

KRŠKO NUCLEAR POWER PLANT

2012

ANNUAL REPORT

2012 saw another year in which Krško Nuclear Power Plant operated at a very high nuclear safety level while strictly respecting environmental limits. The business was conducted responsibly, legally, economically and in accordance with the business plan. The final report of the European Commission concerning special safety reviews of all European nuclear facilities published in the autumn confirmed that Krško NPP achieved extremely good results and that it is suitably prepared for extreme external events, thus proving the rightness of our proactive safety policy. The administrative procedure finalised last year and resulting in the approval of the ageing management review program is one of the major prerequisites for the anticipated operational life extension of the power plant. The outline plans of the Safety Upgrade Program are now

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Hrvoje Perharić

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The outline plans of the Safety Upgrade Program are now in its execution phase. This is the operational fulfilment of recommendations following the special safety review and is a response to formal approval of the bases for long-term plant operations.

The employees are all dedicated to professional, responsible and enthusiastic working in order to ensure further decades of safe and stable plant operation.

Stane Rožman



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ADDRESS BY THE MANAGEMENT BOARD

DEAR READER,

The 2012 annual report gives an overview of operational and business results and main activities per organisational units. Krško NPP operated at a high nuclear safety level and within the environmental limits. The production of electricity was mainly at full capacity and the business year ended in accordance with the business plan. Deviations from the high targets include an extension of the regular outage by four days and a shorter unplanned shutdown of the power plant due to autumn flood conditions and consequently a slightly lower realisation than planned. As in the previous year, we were faced with significant effects of long-running periods of low Sava flows and high temperatures, resulting in the monthly production being slightly below the planned figures.







Major achievements in 2012 include:

- successful completion of Special Safety Review, the so called »stress tests« organised by the European Commission in all European nuclear installations; the report received a highly positive review and proves a high level of NPP's readiness in the event of extreme external events and the readiness of our proactive safety policy;
- the completion of the administrative procedure with the approval of the overall program of the NPP Ageing Management Review which is one of the important prerequisites for safe operations and the anticipated extended operation time;
- preparation, adjustment, approval and start of the safety upgrade project as operative continuation of the stress test recommendations and as a response to the formal approval of the basis for long-term operations; the project was successfully included in the 5-year investment plan and is planned to be finished in 2016;
- the realisation of action plan for the first 10-year periodic safety inspection in accordance with the Radiation Protection and Nuclear Safety Act. Among several measures taken, special significance lies in the in-house AC power-supply and antiflood protection of the installation.

Among major aspects of activities in 2012 was the successful continuation of human resources replenishment, suitable business partner support and financial resources availability for a demanding program realisation. »GEN energija« and »Hrvatska elektroprivreda« as the owners of Krško NPP efficiently and responsibly fulfilled their obligations. During the last ten years we have employed approximately 250 new staff, while about 200 employees left the company due to their retirement. Systematic training of existing and new staff has been carried out in accordance with ever increasing standards as the anticipated level of nuclear safety and operational stability depend on these. The enthusiasm of the majority of staff remained at the same high level and was reflected in some exceptional achievements in 2012; these deserve due respect and trust by the management. With a new recruitment process in progress a positive environment and good relationships among the employees are an important aspect of motivation.



New personal values brought with new staff, safety culture and business morals received insufficient systematic attention during the past year. It is important to maintain attributes which are a guarantee of nuclear safety and operational stability. A relatively high level of safety culture is reflected in the strict monitoring of deviations by the systems and equipment, fast and proactive response to significant events, ensuring the resources for technological maintenance and safety investments as well as staff training at the highest level.

Last but not least, the Krško NPP operated under limiting environmental circumstances. We ran the operations responsibly, legally and economically within the business plan framework. We fulfilled the expectations of the owners and the wider public thus reinforcing the necessary trust.

Management Board







IMPORTANT ACHIEVEMENTS IN 2012, CHALLENGES FOR 2013

Last year Krško NPP saw another important milestone - we marked a thirty-year period of commercial operations of the plant. We provided a significant amount of power at a competitive price in safe, reliable and in an environmentally responsible manner. During the outage in spring, two significant components were replaced as part of plant upgrading activities - the reactor head and main generator rotor. The stability of the plant operation following the outage proves that work has been completed at a high quality level. Following the Fukushima nuclear plant accident in March 2011, the administrative bodies of the European countries and the nuclear industry initiated actions in view of verifying the resistance and abilities of nuclear installation in Europe to handle the circumstances which could occur at a low level of probability, but with extreme consequences. In October 2012 the European Commission published a report with the results of the periodic safety reviews of nuclear installations. The report proves that Krško NPP achieved exceptionally good results and that it is suitably prepared for extreme events. The main tributes for effective implementation and maintenance of high safety standards in NPP go primarily to the employees and these achievements will without doubt be our encouragement for our future proactive and enthusiastic stance to the benefit of safety and stability of the plant operation.

IMPORTANT ACHIEVEMENTS N 2012, CHALLENGES FOR 2013



Krško NPP has always had a preventive attitude and responded to important events in the nuclear industry thus ensuring suitable nuclear safety. Its reaction following the accident in Japan was guick and effective with short-term and mid-term measures. The long-term measures are included in the Safety Upgrade Program, which includes the upgrading of solutions for the prevention of accidents and alleviation of its aftermaths. The activities have already been in progress and will be finished in 2016. During the 2013 outage, two major investments will be realised. The first one is the project for ensuring the integrity of the containment when the hydrogen recombiners which ensure hydrogen and oxygen combustion in the event of severe accidents will be replaced. New passive catalytic hydrogen recombiners will be installed for which no energy for their operation is required. The second investment is the project for the installation of a containment high pressure protection system; with pressure increase this will enable automatic release through the filter system which will ensure complete filtering of all fission products.

Mid last year a procedure was finished which signifies a special achievement and necessitates professional and responsible work for the long-term plant operations. In June 2012 the Slovenian Nuclear Safety Administration passed a ruling approving modifications which will enable NPP's long-term operations. This meant that a comprehensive and long-lasting technical procedure which had been initiated during the first periodic safety review in 2003 was completed. At that time Krško NPP started implementing a special ageing management program of specific safety-related systems, structures and components which is one of the prerequisites for extended plant operation after the original designed plant lifespan. The original project ensured safe operation of the nuclear power plant for the period of originally designed facility operational lifespan. For Krško NPP this was 40 years. On the basis of positive experience from world practice in the nuclear industry, a decision has been taken for Krško NPP to initiate the procedure for the plant's extended lifespan by 20 years.





The procedure included the American legislation requirements and is the most methodological and extensive; moreover, Krško NPP was supplied by American Westinghouse. The United States of America have the most extensive experience concerning the operational lifespan extension as they have done so on 60 nuclear power plants, while additional 20 are in the procedure of getting relevant approvals. The administrative procedure between the URSJV (Slovenian Nuclear Safety Administration) and Krško NPP was conducted in accordance with the requirements imposed on their plants by the American Nuclear Regulatory Commission (NRC).

In September 2006 the Ageing Management Review was started. After three years of detailed preparations and activities, Krško NPP filed an official request with the URSIV for the approval of the USAR amendments, which was followed by a several-month review and harmonisation by authorised companies. In December 2010 an independent positive technical opinion was prepared which was one of the vital foundations for the URSIV's decision. In 2011 the Ageing Management Review was appraised by URSIV. After additional improvements during the latest regular outage in NPP, in June 2012, URSJV rendered the ruling approving the modifications in the NPP's USAR which will enable the extension of the operational lifespan of the plant up to the total of 60 years.

Approved regular ageing inspection of the nuclear plant components is one of the formal prerequisites for its lifespan extension until 2023. Prior to this date and not later than by the end of 2013, the second extensive periodic safety review will have to be carried out, followed by the third one in 2022 and 2023. Numerous safety upgradings will be necessary and the strategy of a permanent technological modernisation will have to be continued. The fundamental prerequisites for commercial plant operation until anticipated 2043 lie in the ageing management program of safety-related systems, structures and components, regular maintenance coupled with high-standard maintenance of the operational equipment and in maintaining a high level of professional qualification of the operators and good safety culture of all employees. To continue our work responsibly and with enthusiasm and to ensure safe and stable plant operation is our challenge for 2013 and all the years to come.



