



KOZLODUY NPP REVIEW

The English language bulletin of Kozloduy Nuclear Power Plant

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INSIDE

EU standards at KNPP

see p. 4

Extensive media coverage

see p. 2

British delegation at Kozloduy NPP

On November 6, 2006, Nick Leake, Deputy Ambassador of Great Britain to Bulgaria, brought a delegation from Copeland Municipality to Kozloduy NPP. The delegation included Ms Elaine Woodburn, Municipality Chairperson, and Mr Fergus Macmorrow, Corporate Director at the Municipality. The guests were welcomed by Mr Ivan Genov, Executive Director, and by other KNPP managers.

Mr Genov presented in short the history of the first Bulgarian nuclear power plant. He talked about modernization of units and about management priorities. The director also pointed out the significant role of Kozloduy NPP as regards security of energy supply in the Balkans, and the positive appraisals by international missions and peer reviews. Mr Genov stressed the role of Kozloduy NPP on the deregulated

market of electrical power in Bulgaria where our company had 70 per cent in 2006.

The British guests inquired about VVER technology, spent fuel management and about social consequences after decommissioning. They visited Units 3 and 5 and met with nuclear operators.

Kozloduy NPP invests in human capital

Department of Trade and Industry provides finances

On November 20, 2006 Kozloduy NPP received for the second time the prestigious Responsible Business Award by the Bulgarian Business Leaders Forum. At the official ceremony, which took place in Sofia, Kozloduy NPP was awarded second place in the "Investor in Human Capital" category. In order to participate in the competition, Kozloduy NPP presented its project entitled "Expanding personnel database

Continued on page 2

Accents



Georgi Kirkov (fourth on the left), Finances Director of KNPP, received the award in Sofia on behalf of KNPP.

Kozloduy NPP invests in human capital

Department of Trade and Industry provides finances

with a 'Family Members' section."

This project comprises a database which includes information about family members of KNPP employees. At the end of 2006, all employees could fill in forms with data about their relatives.

Including such a section in the database was envisaged in the specially prepared Program for Management of Social Consequences after shut-down of Units 1-4. This data will help specialists and their families in searching new job opportunities as Kozloduy NPP approaches decommissioning. The information regarding family members will be used when providing assistance from non-governmental organizations. Support will be provided by the Kozloduy Business Center and the Kozloduy Regional Economic Development

Initiative; they will organize qualification courses, motivational training, business skills training, etc.

The project will be sponsored by the Department of Trade and Industry of Great Britain under the program "Social consequences after nuclear facilities decommissioning in Central and Eastern Europe."

Visitors come to get first-hand information

Media cover the closure of Units 3 and 4

76 students visited Kozloduy NPP in the last two months of 2006. The largest group came from the Plovdiv Univeristy Paisii Hilendarski. 39 students majoring in Chemistry and Computer Chemistry came to the nuclear plant.

It has become a tradition that the Department of Electrical Engineering of the Sofia Technical University organizes visits at Kozloduy NPP. On November 29, 27 future engineers came to see the control rooms and the turbine halls of Units 2 and 5. They also visited the Switch Yard where they had the opportunity to ask specialists about technology and specificity of work. In December, a group of students from the New Bulgarian University came to Kozloduy NPP. These were majors in Ecology and Ecology and Toxicology.

A group of 50 high-school students visited Kozloduy NPP in the last month of 2006.

Media attention was particularly high at the end of 2006 as we approached the deadline for closure of Units 3 and 4. We welcomed reporters from bTV, 24 Chasa, Trud, and other newspapers. They met with managers and employees at Units 3 and 4. Also, we had guests from foreign media such as DPA, ZDF, Reuters, Associated Press, France Press, etc. On January 5, TV Tokyo broadcast a documentary about Bulgaria where special attention was paid to Kozloduy NPP.

Partnership



USNRC delegation at Kozloduy NPP

A delegation of the US Nuclear Regulatory Commission came to Kozloduy NPP on November 13, 2006. The group was led by Mr Jeffrey Merrifield, USNRC Commissioner. He was accompanied by Mr John Ramsey, Senior Program Manager, and Mr John Thoma, Technical Assistant.

Mr John Beyrle, US Ambassador to Bulgaria, also accompanied the delegation.

