

2003
REPORT

NUCLEAR REGULATORY
AGENCY





For the Nuclear Regulatory Agency, 2003 has been a year of heavy workload and international recognition. During the year, long-term operating licenses were granted to Kozloduy NPP units 3 and 4, respectively for 8 and 10 years, and six-year operating licences for units 5 and 6. More than 1200 licences and permits were issued for facilities and activities with sources of ionising radiation. During the same period, more than 650 inspections at nuclear facilities and facilities with sources of ionising radiation have been performed.

The establishment of a comprehensive and unified legislative framework in the area of nuclear energy utilisation remained as a high priority for the Agency. The main part includes the development of the secondary legislation for enforcement of the Act on the Safe Use of Nuclear Energy and putting it into full compliance with the legislation of the European Union.

In fulfilment of its mission „to protect the individuals, society, future generations and the environment from the harmful effects of ionising radiation“, the Agency allocated all necessary resources and time to prevent and mitigate the consequences of emergencies with orphan sources and for monitoring of the implementation of the Programme for Liquidation of the Consequences from the Uranium Mining and Milling.

During the year, the Nuclear Regulatory Agency received international recognition as an independent and competent regulatory authority and in March was accepted as a member of the West European Nuclear Regulators Association (WENRA). One of the most important WENRA activities, in which Bulgaria actively participated, is the development of standards (reference levels) in the areas of nuclear safety and safe management of radioactive waste.

NRA international recognition was confirmed by an IAEA Full-scope International Regulatory Review Team Mission to Bulgaria. The international experts stated: **„Bulgaria has now established an effective regulatory framework. The features of this framework provide the elements for independence which strongly minimise the potential for political interference“**. The team also noted that **„the NRA is provided with experienced and competent personnel who are motivated to work to high standards“**.

In November, after a Peer Review, the Atomic Questions Group of the European Commission confirmed the received by the NRA international recognition by making the conclusion that **„throughout 2001 and 2002, the recommendations to the NRA have been adequately addressed and there is no need for further monitoring by the Commission“**.

During the year the intensive exchange of information and knowledge with the International Atomic Energy Agency continued, the OECD Nuclear Energy Agency, the Nuclear Regulators Group to the European Commission (CONCERT), the Forum of WWER Regulators, and other regulatory authorities from Europe and around the world.

The Agency report is freely disseminated in printed or electronic form and is published at the NRA web page - www.bnsa.bas.bg.

Prof. Dr. Sc. Emil Vapirev



YEAR OF INTERNATIONAL RECOGNITION



26 February

The Nuclear Regulatory Agency issued a 10-year operating license to Kozloduy NPP unit 4



13 March

The Nuclear Regulatory Agency was accepted as a member of the West European Nuclear Regulators Association



7 April

A Training Centre opened doors for staff training and for conferences, seminars and technical meetings



23 May

The Nuclear Regulatory Agency issued an 8-year operating license to Kozloduy NPP unit 3



16 - 27 June

An IAEA Full-scope International Regulatory Review Team mission conducted a detailed review of the regulatory activities in the field of nuclear safety and radiation protection



17 September

The Council of Ministers adopted a Rate Schedule for the Fees Collected by the NRA according to the Nuclear Act and a Regulation for the Fees Payment Procedure



1 October

An agreement was signed for the NRA to join the OECD Halden Reactor Project



10 October

The Nuclear Regulatory Agency handed to the Kozloduy NPP management six years operating licenses for units 5 and 6



18 go 21 October

Invited by the NRA, Mr. Kenneth Brokman head of the IAEA Nuclear Installations Safety Department, visited Bulgaria



28 - 30 October

Invited by the NRA, Ms. Judith Melin Director General of SKI - the Swedish Nuclear Power Inspectorate and WENRA Chairperson, visited Bulgaria



3 - 14 November

Bulgaria presented the First National Report on the Joint Convention on Safety in management of spent fuel and safety in management of radioactive waste



16 - 19 November

The Atomic Questions Group of the European Commission conducted a Peer Review at the NRA and the Kozloduy NPP

TRADITIONS IN NUCLEAR REGULATION



With the ratification of the Statute of International Atomic Energy Agency in 1957, the Republic of Bulgaria became one of the founding states of the organisation. This required the creation of a specialised state body which to co-ordinate the use of nuclear energy. As a result, on 4 June 1957, a Committee for Peaceful Use of Atomic Energy was established to the Council of Ministers.