IMPORTANT ACHIEVEMENTS IN 2012, CHALLENGES FOR 2013



SUMMARY REPORT

In 2012 the plant's operation was safe and stable. The plant was manually shutdown for the regular outage which took place in April and May. In autumn another manual shutdown was required due to an increased amount of flood debris in the Sava river and deteriorating vacuum conditions in the main turbine condenser. The plant generated 5.24 terawatt-hours of net electric energy, which was slightly less than the planned figure. In October 2012 the European Commission published the report with the results of special safety reviews. The report showed that Krško NPP met most requirements while for the remaining requirements not met, the plant prepared an execution plan. This way it got its place among the best prepared facilities in the event of a nuclear accident.

At the beginning of 2012, in line with the requirements set by the Slovenian nuclear legislation, the power plant prepared a Safety Upgrade Program required by a ruling rendered by the Slovenian Nuclear Safety Administration in September 2011. In February it was approved by the same body. The modifications recommended in the program are to be finished by the end of 2016. In 2012 work was started in preparing conceptual design solutions.





In 2012 regular outage of the plant was carried out. It is performed every 18 months. It was an extensive outage as it included several very comprehensive modifications (reactor head replacement, main generator rotor replacement, fire detection system upgrading and others). It lasted 43 days, slightly over the scheduled 39 days.

In order to facilitate the performance monitoring and benchmarking, a performance indicator index was followed up, calculated using weighted values of individual factors and whose value is from 0 to 100. The target figure for 2012 NPP's performance indicator index was not less than 91, while the actual achieved value was 97.5, which proves a very successful performance of the plant.



In 2012 NPP's operation was stable and in accordance with the requirements set by the Slovenian legislation and international regulations and standards. The key targets demonstrated by performance indicators as defined

by WANO (World Association of Nuclear Operators) were achieved. The collective dose was slightly higher; however this was expected in view of the plant outage activities.





NEK TARGET FOR 2012: ≤ 0.86 ManSv



ENVIRONMENTAL IMPACT

NPP carries out radioactive measurements of the waste water discharges into the Sava river and emissions from the ventilation system into the air. An extensive program of radiation surveying is carried out by NPP and external authorised institutions which measure samples in the surroundings, in particular in the area around NPP within a distance of 12 kilometres. In addition, there are 13 automatic radiation survey stations located in the vicinity of the power plant which can detect changes in the natural radiation due to precipitations as well as potential changes due to the nuclear facility. The Sava river is monitored downstream for 30 kilometres from the plant.

The objective of the radiation monitoring is to monitor the plant operations and assess the impact on the surroundings and the local population. This is also the basis for verifying compliance with legal limits.

The effects on the population are so low that they are practically immeasurable. However, they can be calculated by models for the most exposed groups of the population and the annual dose can be compared with the dose received due to natural and other radiation sources. The assessment of an individual dose received by a critical reference group (an adult receiving the highest doses and whose food originates exclusively from locally grown food and fish) shows that the annual dose of such an individual has been approximately I microsievert or less than 0.1 percent of the dose on average received by a person due to natural sources of radiation (approximately 2,500 microsieverts). The annual dose for NPP is limited to 50 microsieverts per person (at a distance of 500 m from the reactor or more) from air and water media. The results of measurements taken are dealt with in detail in a special report for 2012, prepared for NPP by the *Jožef Štefan* Institute together with the Institute for Occupational Safety, and the *Ruđer Bošković* Institute.

Wastewater may contain fission and activation products. In 2012 the activity of fission and activation products (excluding tritium H-3, carbon C-14 and alpha particle emitters) amounted to 0.1 percent of the additional annual limit of activity for liquid discharges. The activity of discharged tritium was approximately 37 percent of the prescribed annual limit. Tritium is a hydrogen isotope found in water and, in spite of being more active than other contaminants, it is less important due to its low radiotoxicity.

The plant observed general and technical regulations which require that radioactivity of wastewater discharged in the channel cannot exceed the prescribed limits. ENVIRONMENTAL IMPACT

LIQUID RADIOACTIVE DISCHARGES





DATA ON LIQUID RADIOACTIVE DISCHARGES IN 2012

RADIOACTIVE SUBSTANCES	ANNUAL LIMIT	PERCENTAGE OF THE LIMIT	
FISSION AND ACTIVATION PRODUCTS	100 GBq	0.1%	
TRITIUM (H-3)	45 TBq	37%	

RADIOACTIVE **RELEASES INTO THE ATMOSPHERE**

The annual dose limit of 50 microsievert is checked monthly for discharges into air and water, for air in a 500-meter distance from the reactor by calculating a dose that could have been received by a person at such distance in one year due to external and internal radiation. The least favourable monthly

average rarefaction values and releases near the ground are presumed in the calculation of individual wind directions. The result for 2012 was 2.1 microsieverts (4.15 percent of the annual limit). More detailed data is given in the table below.

DATA ON RADIOACTIVE **RELEASES INTO THE** ATMOSPHERE IN 2012

RADIOACTIVE SUBSTANCES	TOTAL ANNUAL LIMIT	DOSE	PERCENTAGE OF THE LIMIT
FISSION AND ACTIVATION GASES (TOTAL)		0.129 μSv	
IODINE (I-131 AND OTHERS)		6.5E-04 μSv	
DUST PARTICLES (COBALT, CAESIUM, ETC.)	50 μSv	9.2E-06 μSv	4.15%
TRITIUM (H-3)		1.93 μSv	
CARBON (C-14)		0.0145 µSv	

The plant's general and technical regulations were taken into account; therefore the current radioactive concentrations in the air/dose rate within a 500-metre distance from the reactor did not exceed the prescribed value.

MEASUREMENTS OF THE SAVA RIVER AND GROUNDWATER

In accordance with the environmental permit (OVD) concerning the water emissions and partial water permit measurements of temperature, flow rate and oxygen concentration in the Sava river, monthly measurements of biological and chemical oxygen consumption were carried out.

Due to unfavourable weather conditions. NPP filed twice an application with the administrative body (ARSO) for increasing the permitted added temperature of the Sava river, from the permitted level of 3 °C to 3.5 °C. The applications were approved for specific periods in which the maximum temperature rise of the Sava river due to operations by NPP was 3.3°C.

Groundwater is regularly inspected by NPP who constantly measures the ground water level and temperature in three boreholes and two locations on the Sava river and, on a weekly basis, in ten boreholes in the Krško-Brežice fields. The groundwater level remained the same when compared to previous years.

DATA ON RADIOACTIVE WASTE AND SPENT NUCLEAR FUEL

In 2012, 147 packages of radioactive waste were stored, with a volume of 34.9 cubic meters. The waste also includes 70 castings which were returned to NPP after smelting radioactive metal material. In accordance with accepted practice all compressible waste material is compressed in the super compactor on a regular basis as it is generated, while combustible waste is prepared for shipment to the external contractor for incineration.

The total volume of radioactive waste in the interim storage on 31st December 2012 was 2261.4 m³, while the total activity was 20.4 TBq.

tonnes.

ENVIRONMENTAL MANAGEMENT AND COMMUNAL WASTE

Since the end of 2008, the ISO 14001 environmental management standard has been operating in NPP. Since the certificate was granted, the system has been checked regularly on an annual basis by an external certification organisation. Regular control assessment was completed. It was established that NPP adequately respects the environmental management system requirements.

With this system, municipal waste separation practice was introduced. The volume of mixed communal waste was similar to that in previous years; similarly, this was the case with the volume of collected separated waste.