The visit was organized at the invitation of Mr Sergey Tsochev, Chairman of the Bulgarian Nuclear Regulatory Commission. He came to Kozloduy NPP together with fellow-managers from the commission.

The US guests were welcomed by Kozloduy NPP's Executive Director Ivan Genov, who made a presentation about the nuclear plant. He outlined the goals for the future development of the company: meeting the production targets to assure financial stability, maintaining high level of safety, and expanding the KNPP's share on the deregulated market. Mr Genov pointed out the excellent results of the cooperation between Kozloduy NPP and US companies in implementing modernization measures

at Units 5 and 6.

Mr Beyrle greeted the Bulgarian hosts with the EU membership and said this would provide new opportunities for further US-Bulgarian cooperation. He also stressed the role of the energy sector for regional stability.

Mr Merrifield said the visit was a good opportunity to establish better partnership between the USNRC and the Bulgarian Nuclear Regulatory Agency. He said America plans to build new nuclear plants in the future just like Bulgaria plans to have a new one in Belene.

The guests had a walkdown to various facilities on the plant site.



District governors visit Kozloduy NPP

On November 22, 2007, Dr Antonio Georgiev, District Governor of Vratsa, and Mr Tsvetko Tsvetkov, District Governor of Pleven, visited Kozloduy NPP. They were accompanied by the Kozloduy mayor Mr Milko Torbov.

The guests had a working meeting with

EU Standards

Kozloduy NPP meets EU requirements



Radio-chemical analysis of plutonium isotopes

Clean environment has always been a top priority for Kozloduy NPP. Therefore, environmental radiological parameters have been strictly monitored since plant's commissioning. Analyses are done in the labs of Radioecology Monitoring Department. More than 2,400 samples are analyzed annually; they are subject to 4,100 various analyses. This figure does not include gamma background which is measured continuously. Ecological control is coordinated with several institutions: the Nuclear Regulatory Agency, the Ministry of Environment and Waters, the National Center for Radiobiology and Radiation Protection, etc. Furthermore, the Kozloduy NPP specialists take into account the recommendations of the International Atomic Energy Agency.

"In terms of control, our department is commensurable with other departments

in EU countries and even exceeds the volume of analyses they do," says Russian Tsibranski, Head of Radioecology Monitoring Department.

In fact, Kozloduy NPP has covered a large number of ecological parameters for more than 30 years. Elaborate analyses are performed for all ecological components related to human exposure to radiation.

All the ways of irradiation are examined: air, waters, soil, plants, typical foods for the region. The specialists control those radionuclides that are radiologically significant: the isotopes of cesium, strontium and tritium, and gamma sources. Overall activity is examined as well. Kozloduy NPP specialists use top-of-the-line equipment to measure alfa, beta and gamma radioactivity in environment.

Validated methods

"In terms of control, our department is commensurable with other departments in EU countries"