In 1975, the Committee responsibilities were extended by additionally assigned functions for co-ordination and control over the implementation of the tasks on the use of nuclear energy, fulfilment of the safety requirements by the NPPs, and the functioning of internal and were external systems for dose monitoring. In 1980 the functions extended over the control of nuclear facilities operation and the use of nuclear material.

In 1985, with the entering into force of the Act on the Use of Atomic Energy for Peaceful Purposes, a new Committee on the Use of Atomic Energy for Peaceful Purposes was established to the Council of Ministers with a specialised body – the Inspectorate on Safe Use of Atomic Energy. The Committee included managers of authorities and organisations related to the use of nuclear energy.

In 1995 the Act on the Use of Atomic Energy for Peaceful Purposes was amended and supplemented with the regulation of the use of sources of ionising radiation (SIR). Safe Storage of Radioactive Waste Fund and Decommissioning of Nuclear Facilities Fund were established for securing financing of the activities on safe management of radioactive waste (RAW) and the safe decommissioning of nuclear facilities. Advisory Council on Nuclear Safety and Advisory Council on Radiation Protection were established to the Committee. The national legislation is brought in conformity with the Vienna Convention on Civil Liability for Nuclear Damage.



In July 2002, a new Act on the Safe Use of Nuclear Energy (Nuclear Act) entered into force. In fulfilment of the Act, the Committee on the Use of Atomic Energy for Peaceful Purposes was transformed into Nuclear Regulatory Agency (NRA). The Act guarantees the independence of the regulatory authority in taking decisions concerning the safety of nuclear facilities and sources of ionising radiation. Agency's human and financial resources have been enhanced, as well as experts' motivation.



NATIONAL REGULATOR...

The state regulation of the safe use of nuclear energy and ionising radiation, the safety of radioactive waste management and the safe management of spent nuclear fuel is implemented by the Chairman of the Nuclear Regulatory Agency (NRA). The Chairman is an independent specialised authority of the executive power and is vested with competencies, as specified by the Nuclear Act.

The regulatory functions performed by the NRA at the service of the society, define the mission of the organisation, namely:

To protect the individuals, society, future generations and the environment from the harmful effects of ionising radiation



For the fulfilment of its mission, the NRA is guided by the internationally accepted nuclear safety and radiation protection principles and strives to continuously improve its efficiency and effectiveness through learning from the internationally recognised good regulatory practices.

Because of the increased public interest in Agency activities and the respective controlled activities and facilities, the NRA is continuously in contact with the Parliament, the Government, all authorities concerned, the public, the media and a lot of international organisations.

With the joint efforts of the Parliament, the Government and mostly of the NRA management and employees, within the last few years the NRA has strengthened its position as an independent and competent authority, provided with the necessary resources.

Within the working process, NRA maintains a dialogue with all individuals and organisations concerned, while actively discussing with them raised issues and the basis for the regulatory decisions made and actions taken.



In fulfilment of its functions, the Agency is in close co-operation with all governmental authorities having competence in the use of nuclear energy and ionising radiation, and the safe management of radioactive waste and spent fuel.

...WITH RECOGNISED PRESTIGE AND INDEPENDENCE

Milestone: The Nuclear Regulatory Agency accessed the EU structures in advance



In March 2003, the Nuclear Regulatory Agency was accepted as a full member of the West European Nuclear Regulators Association. The NRA membership in the organisation is evidence that the Bulgarian nuclear safety and radiation protection regulatory authority has met the high WENRA criteria for independence and competence. It is also an acknowledgement that the Agency can actively participate and significantly contribute to the process of establishing a common approach for ensuring nuclear safety in the Old Continent.

Milestone: NRA has fulfilled all recommendations made by the European Commission

In November 2003, the Atomic Questions Group (AQG) of the European Commission carried out a Peer Review on the implementation of the recommendations made towards Bulgaria in the accession process. The implementation status of the recommendations made in the Council Report on Nuclear Safety in the Context of Enlargement (doc. 9181/01) of June 2001 was reviewed, taking into account the AQG 2002 Report, which highlights the issues for further monitoring.

In the opinion of the mission team, throughout the whole of 2001 and 2002 the AQG recommendations have been adequately addressed and there is no need for further attention or monitoring of any recommendation made by the AQG.



The team leader of the international experts Mr. Antonio Madonna explicitly stated that all recommendations made by former missions and related to the organisation, independence, and resources of the regulatory authority are fulfilled and do not require further monitoring.

It is expected that the final report from the Peer Review will be submitted to the Bulgarian Government in March 2004.