A special waste water treatment plant is used for communal waste water. Measurements of pH, temperature, non-soluble substances, chemical and biological use of oxygen at the outlet are taken by an external organisation, which is in line with the OVD requirements.

MEASUREMENTS OF RADIOACTIVE RELEASE AND ENVIRONMENTAL SAMPLES

The laboratory for radioactive protection regularly checks air and environmental samples by an accredited method, thus having fulfilled conditions set by the standard SIS EN ISO/IEC 17025 since 2007, which is checked by a Slovenian accreditation body. The accredited measurements of radioactivity of periodically inspected samples of liquid releases are carried out by the laboratory for radio-chemistry.

The spent fuel pit contains 1040 spent fuel elements from the previous 25 fuel cycles. The overall mass of spent fuel material is 425





2 MAINTAINING AND IMPROVING HIGH LEVELS OF NUCLEAR SAFETY

NPP pays special attention to ensuring and checking the execution of regulations and standards for nuclear technology, as well as other modern technologies in project solutions (equipment upgrading), operation and maintenance activities, the purchasing process and other activities which contribute to safe plant operation and the safety of the population. We are committed to on-going improvement, professional work and personal growth. Our mission is performed through independent review, on-going improvement of human performance and safety culture, critical self-assessment of results achieved, constant comparison with the best comparable facilities in the world, by learning from both in-house and foreign operating experience, and on-going plant assessment in terms of plant operation safety and stability.

Due to its specific nature, NPP took an especially cautious stand towards the environment at an early stage of the project (extensive research concerning its location prior to a final decision, strict respect of standards during construction). During the plant startup and its operation, independent monitoring of the effects on the environment was put into action (radioactive releases into water and emissions into the air, and nuclear fuel and hazardous waste management). A Protection and Rescue Plan (NZIR) for emergency events was prepared, detailing the organisation, measures and means of emergency management when there is a potential danger of radioactive effects on the environment. Care for the environment has always been a special concern of the plant's business policy. The practices of NPP concerning the environment are in accordance with the ISO 14001 standard, internationally the most widely recognised environmental management system. In 2012, the external certification committee successfully completed a control assessment within NPP of the safety and health at work management system in accordance with the BS OHSAS 18001 standard and of the environmental and health at work management system with the ISO 14001 standard.

One of the vital aspects of maintenance and safety improvement in the nuclear industry is respecting operating experience. The nuclear accident at Fukushima Daiichi nuclear plant in Japan which happened in 2011 as a result of a powerful earthquake and tsunami had a great impact on the entire nuclear industry. As a response to the events in Japan, NPP prepared and implemented certain short term action plans, and prepared long term action plans on the basis of experience in the industry and management requirements. In January 2012, an integrated program on upgrading safety was approved. The program defines projects for upgrading certain safety systems, the electrical safety power supply, supervision of radioactive discharges, flood safety and storage of spent nuclear fuel. Certain projects are already being implemented and are planned to be completed by 2016.

MAINTAINING AND IMPROVING HIGH LEVELS OF



After the accident at Fukishima Daiichi, the administrative bodies of European states and in the nuclear industry initiated action plans for checking the resistance and abilities of nuclear plants in Europe to withstand and control circumstances which are unlikely but still might happen and which would leave devastating results. In October 2012, the European Commission published a report with results of special safety reviews of plants. The report shows NPP had already complied with most requirements and has an implementation plan for the requirements not yet met. It was regarded as one of most prepared plants to take action after such an accident.

To extend the operating lifetime of NPP, necessary administrative procedures have been conducted for a number of years. In April 2012, NPP received from the URSIV a partial decision and in June 2012, it received a supplementary decision concerning the supervision over the ageing of equipment and on the measures for long term maintenance of equipment. Checking the status of systems, structures and components (SSC) and approving further operations is related to results on periodic safety reviews which is, in accordance with the law, conducted every ten years of operation.



In November an internal operative exercise in the event of an emergency was carried out in which some external organisations took part. It was carried out as a regular annual verification of NPP readiness in the event of an emergency in NPP. The main objective of the exercise was to verify suitability and harmonisation of the NPP's Protection and Rescue Plan (NZIR), operational and other procedures, organisation and expertise of the intervention teams and support institutions, the operations of management centres, the functional ability of equipment and connections as well as harmonisation of NPP's protection and rescue plan with the procedures in the event of an emergency by URSIV and external support institutions. Special emphasis was given to control strategies in the event of beyond-design-basis emergencies should technical support centre of NPP not function as well as the use of mobile equipment and protective measures in the area of the NPP. This exercise proved the suitable readiness of NPP for such events and revealed areas where improvements are possible.

The legislation and international standards require that, from time to time (every ten years), the plants carry out a safety review and prepare a report which is to be submitted to a competent administrative body. The legal basis for it is stipulated in the lonising Radiation Protection and Nuclear Safety Act and the Rules on operational safety of radiation and nuclear facilities. The first such review in NPP began in 2001 and was completed by submitting the final report to URSIV in 2004. In 2011 the second periodic safety review of NPP started. The main objectives of these periodic safety reviews are to prove that the plant meets the requirements stipulated in the administrative permits and international safety standards, to demonstrate the suitability of the measures until the following such periodic review, and to compare the safety results with those of the previous safety review. Planned review activities were carried out throughout 2012. The final report of the second periodic review must be submitted to the competent authority by the end of 2013.



PROCESS **AUDITING**

Maintaining nuclear safety has been one of the priorities in every field of work in NPP. By maintaining high levels of quality, the plant's systems and equipment are kept in operation in compliance with the design values; in this manner, different processes of the plant can be under independent surveillance, such as design changes, plant procedure revisions, spare parts and services purchasing and other processes. In addition, independent audits are carried out - plant processes auditing and auditing by external companies, contractors and equipment suppliers. The purpose of such audits is to ensure independent assessments of processes and thus to maintain criteria defined in international standards concerning nuclear technology, including:

- organisation;
- quality program;
- internal processes (design, production, special processes etc.);
- records control;
- non-compliance control;
- Corrective Action Program;
- training, etc.

There were seven audits concerning NPP's internal processes auditing in 2012, including environmental management, health and safety at work, radiation protection, chemical processes, engineering, training, purchasing and organisation of measures in the event of an emergency.

Suppliers are audited by NPP's own staff or together with NUPIC, an international company who organises and carries out regular team audits at suppliers' premises. There were 24 independent audits in 2012 of external suppliers from Slovenia, Croatia, Italy, England, Germany and France. With the NUPIC organisation we took part in six audits. The annual audit plan was thus successfully completed in greater detail than in previous years.

The fundamental objective of observations is to identify deviations in the work processes and take relevant corrective actions, and to underline the desired standards. Achieving high standards of work processes in terms of their excellence is a complex task, necessitating time and on-going observations and simultaneous corrective acting. In order to ensure uniform observation, a special procedure has been prepared with instructions for the preparation, execution and observation results analysis.

preparation.



OBSERVATION

In 2012, more than 200 observations were carried out in NPP during its operation and shutdown. All disciplines and work groups underwent the observation procedure in different organisational units and external contractors. The monitoring results analyses of the last few years showed that some work processes could be improved, in particular in the sphere of documentation and work

MAINTAIN-ING AND IMPROVING HIGH LEVELS OF NUCLEAR SAFETY



3 MAJOR TECHNOLOGICAL MODERNISATION

INVESTMENTS

In 2012 NPP continued with the technological upgrading and modernisation strategy which took place both during the operation and during the outage. The most important such modernisations include:

AC POWER SUPPLY UPGRADING

This is the upgrading of the plant's AC power supply by the provision of an alternative source in the event of SBO. The upgrading of the existing supply system included installation of a diesel generator set (DG3), of 4 MW (6.3 kV, 50 Hz, starting time less than 10 seconds), which is connected through a new 6.3 kV busbar (MD3) with the safety busbars MD1 and MD2. The new diesel set is now placed in a new building which protects the diesel generator set from potential design basis events including a plane crash in the vicinity or fuel spill over the platform. By the side of the DG3 building, a diesel fuel tank was dug in, whose capacity is sufficient for a 7-day operation of the diesel generator set at its rated power. To support its start and regulation, 125-Volt batteries with a charger are placed in separate rooms. There is also the 6.3 and 0.4 kV switching equipment installed in a separate room. As the third diesel generator set is safety-related, it can replace one of the existing ones.

mic events.