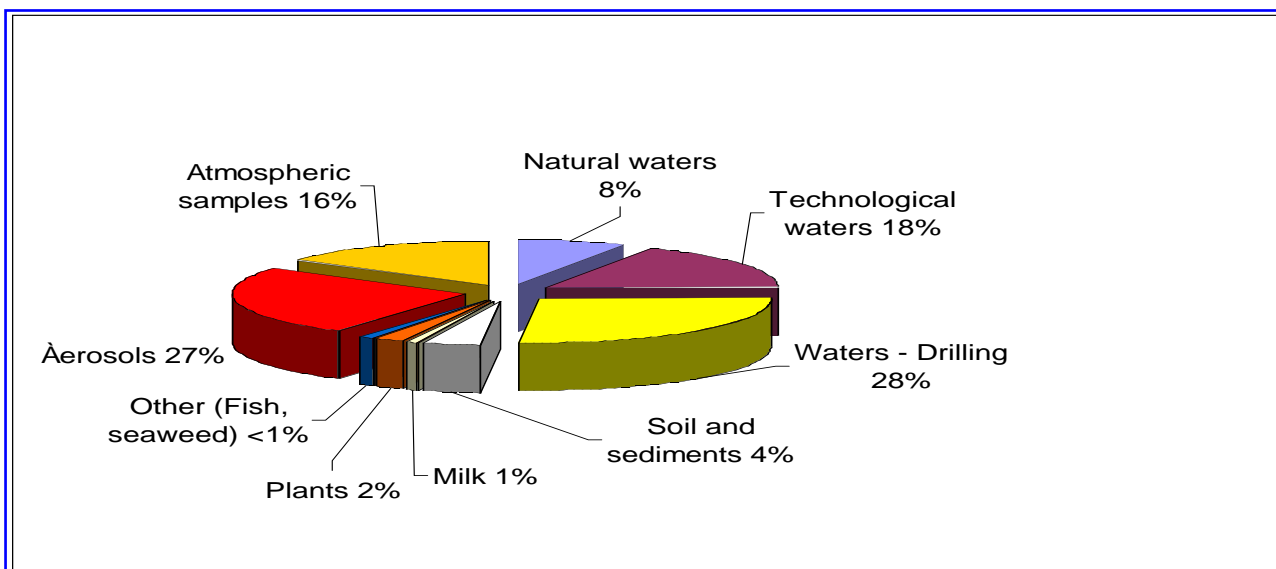
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All analyses are done by approved methods, verified and validated through participation in various comparisons between international laboratories. According to Russian Tsibranski, this is the most important step toward quality assurance, and it's a good practice. "We check up practices of other leading laboratories in the world. Each year, we compare our work to the

Kozloduy NPP meets EU requirements

☞ From page 4

Structure of taken samples, January - September 2006
(1766 samples overall)



work of more than 100 labs worldwide. When our results are good, this is a good sign for the quality of our work," says Mr Tsibranski.

As Bulgaria joins the European Union on January 1, 2007, new requirements are to be enforced as regards emissions of Kozloduy NPP. A mandatory document is the Commission Recommendation 2004/2/EURATOM. It determines the way of reporting results and specifies the standards for information, reported to the Nuclear Regulatory Agency. The EU document sets requirements for monitoring of key radionuclides which are significant from a radiological point of view.

EU recommendations

To respond to this EU, the KNPP specialists started implementing new meth-

ods. They already monitor the isotopes of plutonium, americium and curium. This is done through alfa-spectrometry which is a newly introduced method at Kozloduy NPP. In order to do this kind of analysis, the plant bought necessary equipment in 2005 and assured appropriate training of specialists. It has been one year since Kozloduy NPP first introduced alfa-spectrometry analysis. Thus, the company meets the EU requirements.

Another requirement set by EURATOM is control of carbon-14 and tritium in gaseous emissions. So far, tritium has been monitored in liquid emissions only. In order to implement aerosol analysis of both isotopes, specific sample-taking equipment was provided. It will be installed in the vent stacks. Analysis of samples will be done in the Radioecology Monitoring Department. Specialists have at their disposal modern

Continued on page 8

Accents



Chemistry competition for students

A special competition was organized on December 7, entitled “Kozloduy NPP – chemistry and ecology.” Four teams took part in this event. The event was hosted by the Kozloduy House of Culture.

Students from Kozloduy and Belene demonstrated knowledge and competence in a highly competitive atmosphere. The contest was organized by the non-for-profit organization Women in Nuclear (WIN). The Bulgarian chapter of the organization now gathers more than 100 members who actively promote nuclear power. Women in Nuclear was supported in organizing this event by Kozloduy NPP and by chemistry teachers from Belene and Kozloduy.

“I am glad to see that high school students show ambition to carry on the traditions in nuclear industry. This top-of-the-line technology requires excellent knowledge in all sciences and in chemistry in particular,” said Kiril Nikolov, KNPP Production Director, in his speech before the participants.

The young chemists passed a serious test in four rounds in front of 500 spectators. These were their parents, peers and teach-

ers. During the event the participants demonstrated chemical experiments.

At the end, Hristo Botev High School, Kozloduy, took the first place in the contest. All the participants received awards in three categories: for best essay, drawing and presentation on the topic “Kozloduy NPP – chemistry and ecology.” On December 8, the participants had the chance to visit Kozloduy NPP and see various facilities.