Milestone: An international team of 12 IAEA experts recognised the NRA as an independent and competent regulatory authority

At the request of the Bulgarian Authorities, within the framework of the IAEA project for strengthening the Bulgarian nuclear safety authority, in June 2003 the IAEA conducted a Full-Scope International Regulatory Review Team (IRRRT) mission to the Republic of Bulgaria in the area of nuclear safety and radiation protection.



For two weeks, a team of twelve international experts from Europe, America and Asia conducted a review of the legislative framework in the country and made an assessment and evaluation of the practices and the effectiveness of the Bulgarian regulatory authority in all areas of regulatory concern, such as nuclear safety, radiation protection, emergency planning and preparedness, safe management of RAW and SNF, transport of radioactive material, etc.

The international experts' team carried out meetings and interviews with most of the NRA employees and also with representatives of the specialised control bodies and selected licensees.

The IAEA performed similar missions to Bulgaria in 1993 and 1997. Those missions have found out serious deficiencies in the country concerning the nuclear legislation, as well as the independence and the resources of the regulatory body.



The international experts noted the tremendous progress made the NRA after the mission in 1997, and stated: „The Republic of Bulgaria has made substantial progress in developing its nuclear regulatory system. These developments include the introduction of a new Act on the Safe Use of Nuclear Energy, which amongst other things established the Nuclear Regulatory Agency. In the

opinion of the team the new Atomic Act together with the complementary statutory framework, incorporates all the legal prerequisites to provide for an independent sustainable Bulgarian nuclear regulatory system. ... The features of this framework provide the elements for independence, which strongly minimise the potential for political interference“.

The experts also noted that „the NRA is provided with experienced and competent personnel who are motivated to work to high standards“.

The experts found out a lot of good practices in the NRA activities, which could be used by the regulatory authorities in other countries and gave recommendations and suggestions for further strengthening of the organisation.