It is estimated that by upgrading the safety power supply the overall probability of the core damage frequency (CDF) has been reduced by approximately 30 percent. The probability of CDF due to internal events has been reduced by approximately 40 percent, and by approximately 52 percent due to seis-



REACTOR HEAD REPLACEMENT

During the 2012 outage the reactor head was replaced. We thus achieved the fundamental aim in ensuring the integrity of the reactor coolant system in the field of intergranular stress corrosion cracking on J-weld penetrations. In addition to the fundamental goal we also took into account contemporary trends in the industry and aimed at improving three important performance indicators of NPP's operations related to safety-at-work, outage duration, and staff radiation exposure.

The following modernisations were carried out:

- control rod drive mechanism (CRDM)
- reactor head seismic support
- cooling channels to CRDM
- integral radiation shielding made of 1.5inch steel
- thermal insulation
- suspended cable and foot bridge with a cable connection panel
- power supply and instrumentation cables
- flanges of core thermocouple conductors
- integrated steel protection against ejections
- integrated tripod
- minor tools and devices for work (ladders, platforms, etc.)

Preparatory work had been carried out from 2009 to the 2012 outage, when the majority of equipment was installed in the facility. The main modification was carried out during the 2012 outage, while its completion is planned for the 2013 outage.

The modification improved the operational safety of NPP, which means lessened risk of fault or forced shutdown, considerably shorter time for the head ISI or its removal and adjustment.

MAIN GENERATOR ROTOR REPLACEMENT

NPP decided to replace the main generator rotor based on recognition that the generator was designed and generator components built on the 30 year life span assumption, under normal conditions and operational reliability. Due to the plant's life span extension to 60 years, it is necessary to determine which of the components will not meet these requirements and should be replaced. The expected life span of the main rotor parts is between 20 to 60 years.

During the 2012 NPP's outage the generator rotor was replaced and all final tests were successfully completed. Along with the new rotor a container for the controlled storage of the old rotor was purchased; this is now ready for a thorough renovation which will result in providing Krško NPP an important reserve component.

FIRE ALARMING SYSTEM MODERNISATION

In 2012 modification and modernisation of the fire alarming system was carried out to improve the capability of locating a potential fire, to improve the reliability of the systems and remove difficulties related to old equipment (unavailability of spare parts in the market).

This modification ensures equipment protection in accordance with the requirements set by the American regulatory body and Slovenian URSIV.

Work was carried out both during plant operation and during the outage. Krško NPP modernised the existing fire detection system and extended it to some locations not covered by the detection system.

The conventional smoke alarm systems (smoke, thermal, manual) by the addressable system and addressable modules were installed for activating sprinkle and flooding water.

A network of new fire stations was set up and started.

The modernisation is to be completed in 2013.



ANALYSIS AND INVESTMENTS IN THE SECOND 10-YEAR SAFETY REVIEW

Pursuant to the provisions stipulated in the Radiation Protection and Nuclear Safety Act and in line with the URSJV ruling of 13th May 2010, Krško NPP began with the second periodic safety review (PSR), which has to be completed by 15 December 2013. This set of activities includes program preparation, to be prepared by NPP and harmonised with URSJV. On the basis of the approved program, NPP is, either by own staff or by external contractors, to carry out analyses to be documented in periodic reports for individual safety factors; this will be followed by prioritisation and action plan preparation.

In 2012 different contractors prepared work reports. They prepared subject-specific reports related to individual safety factors. Reports were reviewed by NPP and URSJV. The final subject-specific reports will include activities of SSR (Special Safety Review) and SUP (Safety Upgrade Program), which affects some planned activities and the findings of the 10-year safety review.



ANNUAL REPORT 2012 MAJOR TECHNOLOGICAL MODERNISATION

INVESTMENTS TO IMPROVE FLOOD SAFETY

On the basis of the latest newly determined probable maximum flood (PMF) and using the hybrid hydraulic model, the height of the flood around Krško NPP has been determined. The newly determined height is a new input data for raising the existing antiflood protection.

ANNUAL REPORT 2012

In 2012 all works related to the reconstruction and raising the present flood embankments were finished. The embankment sections along the Sava river and the Potočnica stream had been raised above the level which ensures NPP's safety in the event of a probable maximum flood.

All work concerning the embankment was finished and the operating permit obtained.

THE REPLACEMENT OF THE TRAVELLING SCREEN ON THE ESSENTIAL SERVICE WATER SYSTEM

Krško NPP replaced the fine water treatment equipment on the essential service water (ESW) system on safety line A following the same principle as in 2006 on safety line B.

The reason for the replacement was detected degradation of the equipment guides. As the wear had spread and repair was not possible, there was great danger of the equipment failing, which could cause longer unavailability of the plant.

During 2012 outage all work was completely finished - the old equipment with a direct water intake was removed, building work was carried out at the new location for a dualflow traveling screen, a new traveling screen was installed, the rinse line was reconstructed as well as instrumentation lines and cathode protection, and power supply cables were replaced. All testing of the new traveling screen and essential service water design parameters was successfully completed.





THE REPLACEMENT AND UPGRADING OF THE FLOW RATE CONTROL ON THE **RESIDUAL HEAT REMOVAL** SYSTEM

Extensive degradation of valves for the control of the flow rate through heat exchangers on the residual heat removal system had been noticed in the past few years as well as the degradation of bypass valves of the heat exchangers on the same system.

Due to the wear of the mechanical bear parts of the valves, the valve no-load run increased which made flow rate control significantly difficult. The wear also resulted in extensive leakage from closed valves, reaching from 13 to 20 percent of the full flow rate.

The modification during 2012 included the replacement of the old valves with new high quality flow rate control valves. These ensure operation in accordance with the design requirements, as the effective flow rate control system of the residual heat removal through the control valves is directly linked to a safe plant shut-down.

On the basis of the Agreement concerning technical aspects of investment into NPP's 400-KV switchyard and 400/110 KV RTP (distribution transformer station) concluded between Krško NPP and ELES, switchyard modernisation is being planned, involving the replacement of the primary equipment of transformer bay AC01 and the reconstruction of tie bay AC02 into a reserve transformer bay, including the replacement of the primary equipment. Krško NPP relocated its 110 KV unit field in 2009, while during the 2010 outage it replaced the 400 KV busbars.

During the 2012 outage the 400 KV main line bay Maribor was reconstructed, a new CA12 coupling bay was constructed, transformer T412 was installed and 400 KV busbar protection was replaced, bay AC01 was partly refurbished and coupling bay AC02 was removed and relocated.



MODERNISATION OF THE SWITCHYARD

TECHNOLOGICAL MODERNISATION

Relocating the coupling bay to a new location left the old coupling bay location free for an additional transformer bay which resulted in increased flexibility of the switchyard and system reliability in electric power transmission out from the plant.

The modernisations that took place in the switchyard included the refurbishment of the lighting, a total reconstruction of unit field supply - including a new diesel generator purchase, a new DC and AC unit field supply, the replacement of the inverter and battery charger, and a total reconstruction of unit field building.

In the main control room the control panel for switchyard control and management was reconstructed, coupled with the modernisation of the process information system.

MODERNISATION DUE TO AGING PROCESS MANAGEMENT

The nuclear legislation requires monitoring and inspection of ageing processes, and of the life-span of essential safety and other vital systems and components.

In the period 2006 - 2009 a comprehensive review project of the ageing impact on the vital SSC was carried out, and an action plan for the implementation of various modernisations was prepared; the plan includes modernisation of certain procedures and programs, preparation of new programs, modifications in the NPP's processes, and some analyses and modifications.

