

**ANNUAL
REPORT**

2009



KOZLODUY NPP PLC





DEAR READERS,

The achievements of Kozloduy NPP PLC for 2009 have demonstrated the contribution of high professionalism and excellent team work to overcoming the difficult economic conditions the Bulgarian and European economies have endured over the past months in order to accomplish successfully the set goals and objectives. The results achieved give us grounds to speak about the past year with a deserved sense of satisfaction.

In 2009, the trend of high reliable operation of Units 5 and 6 continued, thus ensuring security of energy supplies.

No reactor SCRAM occurred during the year, which is an indicator of the high safety level of both units. For Unit 6, this is the thirteenth consecutive year without reactor SCRAM, which is a significant achievement worldwide. The downward trend in reducing the number, as well as the significance of the operational events, proves to be steady, as for a third consecutive year there have been no plant events that are assessed to levels higher than "0" according to the INES scale.

In 2009, we celebrated the latest in a series of worthy anniversaries – 35 years from the official commissioning of Bulgarian Nuclear Power Plant. This was the occasion for us to recall the dawn of Bulgarian nuclear power and recognise how much has been achieved with the efforts of several generations of Kozloduy NPP workers and employees. Today our plant holds a prestigious place amongst the European and World nuclear society.

Our work was given another high international assessment in 2009 during the Peer Review Mission performed at the 1000 MW Units 5 and 6 by the World Association of Nuclear Operators (WANO). The WANO experts indicated in their official report a number of strengths and good practices which were implemented and proven at Kozloduy NPP.

Once again, despite the economic crisis which marked 2009, the nuclear power plant achieved good production and financial results. With a share of 35.4% in the national electricity generation, the Bulgarian Nuclear Power Plant continued to be a leading producer of environmentally friendly energy in Bulgaria. Although the 1000 MW Units were operated at a reduced power according to the Dispatcher's Load Schedule from May to August, due to a drop in the national consumption, the plant annual plan was outperformed and the total amount of energy generated was 15 255 797 500 kWh.

In conclusion, I would like to express my confidence that Kozloduy Nuclear Power Plant shall continue to overcome the economic difficulties and thanks to the dedicated efforts of its whole team, it will be a significant factor for secure energy supplies and a clean environment.



A handwritten signature in blue ink, which appears to be "D. Angelov".

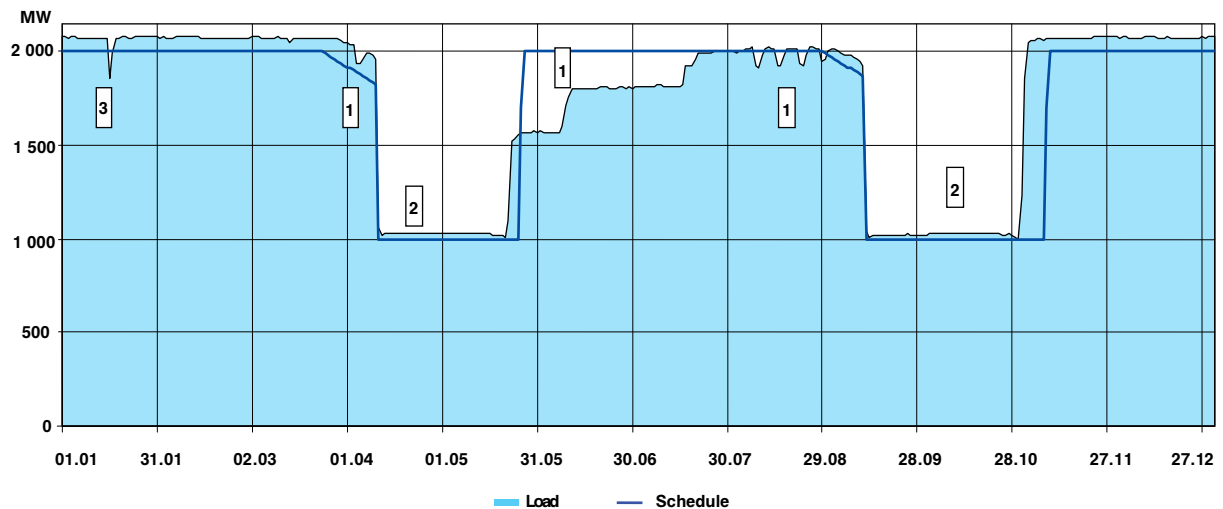
DIMITAR ANGELOV
EXECUTIVE DIRECTOR
OF KOZLODUY NPP PLC

MODE OF OPERATION OF GENERATING FACILITIES

The operation of the 1000 MW Units 5 and 6 in 2009 was in compliance with the load schedule agreed with the Electricity System Operator (ESO) and updated on-line in accordance with the Rules

for the grid management. The reliable and effective operation of the units provided the performance of the dispatcher's electricity generation schedule during the year.

Kozloduy NPP Load Schedule for 2009



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Legend:

- 1. Dispatcher's Load Schedule
- 2. Planned annual outage
- 3. Power deviation



ELECTRICITY GENERATION (GROSS)

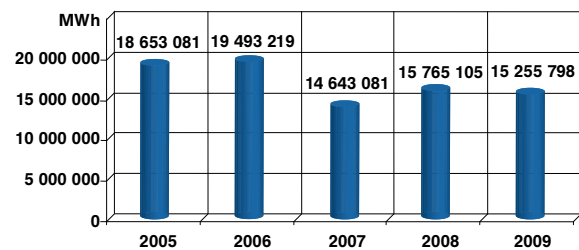
Kozloduy NPP generated electricity amounting to 15 255 798 MWh in 2009. Despite the optimized duration of the downtimes for annual outages, refuelling and modernizations, accident-free operation and the reliable operation of Units 5 and 6, the electricity generation was 509 307 MWh less compared to 2008. This was due to the plant load restriction in the period May to August by ESO in view of the drop in the national consumption.

There have been no emergency shutdowns of the generating facilities, planned or unplanned shutdowns beyond outages or significant deviations from the preset load modes.

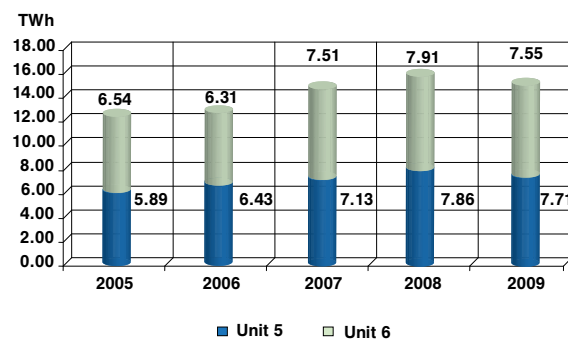
The electricity generated by Units 5 and 6 provided 35.4% of the national electricity generation.

Since the commissioning of the first power unit in July 1974 up to the end of 2009 the Nuclear Power Plant has generated a total amount of 477 297 433 MWh adhering to all requirements for safe operation of the nuclear facilities and without any negative impact on the environment.