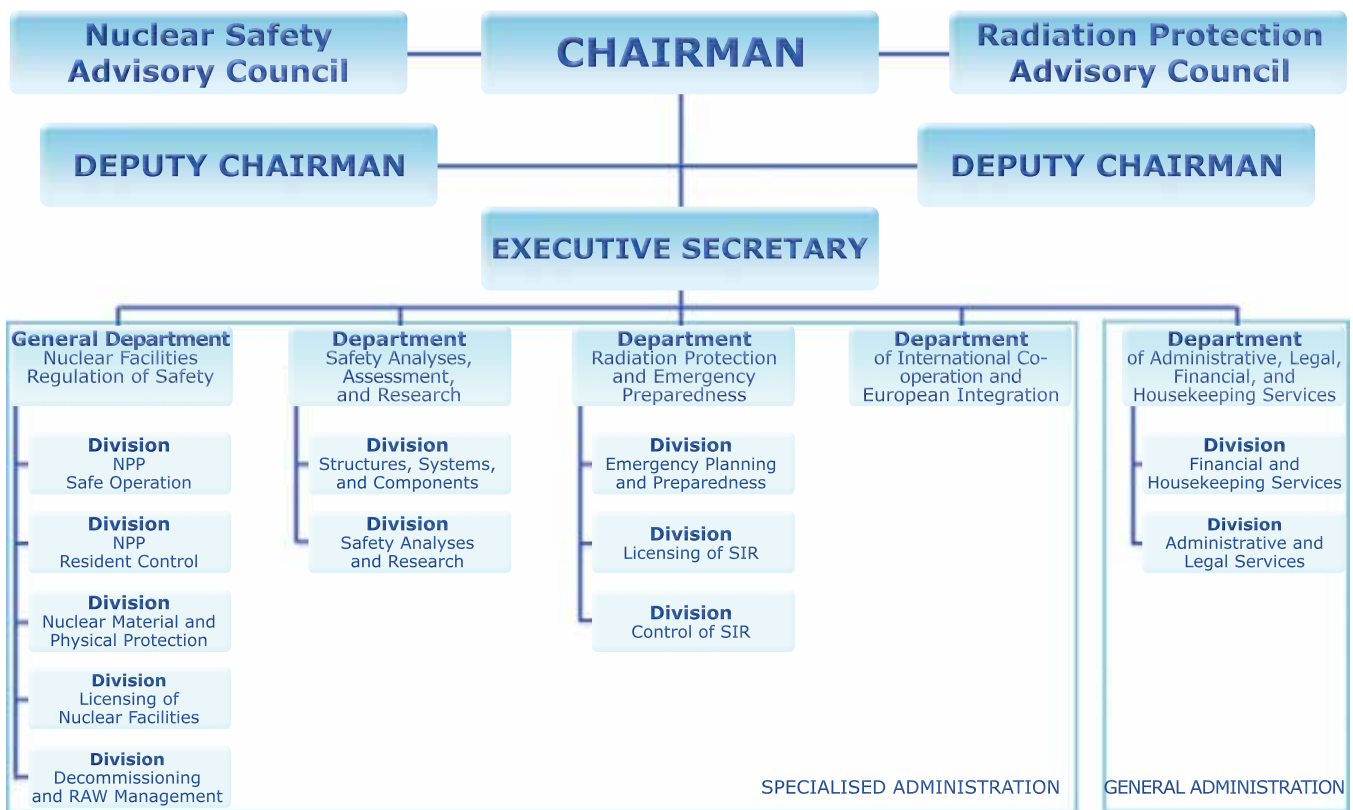


STRUCTURE, COVERING ALL AREAS OF REGULATORY CONCERN

The NRA Rules of Procedure, adopted by the Council of Ministers, specifies a total of 102 permanent positions within the organisation, which are separated into general and specialised administration. The document also defines the functions of the Agency administrative units.

The NRA structure is in conformity with the Law on the Administration, which includes unified requirements towards the frame and structure of the governmental administrations. The structure covers all regulatory activities in accordance with the responsibilities vested with the NRA Chairman by the national legislation.

The general administration provides the necessary administrative and technical support to the specialised administration, and ensures the administrative services provided to the public and the licensees.



The specialised administration is organised in four departments implementing the specific functions and tasks of the authority, such as:

- Development and establishment of nuclear safety and radiation protection regulatory requirements;
- Licensing of nuclear facilities and activities and facilities with sources of ionising radiation;
- Control over the observance of regulatory requirements and license or permit conditions;
- Review and assessment of safety documentation;
- Investigation and analyses of events and review and analyses of operational data and indicators;
- Carrying out research, analyses and technical expertise related to assessment of nuclear safety and radiation protection;
- Management and co-ordination of the international co-operation of the Republic of Bulgaria in the area of safe utilisation of nuclear energy.



HIGHLY QUALIFIED AND EXPERIENCED PERSONNEL

Milestone: Over 95% of NRA experts have university education, masters degree

The large responsibilities of NRA employees before the public determine the higher requirements towards their qualification and experience. Those requirements are clearly and precisely specified in the job description for each position.



Almost all of the NRA employees have university education, masters degree, and professional experience in the field of design, construction, and operation of nuclear facilities or facilities with sources. They are dedicated and highly motivated in their work and stick rigidly to the professional and humane principles and values, which helps them to achieve high quality results.

The NRA management ensures continuous improvement and continual maintaining of personnel professional qualification and competence.

In fulfilment of its regulatory function, the NRA applies unified and successive approach described and approved in a Quality Management System.



At the end of 2003, seven of the total 102 work positions were not occupied due to the established very high employment criteria. The process for selection of personnel continues.



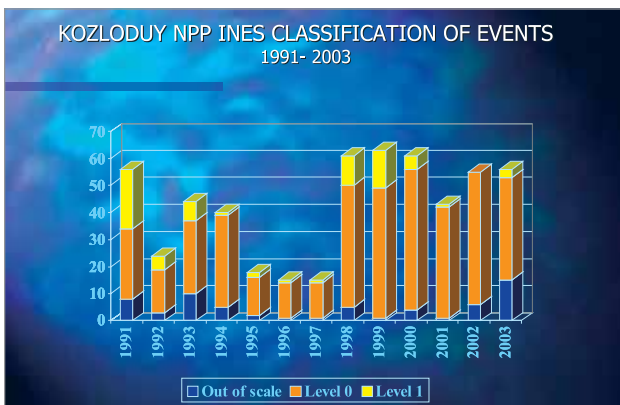
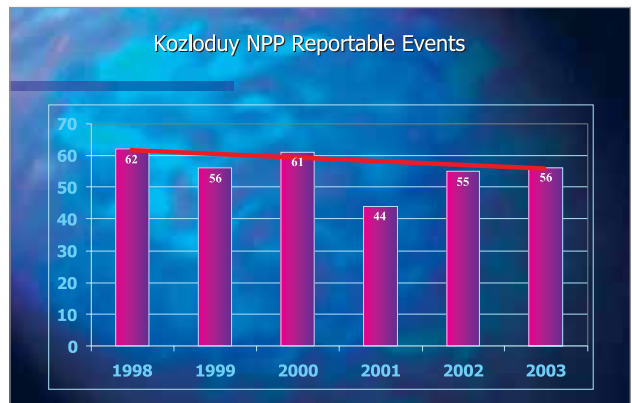
SAFETY – PRIORITY IN THE USE OF NUCLEAR ENERGY