The modifications due to ageing include passive SSCs which carry out certain designed functions not including flexible parts or configuration or purpose changes, and those SSCs which have not been planned for replacement during the entire operational lifespan of the plant.



During the 2012 outage the equipment not qualified in accordance with the environmental requirements in which it operates, which included temperature conditions, pressure, humidity and radiation was replaced (limit switch, positioners, connectors of supply and signal cables, etc.).

ROOM FOR MOBILE EQUIPMENT

In accordance with the recommendations of the industry and in line with the American NRC, in 2011 Krško NPP carried out modifications following the requirements to find solutions to ensure alternative nuclear core cooling methods with mobile equipment in the event of a crash of a large commercial plane into the plant and in view of mitigating the effects of severe natural calamities as it was the case in the Japanese Fukushima plant.

To accommodate the mobile equipment, purchased in 2011, a new seismic qualified building was built in 2012. In addition, the building gave housing to the fire detection control equipment and the fire brigade on-duty team.





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MAJOR MAINTENANCE **ACTIVITIES AND INSPECTION OF** PRESSURE BOUNDARIES

Appropriate inspection, maintenance and upgrading ensure the operational readiness of equipment. Maintenance falls into the categories of preventive maintenance, carried out at specific intervals defined in programs, i.e. predictive maintenance, which is used for establishing the status of equipment (diagnostics), and corrective maintenance, related primarily to equipment not crucial to the availability and safety of the power plant.

There are also other activities carried out in accordance with programs related to the ageing management of equipment, components and structures.

During corrective measures on important equipment, which is included in the preventive maintenance program, a detailed root cause analysis is carried out and if necessary the preventive maintenance program is revised accordingly.

The most vital maintenance activities were carried out during the outage while the others took place during plant operations, most of them in accordance with the preventive maintenance plan and ageing management of equipment and components.





The results of all inspections by means of non-destructive methods showed that the integrity of the pressure boundaries is intact as not a single indication of degradation due to operations was identified.

In line with the secondary system inspection program, inspection of erosion and corrosion effects detected no conditions which would necessitate special corrective measures.

Other maintenance work was carried out during plant operation in accordance with planned activities; however, there was no major corrective work done which would essentially affect safety and/or plant availability.



The regular maintenance during the 2012 outage included: overhaul and revision of high-voltage and low-voltage motors, switches and other electrical equipment; instrumentation gauging, inspection of equipment degradation incurred during plant operation by means of non-destructive testing method, overhaul of valves, ventilation systems and other mechanical equipment, overhaul of diesel generators, overhaul of auxiliary supply pump turbine and its regulation valve, overhaul of various pumps on the secondary systems, etc. Major work included: inspection of half of U-tubes of both steam generators, PT review of the primary water chamber distribution panel of both steam generators, withdrawal of two irradiated samples from

the reactor, overhaul and inspection of clearance of lever supports of two turbine regulation valves, the replacement of two motors of the ventilation cooling units in the reactor building, inspection of the reactor coolant pump motor and repair of oil leak, inspection of the reactor coolant pump interior, replacement of the unit transformer T2, repair of actuator rotor binding, cleaning the highpressure regulation oil system, repair of the leak on the cooling unit evaporator 01A of the chilled water system (CZ), and various activities according to the equipment ageing management review programs.







MAJOR MAIN⁻

PRESSURE BO



5 Performance

NPP's 2012 total output at the generator outlet was 5 527 934.00 MWh of gross electricity or 5 243 682.50 MWh of net electricity. The planned output for 2012 was 5 310 000 MWh; the actual annual output was slightly lower than the planned figure due to the extended outage and unplanned shutdown at the end of October. The availability factor was 87.63 percent, while the capacity factor was 87 percent.

A very extensive and complex outage with refuelling lasted for 43 days, i.e. from 14th April to 27th May 2012. In addition to regular refuelling of nuclear fuel other complex work was done to the equipment, e.g. finding solutions to increased temperature of turbine bearing No. 5, finding solutions to the turbine-generator rotor resonant frequency. Several comprehensive modifications were carried out to vital plant systems, including equipment replacement or upgrading, such as safety systems electric supply upgrading, reactor head replacement, replacement of fire detection system in the technological part of the plant, replacement of the traveling screen in inlet channel of essential service water system on line A, reconstruction of the switchyard, replacement of the main generator rotor, etc. Significant events in 2012 include that of 28th October when we had an unexpected forced manual shutdown of the plant due to the degraded condenser vacuum following the increase of the Sava river alluvium. No other significant unplanned power reductions occurred.

PERFORMANCE

OUTPUT IN 2012



INGRESS FROM SAVA RIVER AND DEGRADATION OF VACUUM IN THE CONDENSER

Performance indicators as set by WANO (World Association of Nuclear Operators) demonstrate that the majority of NPP's targets for 2012 were achieved.



NUCLEAR FUEL AND SECONDARY CHEMISTRY SYSTEM

In 2012, the specific activity of the primary coolant and its contamination were below the required levels. The fuel reliability indicator for 2012 exceeded the target figures set by Krško NPP and INPO, due to slightly lower nuclear fuel integrity during plant operation.

Low input and aggressive electrolytes and consequently limit-value deposition in the secondary cycle demonstrate a good WANO chemistry performance indicator, which in 2012 again reached the targets set. This was due to effective prevention of chemical contaminants input by suitable monitoring and good response time, efficient treatment systems and a good secondary system chemical program. The concentration of free iron oxides during the stable operation of the plant was below targeted WANO values. The plant carried out additional activities aiming at a reduction of such oxides release, transport and deposition.





SERVICE AND EQUIPMENT PURCHASING

To support successful operations and plant modernisation, the necessary services and goods were purchased during the year in a timely manner, correctly and in accordance with the requirements set by internal purchase orders, company's internal rules and legal regulations.

On the import side, the business with American suppliers has been in decline, due to frequent changes of ownership structure of important suppliers, their frequent changes in workforce, their tendency to focus on the American market with inefficient representatives for European customers. Agreements on long-term cooperation with local strategic partners, in particular those who render vital outage and continual services proved to be a good basis for timely, good and competitively priced services. Due to a positive experience, such agreements are extended.

In order to improve and maintain long-term cooperation with vital foreign partners, master agreements continue to be negotiated.

We duly reported in accordance with our obligation under European nuclear legislation, such as requesting certificates, recording data and reporting about purchases within the EU; the reports were submitted regularly and in a timely manner.





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PERFORMANCE	



6 INTERNATIONAL COOPERATION

EXPERIENCE OF OTHERS – GUIDANCE FOR OUR WORK

At NPP we are aware of the importance of joining international organisations and the international control of our operations. It is the only way to achieve internationally comparable operating and safety results.

WANO

All nuclear facilities in the world are members of the World Association of Nuclear Operators (WANO). NPP has been a member of this organisation since its establishment in 1989. Its aim is to promote the highest standards of operational safety, availability and excellence of nuclear power plants. WANO implements a program for sharing operating information, promoting communication, mutual comparison and copying of best practice and solutions among its members. From as early as 1988 NPP has been a member of the Institute of Nuclear Power Operations (INPO) in the USA. Its primary objective is to increase the level of nuclear power plant safety and reliability. All American nuclear plants and/or their operators are INPO members. Its membership extends both to nuclear operating organizations in other countries, as well as to the manufacturers and designers of nuclear facilities.



INPO





IAEA



The International Atomic Energy Agency (IAEA) is an independent intergovernmental organisation which operates within the United Nations Organisation. Its primary objective is to help members in planning and using nuclear technology for various peaceful purposes. These include electricity generation as well as technology and/or know-how transfer in this field. The IAEA develops safety standards that promote achievement of a high level of safety in the use of nuclear energy and in protection of the population from ionising radiation. The organisation operates on the basis of various programs such as control over nuclear material, nuclear technology application, nuclear energy, nuclear safety and technical cooperation. As part of these programs, the IAEA organises OSART (Operational Safety Review Team) missions which involve visiting power plants in order to inspect and assess their operational safety.