Electricity generated (gross)

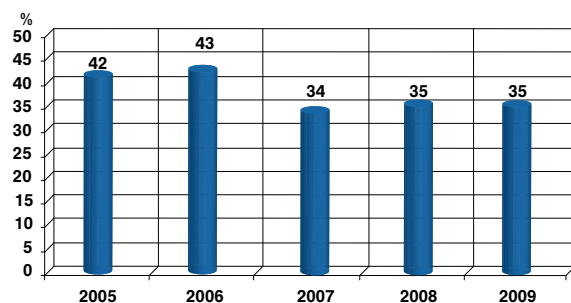


Electricity generated by Units 5 and 6



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Kozloduy NPP's share in the national electricity generation (%)



ELECTRICITY SOLD (NET)

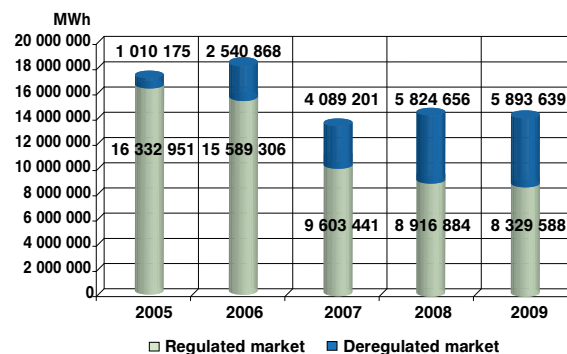
The actual net electricity supplied to the national grid by Kozloduy NPP was 14 223 227 MWh whereas 8 329 588 MWh or 59% of the total net

electricity generation were supplied to meet the demands of the "eligible" consumers (regulated market). The other part (41%) the plant supplied

successfully to the deregulated market whereas 5 893 639 MWh were supplied under bilateral contracts to eligible industrial consumers and sellers in the county and the region.

Regardless of the dynamics of the market environment Kozloduy NPP also maintained its leading position as preferred and reliable electricity supplier in 2009.

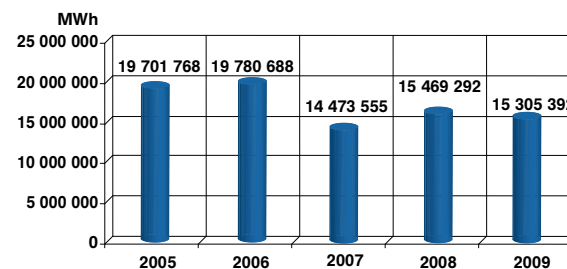
Electricity sale for Kozloduy NPP on the regulated and deregulated market in the country



AVAILABILITY

Along with the net active electricity for satisfying the demand in the country and for the need of the control and security of the electricity grid, throughout the year, the availability of Kozloduy NPP generating facilities amounted to 15 305 392 MWh.

Availability provided

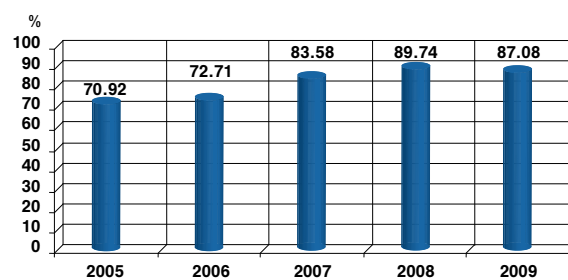




LOAD FACTOR

The Load Factor of the installed capacities in normal operation is a complex indicator for the operation level of the units in terms of reliability of operation, generation optimization (including overproduction) and planned outage downtimes. Its value for the year of 87,08% shows an extremely good level of operation compared to that of the leading power plants in the nuclear industry.

Load Factor for Units 5 and 6 (%)



HEAT GENERATION

The heat generation is an important accompanying activity for Kozloduy NPP providing normal operating conditions for the equipment and personnel (including those at the closed units), as well as the

consumption in the town of Kozloduy. 64% of the heat generated was used for the plant site requirements. The supplied heat generation to the end consumers (household, industrial, etc.) in 2009 amounts to 73 317 MWh.



MAINTENANCE PROGRAMME

The annual outages for refuelling of Units 5 and 6 were performed within the planned terms – 42 and 50 calendar days, respectively, from the day of shutting down of the turbine generator to the day of its connection to the grid. The planned activities provided for the equipment maintenance and modernizations were performed within the required scope and quality. Within the scheduled

outage downtimes a project for replacement of the equipment from the control safety systems were implemented – one channel of the system at Unit 5 and two channels of the system at Unit 6.

As a result of the optimization of the outage scheduled downtimes and the reliable operation of the units during the year, the production plan was outperformed.



LICENSING

The nuclear facilities at Kozloduy NPP are operated in compliance with the licenses granted by the Bulgarian Nuclear Regulatory Agency (BNRA) for the operation of Units 1 – 6 and the Spent Nuclear Fuel Storage Facility (SNFSF). The licenses for the operation of Units 5 and 6 were renewed in October 2009 for a period of 8 years for Unit 5 and 10 years for Unit 6. 196 conditions in total are being performed under the operation licenses. Periodically information in compliance with 84 conditions is submitted to the BNRA. The performance of 18 licensing conditions was reported during the year.

There are seven licenses for the use of ionizing radiation sources (IRS) and one license for specialized training. A total of 113 conditions set forth in these licenses are being performed. In 2009, the licenses for the use of ionizing radiation sources were renewed, i.e. for performance of non-destructive testing with radiation methods, radiochemistry control, environmental radiation monitoring and metrological control, as well as the license for the transport of radioactive materials. The validity of the renewed licenses is 5 years. In December the procedure for renewal of the three licenses for the use of ionizing radiation sources in the fire detectors whose validity expired on 15th February 2010 was renewed.

By an Order of the BNRA Chairman dated 3rd



December 2009, the permission for the construction of the new Dry Spent Fuel Storage Facility (DSFSF) was amended. The amendment refers to the increase of the DSFSF capacity for storage of spent nuclear fuel from WWER-440 type reactors from 2800 to 5256 fuel assemblies.

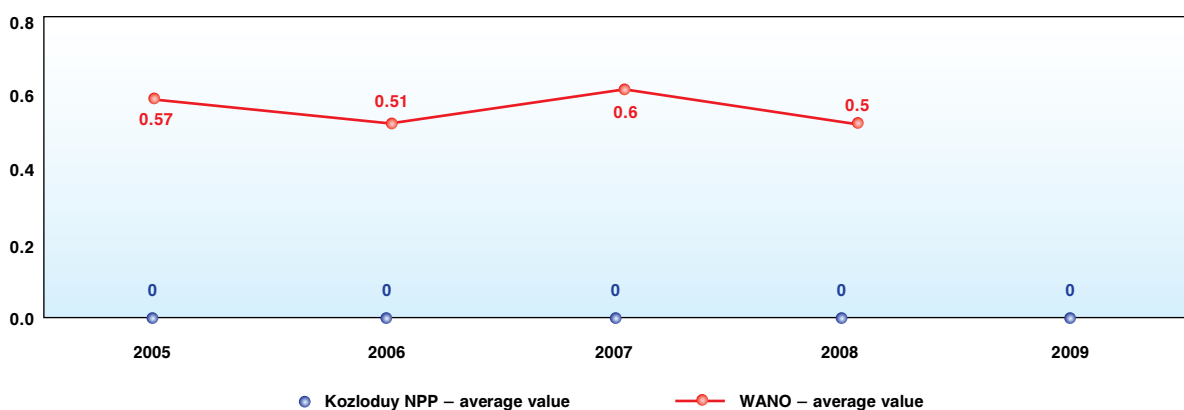
54 permissions for performing modifications were granted by the BNRA during the year, which resulted in changes of the structures, systems and equipment (implementation of technical decisions) and the internal rules for implementation of activities important to the safety of the nuclear facilities at the Kozloduy NPP site.