Kozloduy Nuclear Power Plant

Milestone: There has been no event leading to radioactive contamination on-site or off-site, or to overexposure of individuals in 2003 at the Kozloduy NPP

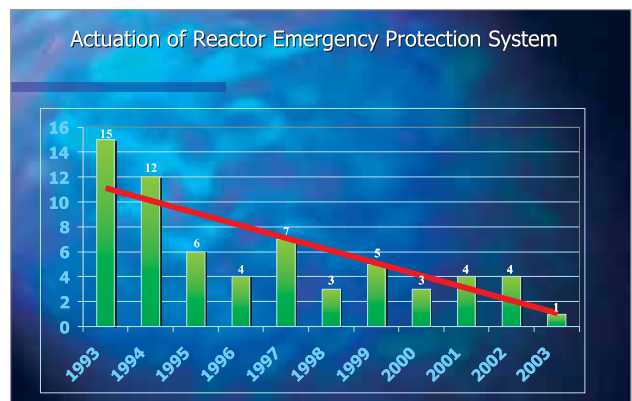
The Kozloduy NPP notifies timely the NRA for each operating event and submits an event report describing the event sequence, direct and root causes identified, the corrective measures planned, the lessons learned, etc. NRA experts review and assess all documents and give recommendations and monitor the timeliness and the quality of the implementation of corrective actions and the fulfilment of the recommendations made.



The NRA has developed and maintains a database of all reported events and deviations. The strengthened NRA requirements to the licensees systems for feedback from the operating experience resulted in reporting by the Kozloduy NPP and analyses of a significant number of „near misses“ and analyses of increased number of

events from foreign NPPs. In this way, the preventive role of the experience feedback system has been strengthened leading to reduction in the overall number of reportable events.

A trend can be seen for reduction in reactor scram actuation at the Kozloduy NPP. The values of that indicator for units 5 and 6 are among the best in the world.



SAFETY REVIEW AND ASSESSMENT LICENSING PROCESS

The NRA performs review and assessment of the submitted justifications and documentation by the applicants and assesses their compliance with the national legislative requirements and the internationally accepted standards of the IAEA.

UNITS 1 and 2

Milestone: The NRA authorised storage of the spent nuclear fuel from units 1 and 2 at the spent fuel pools near the reactors after fuel removal from the core



At the end of 2002 in fulfilment of a Decision of the Council of Ministers of the Republic of Bulgaria, units 1 and 2 of the Kozloduy NPP were shut down and disconnected from the electrical grid of the country. At the time of their shutdown, the reactors have been in their 23 and 24 fuel cycles respectively, while the proven design lifetime is 30 fuel cycles as a minimum.



After a review and assessment of a submitted by the Kozloduy NPP application and the respective safety documentation, in January for unit 2 and in February for unit 1, NRA authorised the operation of the two units in a special operating state. In that state the fuel shall be taken out of the reactor core and placed in the spent fuel pools near the reactors. That is the most appropriate option for maintaining the units in a safe state for a relatively long period. That operational state excludes the possibility of occurrence of reactivity initiated accidents. The performed safety analyses justify that there are no critical accidents for which the necessary mitigation actions could not be undertaken.



At the end of the year, the Kozloduy NPP submitted to the NRA an application, accompanied with the necessary documentation, for a 5-year operating license of units 1 and 2 in operating state „E” as defined by the technical specifications.

The NRA carries out all the necessary activities to ensure effective control over the safety of units 1 and 2 in the decommissioning process. Special attention is paid to the maintaining of high level of safety culture of the personnel, including staff motivation and accepting nuclear safety as a priority objective.

UNITS 3 and 4

Milestone: The Kozloduy NPP proved to the NRA that units 3 and 4 meet all of the basic requirements of the Bulgarian legislation and the IAEA safety series and as a result received long-term operating licenses for 8 and 10 years respectively

A major challenge to the NRA at the end of 2002 and the beginning of 2003 was the issuance of the first long-term operating license for a nuclear unit in accordance with the requirements of the Nuclear Act. In the process of preparation and issuance of the first long-term license, the Agency conducted a detailed review and analyses of the experience and regulatory practices of leading countries operating nuclear facilities. All NRA technical support organisations have been actively involved in the process of review and assessment of the tremendous amount of the submitted safety documentation. The review was managed by the Bulgarian Academy of Sciences.