NUMEX

For over ten years, NPP has been a member of the NUMEX organisation (Nuclear Maintenance Experience Exchange) engaged in the exchange of experience in the sphere of nuclear power plant maintenance.

EPRI

EPRI (Electrical Power Research Institute) is a non-profit and independent organisation for research in the area of electricity production and environment protection. It was established in 1973 in support of the development of the electrical industry. The Institute currently covers all aspects of production, transmission and use of electricity.

NRC

The NRC (Nuclear Regulatory Commission) is an independent agency in the USA in charge of safety and protection of the population against the effects of radiation from nuclear material, reactors and facilities for processing nuclear material. Together with the Slovenian Nuclear Safety Administration (URSJV) and the Jožef Stefan Institute (IJS), NPP is a member of a number of programs which give access to information and literature in various relevant fields.

PWROG

PWROG (Pressurized Water Reactor Owners Group) is the association of all the pressurized water reactor (PWR) operators and Westinghouse. It offers various programs related to improved equipment, optimisation of technical specifications, reduced number of unplanned shutdowns, increased power of the plant, simplification of the plant systems, the manufacture and use of nuclear

fuel, analyses by contemporary programs and analytical methods, etc.

NPP ACTIVITIES IN 2012

The President of the NPP Management Board is a Supervisory Board member of the WANO Paris Centre, made up of representatives of all member countries of the Centre.

NPP has actively cooperated in WANO and INPO for years. We have had three missions of WANO Peer Review, while our representatives took part in 37 such missions worldwide. In 2012, we also actively participated in the international specialist inspections of plant operation in Flamanville and Fessenhein in France and at the nuclear facility Sellafield in Great Britain concerning maintenance, radiation protection and design changes.

Within the framework of Technical Assistance Missions. NPP received 31 such missions covering all activities of the plant. In 2012, two of our experts participated in missions in the French power plant Chooz concerning recovery and discharge of waste water and in Blayais concerning operations in accordance with procedures. In turn, we received two such missions at NPP concerning the supervision of ageing and performance indicators.

Our representatives regularly take part in specialist training programs organised by these organisations.

Due to good results, our plant has become a model example for other operators of nuclear plants and a source of rich experience in various fields of work. In 2012, through WANO, Slovak representatives of Slovenske elektrarne visited us in the field of performance indicators, self-assessment and training, representatives of Dutch plant Borselle visited us in the field of safety operations and representatives of Hungarian plant Paks visited us in the field of training. Our representatives learned about good practice in radiation protection at the Czech plant Dukovany.

As part of our cooperation with IAEA, we have organised three OSART and some other missions. Our specialists have taken part in 16 such missions world-wide. IAEA's inspectors, who safeguard nuclear fuel, are our regular visitors.

- equipment maintenance in nuclear power plants (NMAC – Nuclear Maintenance Application Centre);
- improvement, procurement and qualification of equipment (PSE – Plant Support Engineering);
- non-destructive testing and researches (NDE – Non-Destructive Examination).
- exchange of experience in application of programs for accident analysis (MAAP - Modular Accident Analyses Program User Group);
- exchange of information in the field of erosion/corrosion - CHUG (Checworks Users Group).



NPP takes an active part in some major areas of the EPRI Institute, including:

Our plant participated in the PWROG annual conferences, which are specially organised for nuclear power plants in European countries. Furthermore, as a member of NUMEX, NPP took an active part in the exchange of information in the field of maintenance.





TRAINING

Professional training was carried out to ensure that training programs were well prepared and executed, thus contributing to a high degree of personnel expertise, subsequently resulting in a higher level of safety and reliability of the power plant operation in line with its goals and policy.

These programs were largely prepared and executed in-house and partly in collaboration with external institutions, both national and foreign.

Annual plan and training needs as established and prepared together with heads of individual organisational units of the power plant, were the basis for preparation and execution of individual courses.

Professional training courses for operating personnel were prepared and carried out taking into account relevant legal regulations, internal procedures and the two-year plan.

We continued training according to the Initial operating personnel program for a licence and completed internal training of six new reactor operators with exams. All were successful at the exams and obtained the first reactor operator licence awarded by an expert examination commission, appointed by URSIV.

At the same time, initial training of 11 candidates was started, after having completed successfully the first training phase - Theoretical Basis - in April 2012, and then started the second phase - Systems and Plant Operation; this training stage entails, in addition to lectures, practical exercises on the simulator and hands-on training within the technological part of the plant. Eleven candidates successfully completed the first stage and in the second phase training they were joined by two candidates from ICJT. The total number of second phase training candidates - Systems and Plant Operation, was 13 candidates.

TRAINING OF OPERATING PERSONNEL





In November, the training of the next generation of 15 operators and newly employed graduate engineers was started in collaboration with the Training Centre for Nuclear Technology (ICJT).

On-going professional training of licensed personnel was conducted in accordance with the approved outline program and NPP internal procedures. The training was conducted through classes and simulator scenarios, during four weekly segments, attended by all operations crews and other licensed personnel.

In the final annual session, 27 candidates successfully passed tests for licence renewal, of which ten were for reactor operator, twelve for senior reactor operator, and five for shift engineer. Two candidates successfully passed the exams for the first award of senior reactor operator.

The on-going professional training for equipment operators was conducted in parallel with the training for licensed personnel, in four weekly training sessions. The program focused on hands-on training by using system operation procedures in the technological building or in the classroom which was actively linked with the full-scope simulator. Other training was rendered aimed at refreshing and upgrading existing knowledge and skills which equipment operators need in their day-to-day work.

Two groups of operating personnel attended four-day practical training, which included fuel-handling equipment which was aimed at preparing all participants for safe and firstclass performance of this important refuelling activity.

Prior to refuelling, as the practice was in the past years, training was conducted for staff connected with refuelling activities; the training was attended by individuals from different departments. Training of staff for nuclear fuel reception activities was completed in 2011, prior to the arrival of fuel in NPP.

Operating personnel underwent training on the full-scope simulator prior to major activities in the facility. All major modifications which affect the operation and response of the plant were simulated on the simulator.

TRAINING FOR PERSONNEL IN MAINTENANCE AND OTHER SUPPORT FUNCTIONS

The professional training of technical personnel included courses whose aim was for candidates to acquire or refresh the legally required general and specialist skills needed for performing maintenance and supporting functions.

Within the framework of initial training for technical personnel, a course in the fundamentals of nuclear power plant technology (OT|E) was carried out. In line with regular practice, the course was conducted in collaboration with the Training Centre for Nuclear Technology (ICJT). The OTJE courses are conducted in two parts - in the first part theoretical fundamentals are covered, while the second part focuses on systems and operations of the power plant. A total of four NPP staff attended this training in 2012.

Training of maintenance personnel continued in 2012 with programs of specialist and legally required training, which were prepared on the basis of matrices of required qualifications. Some courses were conducted in the Maintenance Personnel Training Centre in NPP and in NPP technological units, and partly in cooperation with external institutions. The training was conducted, as the practice has become, by engaging, at the training preparation and execution stage, in addition to our own training staff, mentors of practical training from individual Maintenance departments. Due to having introduced a new business system eBS and due to changes in preparing work orders, 264 technicians and work leaders of NPP attended a two-day training course for work leaders and coordinators.

Under an on-going training of maintenance personnel in two segments, we supported a training program on the subject of general and legally required areas. The maintenance personnel were updated on the new aspects of plant processes and operational experience. Part of the training was dedicated to specialist subjects.

OTHER LEGALLY PRESCRIBED AND GENERAL TRAINING

We continued with the implementation of established programs of initial and refresher courses related to legally prescribed skills, such as health and safety at work, fire protection, hazardous substances, protection and rescue plan (NZIR), etc.

Initial and refresher training in radiation protection was continued according to legal requirements.

simulator.