NUCLEAR SAFETY

There has been no unplanned reactor SCRAM for five years at Kozloduy NPP units, and the

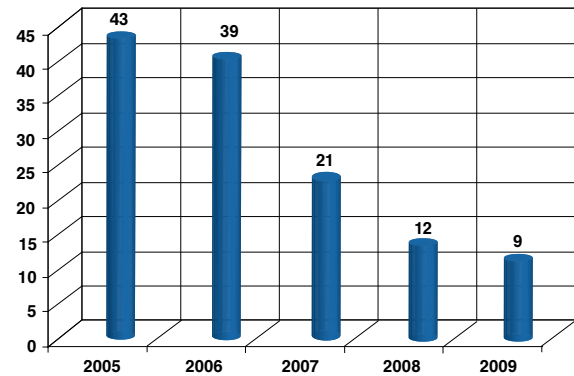
1000 MW Unit 6 has been operated without unplanned SCRAM for 13 years.

Scrams per reactor for 7000 hours of operation



In 2009, nine operational events reported to the BNRA occurred at Kozloduy NPP, as 7 events were classified below the INES scale at level 0 (termed deviation), and 2 events were classified below the scale. No events classified at level 1 (anomaly) or at upper levels according to the INES scale occurred.

INES events reported to the Bulgarian Nuclear Regulatory Agency



RADIATION PROTECTION

The annual limit on the effective dose of occupational radiation exposure of 50 mSv, as well as the limit of 100 mSv over a five-year period, as specified in the Basic Standards for Radiation Protection of 2004, was not exceeded in 2009.

The maximum individual effective dose of the personnel performing activities in the Controlled Area of Kozloduy NPP during the referred period is 15% of the annual limit. The collective effective dose of the personnel in 2009 followed the established steady downtrend for the last 13 years.

The average collective dose for 2009 at the two operating units (VVER-1000) was 0.28 manSv/unit. In accordance with the WANO 2007 Performance Indicators Report, the average value of indicators for the PWR type reactors (analogous to the VVER) for 2008 was 0.59 manSv/unit.

The good results were achieved due to the strictly performed dosimetry and radiation monitoring, and predominantly the systematic application of the ALARA principle for minimizing the dose exposure.



SPENT FUEL AND RADIOACTIVE WASTE MANAGEMENT

The nuclear facilities at Kozloduy NPP are monitored by the inspectors from the Bulgarian Nuclear Regulatory Agency (BNRA), the International Atomic Energy Agency (IAEA) and EURATOM.

In 2009, thirteen routine inspections were conducted by the IAEA and BNRA inspectors to review the compliance with the Non-Proliferation Treaty safeguards. The EURATOM inspectors took part in 10 of the inspections. No violations or non-compliances were found concerning the amounts of the nuclear materials declared and available during the reviews.

52 Inventory Change Reports (ICR) for inventory changes of the nuclear materials and 8 Physical Inventory Listings (PIL) and Material Balance Reports (MBR) for the annual inventory of the nuclear materials were submitted to the BNRA and EURATOM. These reports are

required according to the BNRA Regulation on the conditions and procedure for submitting information to keep records for the activities – subject to the Non-Proliferation Treaty safeguards and Regulation No. №302/2005 of the European Commission on the implementation of the EURATOM safeguards.

The spent nuclear fuel (SNF) at Kozloduy NPP is being stored in compliance with all safety requirements. In 2009, 240 spent fuel assemblies from the Spent Fuel Storage Facility (SFSF) were transported to Russia for reprocessing.

The liquid and solid radioactive waste (RAW) generated in the process of operation of the nuclear power plant during the year do not exceed the design limits and the downtrend is observed. The waste is submitted to the State Enterprise Radioactive Waste Kozloduy (SE RAW) for processing.

EMERGENCY PLANNING AND PREPAREDNESS

The on-duty emergency response team of the nuclear power plant took part in the preparation and performance of the National Drill Protection 2009. The drill was observed locally by the Vice Prime Minister and Minister of Emergencies, as well as the heads of different state agencies and institutions, and in turn managers and specialists from Kozloduy NPP took part in the event performed in the Civil Protection General Directorate of Sofia. Having analyzed the results, the emergency planning and preparedness of the plant employees was assessed as very high.

In December, an on-site emergency drill involving the whole plant personnel with an emergency

event Steam Generator Primary Header Rupture and Opening of Steam Damp to Atmosphere Valve at WWER-1000 was performed. The communication and activity co-ordination between the teams in the Emergency Control Centre and WWER-1000 Full Scope Simulator was verified.

During the year the Emergency Preparedness Department specialists took part in the Interdepartmental Working Groups which updated the External Emergency Plan for Kozloduy NPP.

The individual protective equipment for radiation protection of the personnel in case of emergency at Kozloduy NPP is properly maintained and is in compliance with the storage requirements.



FIRE SAFETY

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A set of organizational and technical measures were performed in order to provide fire protection of facilities and personnel at Kozloduy NPP. Technical measures to improve fire detection and fire extinguishing systems and increase their efficiency were implemented within the

modernization programmes of the units. As a result, the fire risk was reduced and no fires occurred at the plant technical facilities and buildings in the past year. The reviews of the specialized supervisory authorities confirmed once again the high level of the plant fire safety.

DISCHARGE RADIOLOGICAL MONITORING

The results obtained from the monitoring of liquid and gaseous discharges to the environment for 2009 show that the trend of radioactive discharges being much less than the statutory limits has been kept.

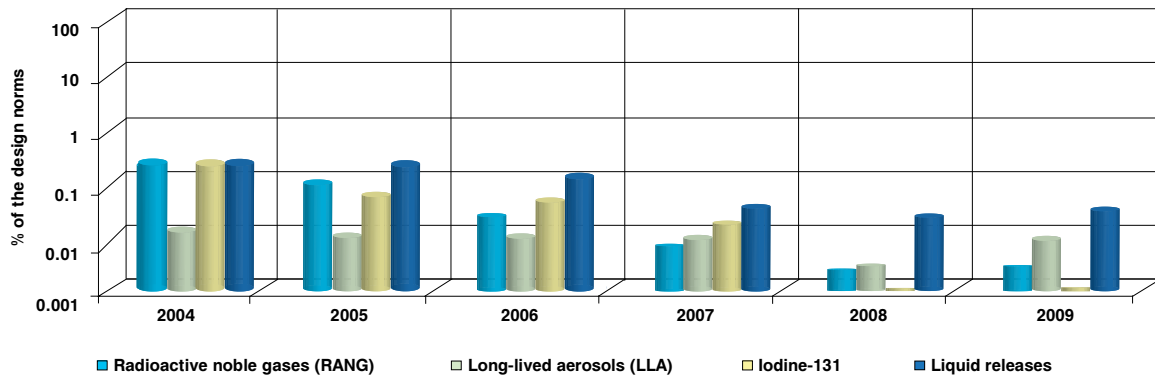
Two significant projects for WWER-1000 type reactors – Project on measurement of carbon 14 and tritium in gaseous discharges and Project for on-line isotopic gamma spectrometry of radioactive noble gases in gaseous discharges were financed during the past year in order to

improve the monitoring of discharges to the environment.

