here. My parents and my brother work at a thermal power plant, but things there are quite different“



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One of the emphasis of the conference was the reduction of CO₂ emissions under EUCO2 80/50 project that includes 18 European metrological regions and reviews a period until the year 2050

The real status and the innovative technologies in the area of physics were considered and the good practices and strategies shared, exchange of information on up-to-date topics, maintenance of useful contacts between the Balkan Universities –these are some results achieved at the Seventh General Conference.



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SPORTS



16 gold, 12 silver and 10 bronze medals for the Plant at the VII National Worker's Sports and Athletics Meeting in Albena, September 16-20, 2009



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THE WEB!**

www.kznpp.org

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The Gold Medal winner in Arm Wrestling
PLAMEN BAMBOV

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

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