An extensive general program of courses was conducted for external contractors; the general employee training program, the program related to radiation protection (Radiation Protection 2, Radiation Protection 3), and training for work group leaders.



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Furthermore an extensive NZIR drill was conducted, supported by the full-scope

In addition, other courses were carried out for other departments within the power plant, intended to update the staff on new legislation, and innovations in the area of production processes; we also continued with general courses in the areas of computer literacy and foreign languages.



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SUMMARY OF THE 2012 FINANCIAL STATEMENTS

In accordance with the Companies Act (ZGD-1) and the Articles of Association of NPP, a summary of the NPP Report for 2012 is given below. The summary includes the main characteristics of business operations in 2012 and consolidated fundamental financial statements. The full versions of fundamental financial statements are presented in the NPP Annual Report for 2012 prepared in accordance with the Agreement concluded between the Government of the Republic of Slovenia and the Government of the Republic of Croatia on regulating the status and other legal issues related to investments in the Krško Nuclear Power Plant, its utilisation and decommissioning (Intergovernmental Agreement), the Articles of Association of NPP, the Companies Act (ZGD-I) and Slovenian Accounting Standards (SAS).

The Annual Report of NPP for 2012 was submitted to the organisation authorised to process and publish the data the first working day after it had been accepted at NPP's General Meeting, and is published on its website. In 2012 during a fierce economic situation, NPP performed successfully. The outage was longer than planned and additionally, we had an unplanned shutdown. In spite of this the supply of electricity was only 67 GWh less than planned. We supplied 5,243 GWh of electricity.

The 5,243 GWh revenue amounted to a total of \notin 190,035 thousand. The majority of this revenue was generated from electricity supplied to the partners, while the remaining amount of the operating revenue was other business and financial revenue.

Due to the nature of production, our stocks demonstrate neither unfinished production nor semi-products nor finished products; therefore, our costs are our expenses. In 2012 our expenses amounted to a total of \in 190,035 thousand.

The structure of expenses is illustrated in the graph below.

SUMMARY OF THE 2012 FINANCIAL STATEMENTS





The largest portions in the structure of expenses are represented by the cost of depreciation, the cost of material and services, the cost of labour and the cost of nuclear fuel, amounting to a total of 92 percent of all expenses.

Major investments were made in technological upgrading, while some expenses represent minor investments. The long-term debt was reduced in accordance with the plan. A loan taken for plant modernisation was fully paid off in 2012 as well as four instalments were paid of a long-term loan taken for the replacement of the reactor head and work concerning pressurizer welding.

The average stock value was somewhat lower than planned, especially due to the purchase of spare parts for the outage in 2013.

The financial position of NPP is satisfactory. Long-term resources cover all long-term assets and also the majority of inventories. Business results are demonstrated in the consolidated fundamental financial statements. These should be interpreted together with notes detailed in the NPP Annual Report 2012 which is published on AJPES (Agency of the Republic of Slovenia for Public Legal Records and Related Services) website (www. ajpes.si).

AUDITOR'S REPORT **ON FINANCIAL STATEMENTS** TO BE PUBLISHED FOR PUBLIC USE

KPING

Auditor's Report for Public Reporting Purposes

We have audited the financial statements of the company Nuklearna elektrarna Krško d.o.o. and the related notes for the financial year ended 31 December 2012, in accordance with International Standards on Auditing, on which the summaries of financial statements are based. In our report dated 18 March 2013, we have issued the opinion that the financial statements and the related notes on which the summaries of financial statements are based, give a true and fair view of the financial position of the Company as of 31 December 2012, the results of its operations, its cash flows for the year then ended in conformity with the International Contract entered into between the Republic of Croatia and the Republic of Slovenia, and in conformity with Slovenian Accounting Standards issued by Slovenian Institute of Auditors.

In our opinion, the attached summaries of the financial statements comply, in all material aspects, with the financial statements from which they originate.

For a better understanding of the financial situation of the Company as of 31 December 2012, the results of its operations, its cash flows for the year then ended, and the scope of our audit, it is necessary to read the summaries of the financial statements together with the financial statements from which they originate and with our Auditor's Report on these financial statements

KPMG SLOVENIJA. podjetje za revidiranje, d.o.o.

Jeog- Jeshini,

Marjan Mahnič, Partner

Tomaž Mahnič, ACCA

Ljubljana, 18 March 2013

Certified Auditor

KPMG Slovenija, d.o.o.

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SUMMARY OF THE 2012 FINANCIAL STATEMENTS

BALANCE SHEET AS AT 31 DECEMBER 2012

INCOME STATEMENT FOR THE YEAR ENDED 31 DECEMBER 2012

	BALANCE SHEET ASSETS	in the 31/12/2012 3	ousand EUR 31/12/2011	INCOME STATEMENT	in tho 2012	usand EUR 2011	
2	A. LONG-TERM ASSETS	399 314	402 286	I. OPERATING REVENUE	189 644	199 634	
	TANGIBLE FIXED ASSETS	398 663	401 540	II. OPERATING EXPENSES	189 394	198 827	
	INVESTMENT PROPERTY	510	556	III. OPERATING PROFIT OR LOSS FROM OPERATIONS (I – II)	250	807	
	LONG-TERM FINANCIAL INVESTMENTS	4	190	IV. FINANCIAL REVENUE	391	357	
	LONG-TERM OPERATING RECEIVABLES	-	-	V. FINANCIAL EXPENSES	641	64	
	B. CURRENT ASSETS	105 098	110 199	VI. OPERATING PROFIT OR LOSS FROM FINANCING (IV – V)	(250)	(807)	
	INVENTORIES	70 169	79 390	VII. OPERATING PROFIT OR LOSS FOR THE PERIOD (III + VI)	0	0	
	SHORT-TERM FINANCIAL INVESTMENTS	16 688	87		0	0	
	SHORT-TERM OPERATING RECEIVABLES	18 226	29 610	IX NET OPERATING PROFIT OR LOSS FOR THE PERIOD (VII – VIII)	0	0	
	CASH	15	12		Ŭ	•	
	C. SHORT-TERM DEFERRED EXPENSES AND ACCRUED REVENUE	252	165				
	TOTAL ASSETS	504 664	512 650	CASH FLOW STATEMENT			
	OFF-BALANCE SHEET ASSETS	12 383	12 026				
		in the	ousand EUR	31 DECEMBER 2012			
	BALANCE SHEET	31/12/2012 3	1/12/2011		in the	ousand EUR	
	EQUITY AND LIABILITIES			CASH FLOW STATEMENT	2012	2011	
	A. EQUITY	439 515	439 515	I. CASH FLOWS FROM OPERATING ACTIVITIES			
	CALLED-UP CAPITAL	353 545	353 545	I. CASH RECEIPTS FROM OPERATING ACTIVITIES	210818	217 920	
	REVENUE RESERVES	88 675	88 675	2. CASH DISBURSEMENTS FROM OPERATING ACTIVITIES	121 422	152 139	
	RETAINED EARNINGS	(2 705)	(2 705)	3. NET CASH FROM OPERATING ACTIVITIES (1 – 2)	89 396	65 781	
	NET PROFIT OR LOSS FOR THE FINANCIAL YEAR	-	_	II. CASH FLOWS FROM INVESTING ACTIVITIES			
	B. PROVISIONS AND LONG-TERM ACCRUED COSTS AND DEFERRED REV	'ENUE 6605	6211	1. CASH RECEIPTS FROM INVESTING ACTIVITIES	227	10 259	
	PROVISIONS FOR JUBILEE BENEFITS AND TERMINATION BENEFITS	5 924	5 467	2. CASH DISBURSEMENTS FROM INVESTING ACTIVITIES	77 458	60 674	
	OTHER PROVISIONS	681	744	3. NET CASH FROM INVESTING ACTIVITIES (1 – 2)	(77 231)	(50 415)	
	C. LONG-TERM LIABILITIES	14 897	10 224	III. CASH FLOW FROM FINANCING ACTIVITIES	()	()	
AL RT 012	LONG-TERM FINANCIAL LIABILITIES TO BANKS	14 640	9 960	L CASH RECEIPTS FROM FINANCING ACTIVITIES	120 910	90 680	ARY 012 012 UTS NTS
	LONG-TERM OPERATING LIABILITIES	257	264	2 CASH DISBI IRSEMENTS FROM FINANCIAL ACTIVITIES	133 072	106 044	AMA ANO SMER
AN RE	Č. SHORT-TERM LIABILITIES	43 497	56 524		(12,142)	(15.244)	
	SHORT-TERM FINANCIAL LIABILITIES TO BANKS	5 320	21 643	5. THE CASE THAT THAT AND A COMPANY $(1 - 2)$		(10.01)	ST P
	SHORT-TERM OPERATING LIABILITIES	38 177	34 881		כ ו د	12	
	D. SHORT-TERM ACCRUED COSTS AND DEFERRED REVENUE	150	176	V. INET CASH INFLOVV OR OUTFLOVV FOR THE PERIOD	3	Z	
	E. TOTAL EQUITY AND LIABILITIES	504 664	512 650		12	10	
				VI. OTENING DALANCE OF CASIT	14	10	