A significant achievement was also made in the work under the Project on optimization of the WWER-440 type reactor liquid and gaseous discharge radiological monitoring system.

Following the good European practices, in 2009, the Bulgarian Nuclear Regulatory Agency began independent monitoring of the radioactive discharges to the environment at Kozloduy NPP. The scope of the monitoring involved sampling

Total activity of gaseous aerosol (RANG, LLA, Iodine-131) and liquid releases in % of the annual limits defined for the plant site



from the liquid and gaseous discharges from WWER -1000, WWER-440 and Spent Fuel Storage Facility, as well as aerosol sampling from the site ground air. The samples were analyzed in an independent laboratory of the Nuclear Research and Nuclear Power Institute at the Bulgarian Academy of Science.

The maximum individual effective annual dose for the public from the plant gaseous and liquid discharges to the environment is approximately 5 $\mu\text{Sv/a}$. This value is approximately 2% of the plant statutory discharge value of 250 $\mu\text{Sv/a}$

and it is below 0.2% of the annual exposure resulting from the natural radiation background of the country (2.4 mSv). The fact that the value of the dose exposure limit of the public is below 10 $\mu\text{Sv/a}$ – a value which the International Commission on Radiological Protection considers negligibly low, means that good practices and discharge management tools were used at Kozloduy NPP in 2009, as well the ALARA principle being successfully applied as far as the public was concerned.



ENVIRONMENTAL RADIOLOGICAL MONITORING

The scope and the range of the radio-ecological monitoring of Kozloduy NPP PLC fully complies with the national and European regulatory requirements and corresponds with the experience and good practice of the countries with developed nuclear power. The established practices were harmonised with the requirements of Article 35 of the EURATOM Treaty and the EU Recommendation 2000/473/EURATOM.

The monitoring covers the main components important to the protection of public health and the environmental condition. The monitoring area includes the area within the 100 km area surrounding the Nuclear Power Plant. In 2009, 3 708 analyses of 2 230 samples from various environmental components (air, water, soil, vegetation, milk, fish, cultivated crops etc.) from the monitoring area were made. The results obtained confirmed there were no deviations from the radiation indicators exceeding the admissible limits.

The gamma background values within the 100 km area are completely comparable with the values recorded along the plant site boundaries.

The airborne man-made activity values are close to the background values (average $2 \mu\text{Bq}/\text{m}^3$), many times below those specified in the Basic Standards for Radiation Protection of 2004. The total beta activity of the long-lived aerosols is within the natural limits with the average value of $0.64 \text{ mBq}/\text{m}^3$.

The total beta activity of the airborne depositions in the monitoring area surrounding Kozloduy NPP vary within the range 0.046 to $1.54 \text{ Bq}/(\text{m}^2\cdot\text{d})$, at the average annual value of $0.42 \text{ Bq}/(\text{m}^2\cdot\text{d})$. The

results are comparable with those from previous years and are within the natural limits for this radiation parameter.

The total beta activity, as measured in the open water basins of the Danube, Ogosta and Tsibritsa Rivers, as well as the Kozloduy dam is within the limits of 0.018 to $0.14 \text{ Bq}/\text{l}$, this being 19% of the statutory limit ($0.75 \text{ Bq}/\text{l}$). No impact was found as a result of Kozloduy NPP operation on the radiation situation of the natural water ponds in the region.

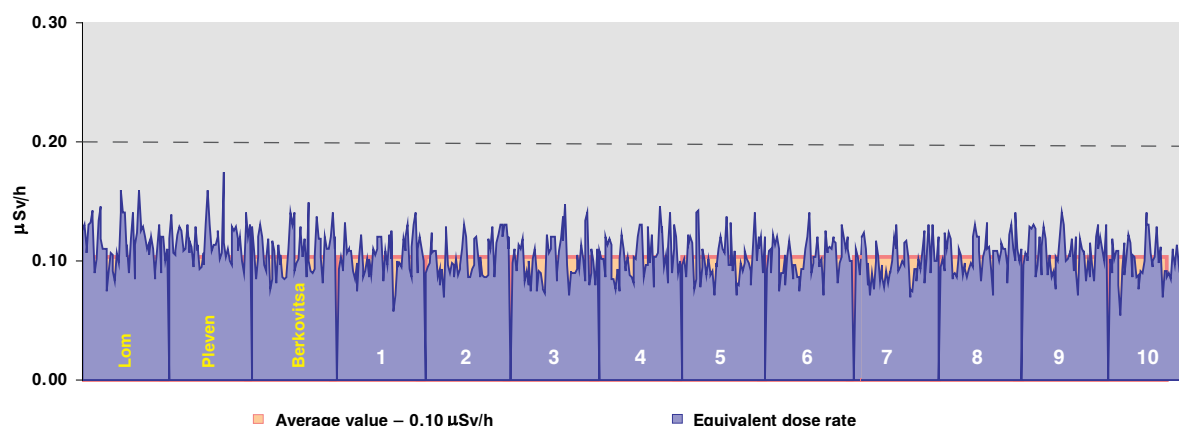
Monitoring on the drinking water samples showed that the total beta activity ranges between 0.029 and $0.075 \text{ Bq}/\text{l}$ those values being much lower than the admissible limits for drinking water as set forth in Regulation №9 of 16.03.2001 ($2 \text{ Bq}/\text{l}$ total beta activity and $100 \text{ Bq}/\text{l}$ for tritium). Tritium content is within the minimum detectable activity limits, average value of $4.8 \text{ Bq}/\text{l}$.

No man-made activity was registered in soils in the 100 km monitoring area generated by Kozloduy NPP.

The man-made activity in the vegetation studied is within the standard limits – ^{137}Cs to $4.99 \text{ Bq}/\text{kg}$ and ^{90}Sr – to $5.18 \text{ Bq}/\text{kg}$ (dry weight). The results are similar to those from the previous years.

Food products, produced in the plant region – cow milk from three farms in the region (the town of Kozloduy, town of Oryahovo and village of Harlets), fish from the Danube River, season cereals and forage crops were monitored. The results were within the typical values for the region without measurable impact of the Kozloduy NPP PLC operation.

Radiation gamma background ($\mu\text{Sv}/\text{h}$) in the dwellings in the 100 km monitoring area and the fencing of the plant (points 1–10), 1996–2009



The same year participation into renowned international laboratory comparisons arranged by ALMERA – IAEA and BfS – Germany and NPL – Great Britain confirmed that the results from the radio-ecological monitoring performed by Kozloduy NPP were of high quality and reliability.

The first stage of the construction of the automated information monitoring system of the radiation gamma background in the residential areas of the 30 km monitoring zone was completed in 2009. The monitoring stations in 5 residential areas of Kozloduy, Harlets, Glozhene, Butan and Miziya are in operation.