Units 5 & 6 prepared for the winter

At the end of November Unit 6 was put in operation after planned annual outage was completed four days ahead of schedule. Thus, the annual outages for our 1000 MW Units were finalized. During outages the two Units were reloaded with fuel for new fuel cycles. The efforts of personnel were mainly focused on implementation of an important measure: replacement of the secondary circuit control system (UKTS). Replacement had to be done in short time not to extend the outage period.

Maintenance of equipment is a key factor for trouble-free and reliable operation during winter.

Tsanko Bachiiski, head of Maintenance Division, said control over quality of maintenance was strict as always. Coordination between various departments was well organized during outages.

Outage campaign of Unit 5 was completed seven days ahead of schedule. Thanks to this, Unit 5 generated 123,821,500 KWh above the plan. For Unit 6 this figure is 54,474,300 KWh generated in four days.



Petko Krastev, left, gets his award from Misho Monev.

Nuclear power for the people

Almost 30 specialists from Kozloduy NPP took part in the annual conference of the Bulgarian Nuclear Society (BgNS). The event was held at the Bulgarian Academy of Sciences on November 23 under the slogan "Nuclear power for the people." Several specialists from Kozloduy NPP presented papers to the public: Anton Antov, Kosta Stoychev, Dimitar Popov, Robert Vaklev, Dimitar Nanov and Dimitar Lazhov. Seven young authors participated in the special contest program with their papers. The first prize was awarded to Petko Krastev, physicist at the Plovdiv Regional Oncology Center. Mr Misho Monev, head of the Kozloduy branch of BgNS, handed the prize to the winner.

A special guest to the conference was Mr Sergey Barbashev, Vice President of the Ukrainian Nuclear Society. He delivered a speech about the consequences of the Chernobyl accident in 1986 on human

health and the environment. On November 24, 12 of the conference participants came to Kozloduy NPP. They were welcomed at the Information Center by Mr Kiril Nikolov, Production Director, who talked about the Kozloduy NPP's history and current developments. The guests visited the control rooms and the turbine halls of Units 3 and 5.

☞ From page 3

District governors visit Kozloduy NPP

the KNPP managers. After that, they had a briefing for journalists. The governors said they came to discuss possibilities for regional development. "I am convinced that our region, where Kozloduy NPP is situated and Belene NPP will be constructed, will continue to be a center of nuclear industry in the Balkans," said Tsvetko Tsvetkov. Dr Georgiev stressed the fact the Kozloduy NPP is the place where specialists are prepared for the new power plant in Belene.

Taking into account the experience over the years, the Kozloduy NPP's Executive Director Ivan Genov said that our nuclear plant has the potential to provide qualified personnel for Belene.

The district governors and the Kozloduy mayor visited the control rooms as well as the turbine halls of Unit 5. They also inspected the river-bank dike along the Danube.

☞ From page 4

Kozloduy NPP meets EU requirements

liquid scintillation spectrometers that can measure various concentrations. These two isotopes are of a high significance as they make up for 94 percent of the additional public exposure according to data by the United Nations Committee on the Effects of Atomic Radiation.

ALMERA membership

Recently, the Radioecology Monitoring Department became a member of the Analytical Laboratories for Measurement of Radioactivity (ALMERA). This is an international organization affiliated with the International Atomic Energy Agency. Its major goal is to gather competent laboratories from member countries so as to provide opportunity for cooperation and exchange of information in case of accidents with trans-border contamination. Establishment of such an organization became important after the Chernobyl accident in 1986 when trans-border effects were serious. For the Radioecology Monitoring Department, the ALMERA membership is quite a challenge and a responsibility. At present, 104 laboratories are members of ALMERA from over 66 countries. They undergo annual tests to prove high competence.

Vilma Tosheva is the Sports Person of 2006



Vilma Tosheva is an operator at the KNPP's Bank Pumping Station. She was elected as the Sports Person of 2006 in a traditional poll held at the end of

2006. Ms Tosheva received 25 percent of the votes. For several years in a row, Kozloduy NPP has organized an online poll to elect the best athlete among ten nominees. Ms Tosheva is a table-tennis player. She got two impressive first places at two major competitions: the World Workers Games and the National Championship of the Energy Industry Workers which took place at the Black Sea resort of Albena.

At a special celebration on November 23, Mr Ivan Genov, Executive Director, greeted Ms Tosheva for her achievements.

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