STATEMENT OF CHANGES IN EQUITY FOR THE YEARS 2012 AND 2011

in thousand EUR

ব								NET PROFIT OR LOSS	
	EQUITY COMPONENTS	CALLED-UP CAPITAL	PR0 RESE	OFIT ERVES		RETAINED PROFIT/L	ONET LOSS	FOR THE FINANCIAL YEAR	TO EQU
		CALLED-UP CAPITAL	LEGAL RESERVES	STATUTORY RESERVES	RET NET	ained Profit	RETAINED NET LOSS	NET PROFIT	
	OPENING BALANCE - 1/1/2012	353 545	35 354	53 321		_	(2 705)	_	439 5
	CHANGES IN EQUITY CAPITAL	_	_	_		_	_	_	
	TRANSFER OF NET FINANCIAL RESULT OF FINANCIAL YEAR	_	_	-		_	_	-	
	CHANGES WITHIN EQUITY CAPITAL	_	_	_		_	_	_	
	ALLOCATION OF NET INCOME AS EQUITY CAPITAL ELEMENTS AS PER DECISIONS OF MANAGEMENT AND SUPERVISORY BOARDS	_	_	_		-	_	-	
	CLOSING BALANCE - 31/12/2011	353 545	35 354	53 321		_	(2 705)	-	439 5
	OPENING BALANCE - 1/1/2011	353 545	35 354	53 321		_	(2 705)	_	439 5
	CHANGES IN EQUITY CAPITAL	_	_	_		_	_	_	
	TRANSFER OF NET FINANCIAL RESULT OF FINANCIAL YEAR	_	_	_		_	_	-	
	CHANGES WITHIN EQUITY CAPITAL	_	_	_		_	_	_	
	ALLOCATION OF NET INCOME AS EQUITY CAPITAL ELEMENTS AS PER DECISIONS OF MANAGEMENT AND SUPERVISORY BOARDS	-	_	-		-	_	_	
	CLOSING BALANCE - 31/12/2011	353 545	35 354	53 321		_	(2 705)	_	439 5
_									









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COMPANY ORGANISATION

In accordance with the intergovernmental agreement concluded between the Government of the Republic of Slovenia and the Government of the Republic of Croatia on regulating the status and other legal issues related to investments in the Krško Nuclear Power Plant, its utilisation and decommissioning, and the Articles of Association, both having entered into force on 11th March 2003, NPP is organised as a limited liability company. The bodies of the company, having parity membership, are the General Assembly, the Supervisory Board and the Management Board.

The equity capital of NPP is divided into two equal business shares owned by the members GEN energija, d. o. o., Krško and Hrvatska elektroprivreda d. d., Zagreb. NPP generates for and supplies electricity exclusively to the members; it is their right and obligation to take 50 percent of the total available capacity and net electric power.

The internal power of the organisation is its employees with expert knowledge, enthusiasm, values, attitudes and behaviour. In NPP we build an organisational culture with clear values, responsibilities and compliance with requirements of high standards. These can be met only by employees that are connected by safety culture values and business ethics, by knowledge, enthusiasm and responsibility that ensure quality implementation of works and decisively contribute to safe and stable plant operation.



INTERNAL ORGANISATIONAL **POWER IS COMPETENT** STAFF

ORGANISATION CHART

In 2012, we provided stable and sufficient staff occupancy. Generational change process continued: mainly due to retirement, 31 workers left the plant while we employed 23 new workers. Annual exit fluctuation was 5 percent higher than in the previous year, which was expected due to forecast retirement changes. By timely employment of new workers, including in the past years, we successfully replaced those that retired. Employees were given systematic education and training and efficient transfer of knowledge and experience.

The educational level is high. More than half have a university level education, while the share of those with occupational education or less is gradually falling (5.6%). There are 7 individuals with a doctor's degree and 13 with a masters of science degree.

The company is maintaining 14 percent of female staff. Female staff, working in various areas in NPP, equally and successfully realise their expert knowledge and capabilities through their professional work.

The long-term provision of human resources of specific technical occupations in deficit is partly eased by granting scholarships, the practice in recent years. In 2012, we granted additional eight scholarships to students of the Bologna second degree studies in technical studies in deficit. At the end of the year we had 24 scholarship recipients.

Through appropriate organisational and staff structure we follow modern organisational standards. High operating and strategic goals demand professionalism and dedication of all staff. We therefore give our staff a stimulative environment for their personal and professional development.





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10 ACRONYMS

	British Standard – International Occupational Health
CDF	Core Damage Frequency
CHUG	Checworks Users Group
C7	Chilled Water System
ČD	Čisti dobiček /Net profit/
FLES	Flektro – Slovenija
FPRI	Electrical Power Research Institute
IAFA	International Atomic Energy Agency
ICIT	Izobraževalni center za jedrsko tehnologijo /Training
IIS	Institut ložef Stefan /ložef Stefan Institute/
INPO	Institute for Nuclear Power Operations
I&C	Instrumentation and Control
ISO	International Organisation for Standardization
IVP	Izredni varnostni pregled / Special Safety Review/
MAAP	Modular Accident Analysis Program User Group
NDE	Non-Destructive Examination
NEK	Nuklearna elektrarna Krško / Krško Nuclear Power Pl
NMAC	Nuclear Maintenance Application Centre
NRC	Nuclear Regulatory Commission
NUMEX	Nuclear Maintenance Experience Exchange
NUPIC	Nuclear Procurement Issues Committee
NZIR	Načrt zaščite in reševanja / Protection and Rescue Pla
OSART	Operational Safety and Review Team
OTJE	Osnove tehnologije jedrskih elektrarn / Fundamenta
OVD	Okoljevarstveno dovoljenje / Environmental permit/
PIS	Procesno informacijski sistem /Process Information S
PMF	Probable Maximum Flood
PNV	Program nadgradnje varnosti / Safety Upgrade Progra
PSE	Plant Support Engineering
PSR	Periodic Safety Review
PT	Pressure Test
PWROG	Pressurized Water Reactor Owners Group
RTP	Razdelilna transformatorska postaja / Distribution tra
SBO	Station Blackout
SRS	Slovenski računovodski standardi/Slovenian accounti
SSC	Systems, Structures and Components
SSR	Special Safety Review
SW	Service Water
URSJV	Uprava Republike Slovenije za jedrsko varnost / Slov
USAR	Updated Safety Analysis Report
WANO	World Association of Nuclear Operators
ZGD	Zakon o gospodarskih družbah / Companies Act/
ZVISJV	Zakon o varstvu pred ionizirajočimi sevanji in jedrsk
	/Ionising Radiation Protection and Nuclear Safety Act/

A DCC



Slovenije za okolje /*Slovenian Environment* Agency/ International Occupational Health and Safety Management Standard

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