ENVIRONMENTAL PROTECTION – NON-RADIOLOGICAL ASPECTS

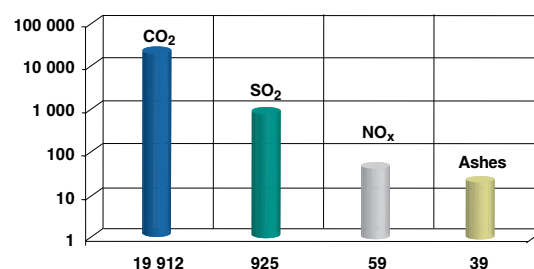
The management of the environmental protection activity at Kozloduy NPP is in compliance with regulatory requirements and conditions as set forth in the permits issued to the plant by the Ministry of Environment and Water (MEW), Danube Region Basin Directorate – Pleven and Regional Inspectorate of Environment and Waters – Vratsa (RIEW – Vratsa).

In 2009, the fulfilment of the conditions from the permit for operation of a high risk potential company in terms of the usage of hazardous chemical materials was arranged. The documents to extend the validity of the permit for waste water discharge to the main discharge channel were submitted in October. The expiry of the permit for the construction of a small Thermal Hydraulic Plant on the hot channel at the Danube River with the installed capacity of 5 MW was extended by 5 years. 400 samples of the underground and waste waters at the nuclear power plant site and the non-radioactive waste storage facility were analyzed within the plant non-radioactive monitoring programmes. Along with the monitoring performed by an external accredited laboratory, there is also plant monitoring performed by the plant laboratories. The results from the over 3500 analyses did not show any significant exceeding of the permissible limits and were similar to those from the previous years. There was no trend of increasing the values of the monitored indicators.

The adherence to the requirements for the company environmental protection is controlled through regular internal walkdowns and reviews. The MEW, RIEW – Vratsa and Danube Region Basin Directorate performed 12 ecological inspections. The conclusions of the supervisory authorities confirmed that prompt and adequate measures to prevent and solve the ecological problems were taken at Kozloduy NPP.

With the amount of the electricity generated, in 2009 Kozloduy NPP saved the harmful impact on the public and environment of around 20 million tons of carbon dioxide (CO₂) equivalent, 925 thousand tons of sulphur dioxide (SO₂), 59 thousand tons of nitrogen oxides (NO_x) and 39 thousand tons of ashes, containing natural radioactivity.

Emissions of greenhouse gases saved in 2009 by Kozloduy NPP compared to conventional coal-fired electricity generating plants (in thousands of tons)





The World Association of Nuclear Operators (WANO) Peer Review at WWER-1000 MW Units 5 and 6 (Electricity Production – 2) of Kozloduy NPP was conducted in the period 15th to 26th June 2009.

The Peer Review was in response to the invitation issued by the Plant Management to the WANO Moscow Centre. The aim of the Peer Review was to determine the areas that require further improvement to enhance the safety and reliability of Units 5 and 6 and to assist Kozloduy NPP in this process, as well as to define the strengths in the operation of the Bulgarian NPP that may prove to be useful to other nuclear power plants round the world.

The WANO team included representatives from the four regional centres of the organization – located in Moscow (Russia), Paris (France), Tokyo (Japan) and Atlanta (USA). Highly-qualified experts (16 inspectors and one coordinator) from 10 different countries, who took part in a total of 91 peer reviews, were involved in the team. Their total experience in the nuclear field amounted to 412 years. The team leader was Jaroslav Vokurek (The Czech Republic).

During the two weeks of the Peer Review the WANO representatives reviewed the following main areas:



- Organization and Administrative Management;
- Operations;
- Maintenance;
- Engineering Support;
- Operating Experience;
- Radiation Protection;
- Chemistry;
- Training and Qualification;
- Fire Safety.

At the same time the activities at Electricity Production – 2 in the following common functional areas were analysed:

- Safety Culture;
- Personnel Work;
- Self-assessment;
- Industrial Safety;
- Configuration Management;
- Equipment Characteristics and Condition;
- Maintenance Activities Management.

After the completion of the Peer Review the team leader Jaroslav Vokurek expressed his high opinion of the arrangements made by Kozloduy NPP, emphasizing that the open atmosphere established at the beginning of the teamwork and the well-prepared information package by the Bulgarian counterparts contributed considerably to the success of the Peer Review.





The main investment projects in 2009 were related to the implementation of measures aimed at keeping compliance with the international safety requirements and enhancing the reliability of Units 5 and 6 generation.

The planned financing by Kozloduy NPP resources was BGN 115 909 thousand, the actual implementation amounted to BGN 125 422 thousand. The following projects disbursed a considerable part of the expenses during the year:

- Replacement of Unified Complex of Technical Connections (UCTC) of safety systems (SS) with a process-technical complex of control safety system (PTC CSS) – for Unit 5 of II SS, for Unit 6 of I and III SS;
- Replacement of 0.4 kV breakers type A3700 and reconstruction of the complete in-house transformer substation switchgear at Units 5 and 6 and plant construction sites at Electricity Production – 2;
- Replacement of 6 kV breakers type BЭ-6 in 5,6 BA, BB, BC, BD switchgears;
- Design, supply and installation of secondary moisture separation of Turbine Generator

(TG)-9 and TG-10;

- Supply and installation of 5EA20 and 5EA90 accumulator batteries;
- Supply and installation of licensed automatic system for measuring the containment leakage at WWER-1000 units during pneumatic tests.

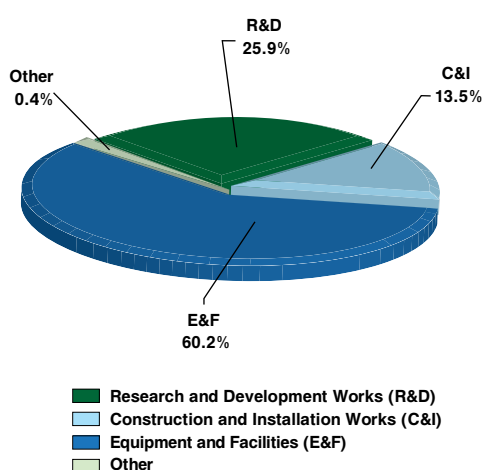
The continuous process of modernizations and improvements will provide safe operation of the units at a higher quality, extension of the operating lifetime and increased equipment availability.

The rest of the resources provided by Kozloduy NPP funding had been allocated for the implementation of activities for improvement of the Spent Fuel Storage Facility safety; implementation of measures for maintenance and enhancement of Kozloduy NPP security and physical protection; modernization of the facilities under the Programme for reliability enhancement of the Open Switchyard; environmental parameters improvement in connection with the Programme for harmonisation of the Kozloduy NPP activity with the legislation requirements for ambient and working environment.

The activities of the social sphere related to the gradual implementation of measures for enhancement of the efficiency and quality of the heat supply for the needs of the town of Kozloduy and Kozloduy NPP, reconstruction of Hostel №1 in the town of Kozloduy and the holiday centre in Kranevo which is a property of Kozloduy NPP.

BGN 31 102 thousand were allocated from the external funding in 2009. These resources financed the activities related to: the design and construction of Dry Spent Fuel Storage Facility; optimization of the release monitoring system in compliance with the European Commission requirements; radiological assessment of the equipment at Units 1-4; infrastructure separation of Units 1-4 on projects financed by the Kozloduy International Decommissioning Support Fund under the Framework Grant Agreement with the European Bank for Reconstruction and Development.

Structure of the allocated resources





The total amount of the commissioned long-term assets in 2009 was BGN 137 516 thousand.

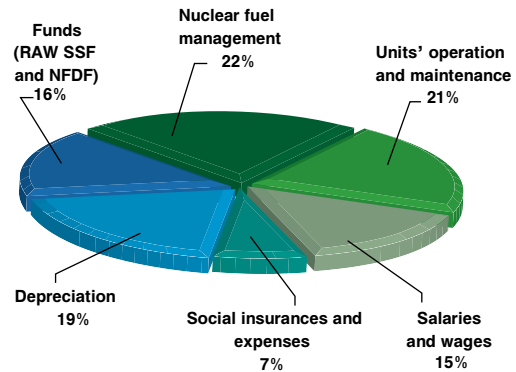
Within the commissioned long-term assets the following sites had a permit to use or a commissioning certificate:

- Replacement of SS UCTC with PTC CSS – II SS for Unit 5, I and III SS for Unit 6;
- Heat supply facilities in the town of Kozloduy. Replacement of worn out sections of the sewerage system of the town of Kozloduy with pre-insulated pipes for tracing free-of-channel – 12 sections;
- Reconstruction of the high voltage electric network at Kozloduy NPP, Open Switchyard – fields 3 and 5, 13, 15, and 17. Replacement of measuring transformers in the Open Switchyard – fields 5, 13, 15 and 17;
- Reconstruction of room and arranging an archive room for the operation documentation of the Circulation Pump Station-4 (CPS-4);
- Replacement of the actuator of the 160/32/8-ton bridge crane in the Spent Fuel Storage Facility;
- Replacement of the window frames of the Administrative Building – Kozloduy NPP Management;
- Replacement of the windowpanes of the external walls of the Chemical Water Treatment Plant-2 building by PVC window frames and sandwich type panels PU;
- Replacement of 0.4 kV breakers and reconstruction of the Switchgear in a workshop at the Personnel and Training Centre Division;
- Insulation of the facade of the Ledenika Recreation Centre;
- Holiday Centre in Kranevo which is a property of Kozloduy NPP PLC;
- Reconstruction of Hostel №1 in the town of Kozloduy.

The trend of reducing the electricity demand in the country and in the region as a result of the economic and financial crisis led to dispatcher's restriction of the loading of the generating facilities at Kozloduy NPP in 2009. However, the successful implementation of the production, maintenance and investment programmes was provided due to the reliable operation of Units 5 and 6 in optimal operating modes, the good organization and the financial discipline.

The net profit of sales during the year amounts to BGN 748 472 thousand. The profits from funding amount to BGN 80 644 thousand of which 91% were from external funding, 9% were from sales of materials and long-term tangible assets. The total profit for 2009 amounts to BGN 829 116 thousand. Due to these revenues Kozloduy NPP has provided its solvency and the correct payment of all obligations related to the plant activities. Within the foreseen legislative terms, Kozloduy NPP has paid the due amounts of BGN 108 168 thousand to the RAW Safe Storage Fund (RAW SSF) and Nuclear Facilities Decommissioning Fund (NFDF) respectively. The taxes due to the State Budget totalled to BGN 128 545 thousand, the overheads to the social and medical funds amount to BGN 41 883 thousand.

Structure of Kozloduy NPP expenditures in 2009



Kozloduy NPP production expenses for 2009 amount to BGN 747 265 thousand. A considerable part of them were defined by the Law, which restricts the possibility of their reduction.

The largest share in the structure of expenditures for electricity generation includes the expenditures for units' operation and maintenance, nuclear fuel management and depreciation.

Kozloduy NPP profit for 2009 after taxation amounted to BGN 65 042 thousand, compared to planned profit of BGN 56 900 thousand.



**STATEMENT OF FINANCIAL POSITION
OF KOZLODUY NPP PLC, KOZLODUY
as at 31st December 2009**

Description	Current year (BGN thousand)	Previous year (BGN thousand)
ASSETS		
NON-CURRENT ASSETS		
1 Long-term tangible assets	1 188 247	1 182 196
2 Intangible assets	10 870	22 185
3 Financial assets	232	232
4 Investments in subsidiaries	1 161	1 161
5 Loans granted	11 419	11 225
6 Assets in the process of construction	162 009	145 394
Total of non-current assets	1 373 938	1 362 393
CURRENT ASSETS		
1 Inventories	251 868	241 912
2 Trade and other receivables	187 110	100 521
3 Cash and cash equivalents	79 641	121 350
4 Current tax receivables	1 322	
5 Deferred expenses	3 243	4 551
Total of current assets	523 184	468 334
Total of assets	1 897 122	1 830 727
Liabilities and Equity		
Equity		
1 Share capital	101 716	101 716
2 Reserves	984 671	977 660
3 Retained earnings from previous years	70 561	7 042
4 Retained earnings from current period	65 042	70 110
Total of equity	1 221 990	1 156 528
LIABILITIES		
Non-current liabilities		
1 Long-term bank loans	382 630	417 099
2 Deferred tax liabilities	46 105	48 075
3 Long-term provisions	13 578	6 062
4 Deferred income and funding for long-term assets	92 954	69 236
Total of non-current liabilities	535 267	540 472
Current liabilities		
1 Trade and other payables	63 419	52 963
2 Current portion of long-term payables	33 562	31 624
3 Current tax payables	12 785	22 516
4 Short-term provisions	17 814	22 547
5 Deferred income and funding current activities	12 285	4 077
Total of current liabilities	139 865	133 727
Total of liabilities	675 132	674 199
Total of liabilities and equity	1 897 122	1 830 727
Contingent Assets	47 390	41 661

STATEMENT OF COMPREHENSIVE INCOME
OF KOZLODUY NPP PLC, KOZLODUY
for the period 01st January 2009 to 31st December 2009

Description	Current year (BGN thousand)	Previous year (BGN thousand)
1 Profit from sales	748 472	768 282
2 Other revenues	80 644	67 282
3 Changes in inventories of finished goods and work in progress	(7 947)	15 848
4 Cost of goods and long-term assets sold	(816)	(1 508)
5 Own work capitalized	434	162
6 Expenses for liquidation of long-term assets		
7 Raw materials and consumables used	(138 998)	(140 360)
8 Expenses on hired services	(154 034)	(217 545)
9 Depreciation costs	(142 530)	(143 901)
10 Salaries and wages	(138 491)	(116 285)
11 Social insurance costs	(31 002)	(30 723)
12 Other costs	(133 881)	(95 007)
incl. provisions	(7 834)	(5 749)
13 Finance income/costs	(10 052)	(27 352)
14 Income from subsidiaries and associates	389	414
15 Profit before tax	72 188	79 307
16 Tax expense	7 146	9 197
17 Profit or Loss for the period	65 042	70 110
18 Other comprehensive income for the period		
19 Total comprehensive income for the period	65 042	70 110





Since the beginning of its operation, which was 35 years ago, Kozloduy NPP has been among the largest employers in Bulgaria sustaining proper

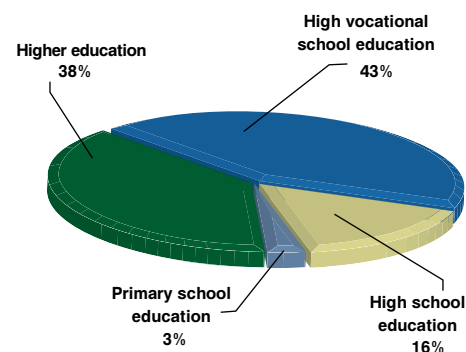
labour relations. The basis of this policy is respect to the personnel and permanent protection of the worker and employee's rights.

PERSONNEL STRUCTURE

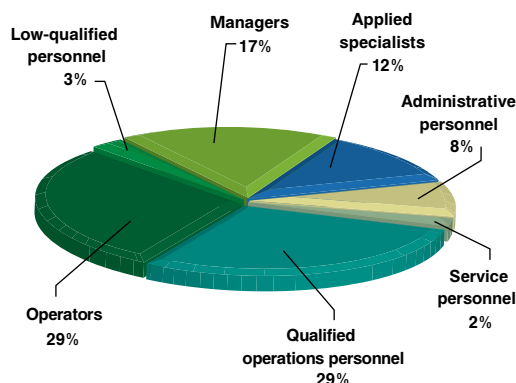
At the end of 2009 the number of the company personnel was 4 406. Having analyzed the necessity of the vacant positions, the payroll was also optimized, and at the end of 2009, the payroll was reduced by 79 positions (1,8%) compared to 2008. The number of payroll staff was reduced by 79 as the prevailing 69% took the opportunity for early retirement.

Recognizing that in the modern world people are the most valuable resource for a company, Kozloduy NPP makes consistent efforts for career development of its employees. Enhancing the education and qualification of personnel is encouraged. The employees who continue their education at higher educational institutions in the specialties for the plant needs are provided with paid leave. Kozloduy NPP organizes

Educational structure of personnel



Structure of personnel in categories according to the national classifier of professions and positions



language courses and professional training with qualification for its personnel. The efficiency of this policy is justified by the fact that over 80% of the company employees are specialists with higher and secondary vocational education, as the higher education specialists in 2009 were 38%, which is 2% higher than in 2008. 13 plant specialists have the educational and scientific Ph.D degree.

The project for English language training under the Operational Programme "Human Resources Development", funded by the European Social Fund, initiated in 2008, was completed last year. The evidence for the motivation effect of the project, in which 90 company workers and employees were involved, is that most of the trainees continued the next level of the English training, which is financed by the nuclear power plant.



TRAINING AND QUALIFICATION

In order to meet the high requirements to the education and professional qualification of the nuclear power operators, Kozloduy NPP has established a system for a continuous improvement of the specialized preparation and competence of the personnel. This is performed by the plant Training Centre, which is equipped with modern technical facilities, as well as trainers and instructors with high qualification.

The specialized training of the senior operations staff at Kozloduy NPP is provided at the Simulator Training Facility equipped with a full-scope simulator for WWER-1000 type reactors (FSS-1000) and multifunctional simulator for WWER-440 type reactors. In 2009, a FSS-1000 integrated critical parameter monitoring system for Unit 6 and a project for the construction of its simulator model was initiated. A model of the Ovation monitoring information system was implemented successfully. A number of changes in the configuration which extend the capability of using the simulators as a tool for technical analyses and engineering tasks were implemented in order to improve the compliance between simulators and their reference units, with company funding and jointly with contractors.

Individual training programmes were elaborated for the individuals whose activity is related to ensuring nuclear safety and radiation protection in compliance with the Licence for specialized

training. In 2009, 47 general training programmes and 335 refresher training programmes were elaborated. As a result 109 training courses in different areas such as regulatory requirements, radiation protection and nuclear safety, technology and operating modes, human factors, application of information systems, etc. were performed. The training system for the licensed personnel was also applied to the rest of the job positions considering the regulations and specifics of the job descriptions. For the training of the personnel outside the scope of the license, in addition to the typical training programs, 38 individual training programs were accomplished.

In 2009, 71 typical training programmes were initiated of which 24 were newly developed and 47 were updated. A total of 165 synopses of which 133 new and 32 updated were elaborated.

The Training Centre performs training and issues certificates of competence to external organizations to perform works with ionizing radiation sources. In 2009, 65 individuals were trained, 30 of which were capable of performing activities with ionising radiation sources.

408 courses were conducted and 7542 individuals were trained in order to provide access to the site and to the corresponding working places of all contractors. All school and university students who perform internship and hands-on training at the nuclear power plant are mandatorily trained.

MOTIVATION OF THE EMPLOYEES

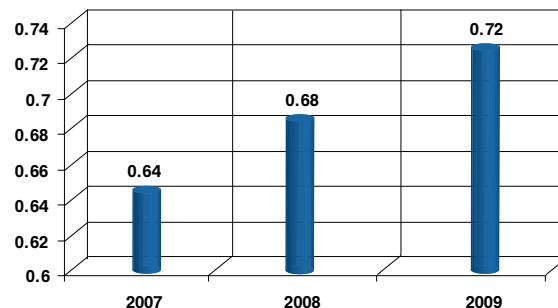
In the recent years, recognising the importance of the attitude to the activities performed, commitment to the company's main objectives and the aim to achieve high results, Kozloduy NPP has carried out studies on personnel motivation. The survey performed in 2009 involved 459 employees from all plant structural units as the principle of random selection was applied.

The survey aimed to study the attitude of the plant employees to 25 components of the working environment. The results obtained showed that the highest percentage of people have been motivated by safety and health factors. 85% of the plant employees, who have been surveyed, believe that Kozloduy NPP PLC is operated safely and trust the management takes the necessary care for their health.

The comparison of the degree of motivation in the period 2007 to 2009 for the corresponding factors showed a positive trend of increasing the number of factors which motivate the employees.

Based on the results obtained, an Action Plan to maintain and increase the motivation of personnel was elaborated. All opinions and proposals given by the employees and related to the problematic

Motivation index of the Kozloduy NPP personnel



areas were considered in the document elaboration. The plan was implemented by an order of the Executive Director and by the end of the year part of the measures were already implemented, and the rest were in the process of implementation.

The results from the motivation study made, as well as the stages of the implementation of the Action Plan, were published in the internal information network. Thus, the current status of the indicators and measures taken for their optimisation were communicated to the plant personnel.



LABOUR CONDITIONS AND RECREATION

Kozloduy NPP develops risk assessment programmes to ensure good health and safe labour conditions for its employees. These risk assessment programmes are harmonised with the IAEA recommendations, international practice and regulations of the Law on health and safe labour conditions (LHSLC). The programmes covered all activities related to the industrial safety and obligations incurred by the LHSLC and regulations. An important stage is the focus on prevention and encouragement of safety improvement and health protection of the employees. Consistent efforts to maintain high level of the training and personnel awareness of the adherence to the safety and health rules in operation are made.

To eliminate or minimize as much as possible harmful factors, laboratory measurements of the working environment parameters are arranged periodically, the compliance to the regulatory requirement is assessed and corrective measure are prescribed, if required.

The risk assessment at the working places is made regularly and the implementation of the prescribed measure is reported. As a result, Kozloduy NPP has established a downtrend of loss of working days and injuries.

The indicators and indexes characterising the industrial injuries at the power plant continued to maintain low values. The plant industrial injuries factor is 0.73 and it is lower than the average value of 2.54 for the utility and the value of 1.17 for the country.

Traditionally Kozloduy NPP makes a lot of efforts for the employees health, adequate recreation, multiple cultural life and contemporary sports conditions for the plant employees, as well as for their families. All Kozloduy NPP employees benefit from a wide social package, including additional voluntary health insurance, additional voluntary pension security, high quality health services, possibilities to recover in a recreation centre, etc.

WITH CARE FOR YOUNG PEOPLE

With the attention to the future of the young people in the country, Kozloduy NPP took part in the national initiative “Manager for a Day” and for the fifth year organized a paid student internship programme. Thirty-nine students applied and had their internships in the 15 structural units of the company. Since the beginning of the programme, in 2009, the company accepted the highest number of interns who could benefit from the plant transport and accommodation facilities. During the internship the interns elaborated

projects on different topics and presented them to their intermates and plant supervisors.

The efficiency of the student internships is proven by the fact that after completion of their internship, students continued to demonstrate their interest in Kozloduy NPP through applying for a job to the company. Eight of the former interns, after successfully completing selection procedures for vacant positions, have already become part of the nuclear power plant personnel.



Following the Company's main objectives for safe, effective and environmentally friendly electricity generation with ensured quality and reliability, Kozloduy NPP's international activities are aimed at development, discernment and application of the latest trends, methods, approaches and good practices to the operation of nuclear facilities as well as complying with the international obligations related to the use of the nuclear energy for peaceful purposes.

Kozloduy NPP PLC is an active member of the most authoritative international organizations in the nuclear energy field such as the World Association of Nuclear Operators (WANO), International Atomic Energy Agency (IAEA), EURATOM, FORATOM, European Nuclear Society (ENS), World Nuclear Association (WNA), etc. Recognizing the need for awareness of and following the world trends in the field of financial and human resources management and nuclear energy, Kozloduy NPP is also a member of other prestigious international organizations such as The European Business Forum and the Bulgarian National Committee to the World Energy Council.

In 2009 Technical Support Missions of WANO – Moscow Centre were conducted at the plant on the subject Programmes and Methodologies

for Supporting the Equipment Qualification in NPPs with WWER-1000 reactors and Technical Maintenance and Repair in NPPs with WWER-1000 reactors.

Within the continuous exchange of information and operating experience plant specialist took part in the Experts Visits Programmes and International Missions of IAEA and WANO, including Peer Review at Mochovce NPP – Slovakia; Technical Support Mission at Zaporozhye NPP on Integration of the Control System of the Current Safety Level and Exchange of Experience for Integration of the Safety Monitoring Tools through Risk Monitoring; Peer Review at Kursk NPP – Russia; Peer Review at Rovno NPP on Discussion on the Good Practices Whilst Developing and Applying the Integrated Management System in Compliance with the Latest IAEA Safety Standards; Technical Support Mission at Trawsfynydd NPP – Wales, UK.

In 2009 Kozloduy NPP was visited by a number of foreign delegations, high ranking representatives of various international organizations and diplomats: Philippe Jamet – Director, Nuclear Installations Safety at the IAEA Department on Nuclear Safety and





Security; Riaz H. Awan – Director, Regional Office of the USA Embassy in Bulgaria Energy Department; delegation of the Japan Atomic Energy Commission; delegation of the USA Embassy in Bulgaria along with representatives of the international companies Westinghouse and Holtec; WANO – Central Office delegation; representatives of the Technical Group on Risk (TGR) within the European Commission project European Network for Inspection and Qualification; representatives of the participants in the International Forum of WWER Regulators; participants in the International Youth Exchange Project of New Idea Association, etc.

A practical example of the Kozloduy NPP cooperation with specialized Research and Development and Regulatory Institutions working in the nuclear industry were the specialized conferences, symposiums and seminars conducted during the year. These are some of them: International Nuclear Conference on the Bulgarian Nuclear Energy – National, Regional

and World Energy Security; the Annual WIN Conference – Slovakia; the Seventh General Conference of the Balkan Union of Physicists; International Symposium SIEN 2009 Nuclear Energy – New Challenge.

The Company actively participates in the implementation of the international projects: Project 27 – Personnel Training and Qualification on Decommissioning; IAEA project BUL/0/009 – Management of Workforce Flow and Risk of Nuclear Knowledge Loss; projects Safety Culture Enhancement (KNPP1) and Emergency Preparedness (KNPP2) within the Cooperation Programme between Norway and Bulgaria – Safe Nuclear Energy with the participation of IAEA experts; project IRIS – Industrial Risk Control System within the Seventh Framework Programme of the European Commission. During the year Kozloduy NPP specialists took part in more than 60 technical meetings, seminars and working sessions organized by IAEA, WANO, EC, FORATOM, etc.

Kozloduy NPP is amongst the leading operating companies in Bulgaria which gives priority to the company communications. Recognizing that the basis of the consensual understanding is trust, consequently Kozloduy NPP follows the model of open behaviour and honest and open relationships with all representatives of the public.

The initiatives for providing personal contacts and receiving direct personal impressions from the plant have a special place amongst the activities for external audiences. Holding this view, visits to different plant sites are organized – the control rooms and turbine halls of the power units, Open Switchyard, Radiation Monitoring Department, Information Centre, Training Centre, etc. Throughout 2009 Bulgarian and foreign citizens, half of which are schoolchildren and students, continue visiting Kozloduy NPP. The plant visitors were from Germany, Spain, Romania, Turkey, Greece, Poland, USA, France, etc.

During the Open Doors Day, organized twice a year at Kozloduy NPP, inquiries were carried out among the adults to receive information about the public attitudes towards the nuclear energy industry. Compared to 2008, in 2009 the share of those considering the most important reason for using nuclear energy is the cleanness of this energy source, increased by 5%. This shows that the number of people giving priority to the

nuclear plants and the need for protection of the environment has increased.

The relationships with the media are among the highlights of the Kozloduy NPP company communication. The activities in this field include distribution of press releases, provision of information upon request on a specific occasion, organization of press conferences and briefings, organization of journalists' visits to the Kozloduy NPP site. In 2009 the plant was visited by representatives of a number of world information agencies and media – The Associated Press, Reuters, BBC, etc. The Company management team has organized annual workshops with journalists for over 10 years. Representatives of 21 national and 13 regional media took part in the workshop in 2009, which is an indication of the efficiency of the activity as a way of providing current information for the plant.

The high interest shown in Kozloduy NPP was also verified by the increased number of the visits to the Internet site of the plant – 123 000 visits in 2009, which is 15% more than the previous year. Considering the growing role of the modern information technologies in the communication process the web page www.kznpp.org contains together, with the current announcements, news, etc. an electronic copy of the printed publications of Kozloduy NPP – Annual Report, Parva Atomna journal and information materials for children.





ПЕРВА АТОМНА ЕЛЕКТРОЦЕНТРАЛА Kozlovskaya

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