For receiving a long-term operating licence, first unit 4 was subjected to thorough and in-depth safety review and assessment. In addition to the submitted in June 2002 Safety Analyses Report and at NRA requests, the plant submitted supplementary justifications and evidences proving the fulfilment of different aspects from the regulatory requirements on nuclear safety and radiation protection. A huge amount of safety documents and programmes have been assessed, including the additionally requested safety justifications. The review and assessment results and the conclusions from the independent analyses performed demonstrated that unit 4 satisfies all safety requirements of the Bulgarian legislative documents. Even more, in

the licensing process the NRA experts demanded and the NPP experts and their consultants managed to convince NRA that the unit satisfies the fundamental international requirements and recommendations towards nuclear installations, specified in the IAEA safety series.

In accordance with the requirements of the Nuclear Act, in February 2003 the NRA issued to Kozloduy NPP unit 4 an operating license for the maximum allowed by the Act period of 10 years. The license sets general conditions for conformance with the nuclear safety and radiation protection principles, as well as specific conditions such as safety improvements and upgrades and future developments in the area of severe accident management.

In respect to the Kozloduy NPP unit 3, the NRA applied the same approach and procedure and in May 2003 issued an operating license. The license has a validity of 8 years, a period requested and justified by the applicant - Kozloduy NPP.



UNITS 5 and 6

Milestone: NRA issued 6-year operating licenses for units 5 and 6. The review and assessment of licensing documentation related to their reconstruction and modernisation continues



After complete and in-depth safety assessment and following the already adopted procedure on licensing of nuclear facilities, the NRA issued operating licenses to Kozloduy NPP units 5 and 6. The term of validity of these licenses is 6 years, which is in relation with the completion of the large-scale modernisation program of the units and the preparation of updated Safety

Analyses Reports. A safety reassessment of the units is necessary to be performed for the extension of the granted licenses, including the analyses and feedback from its own and the international operating experience and considering the achievements of science and technology in the corresponding areas.

To control the fulfilment of the conditions in all licenses granted, the NRA has developed and applies an unified and systematic approach comprising of a system of regulatory inspections, review and assessment of periodic safety reports, analyses of probabilistic and operational indicators, etc. According to the Nuclear Act, a license extension is possible only after review and assessment by the NRA of a large set of documents, called Periodic Safety Review. ■



SPENT FUEL STORAGE FACILITY

Important: Licensing documentation for operation of the SFSF with increased storage capacity of spent fuel has been submitted



The Spent Fuel Storage Facility (SFSF) has an operating permit, issued by the NRA in March 2001 and with a term of validity of 3 years. A license application and the corresponding documentation have been submitted to the NRA for issuing of a license for operation of the SFSF facility with increased capacity of spent nuclear fuel. An independent assessment of the Safety Analyses Report has been assigned to a NRA technical support organisation. ■



MODERNISATION

Milestone: After review and assessment of submitted safety documents, the NRA issued 123 permits for modifications

Licensees can implement any safety-related modification only on the basis of a permit issued by the NRA. Permit application shall include detailed safety justification of the modification, including the technical design for the implementation. The NRA should be fully convinced in the safety benefits and the licensee preparedness to conduct the modification, including the changes in the operational and technical documentation and the additional training of the personnel, when required.



Within the process of review and assessment of submitted safety documents, the NRA uses the services of its organisations for technical support in performing independent expert assessments in the fields of instrumentation and control, seismic stability of structures, systems and components, accident analyses, etc.

After review and assessment of the submitted safety documents for modifications at the six Kozloduy NPP units, the NRA issued altogether 123 permits.

MANAGEMENT OF RADIOACTIVE WASTE FROM KOZLODUY NPP

On the basis of a complete and in-depth safety assessment, the NRA issued to Kozloduy NPP a permit for commissioning of the RAW Treatment Facility (RAWTF) at a stage of trial operation. Two topical inspections were carried out at the RAWTF related to the commissioning process:



- Status of the line for treatment of liquid RAW and status of the storehouse for temporary storage of conditioned RAW;

- Organisation and conduct of the trial operation of the RAW management facility;



REGULATORY INSPECTIONS

Important: NRA inspectors have performed 7 complex and 6 topical inspections at the Kozloduy NPP units 1-6

By carrying out regulatory inspections, the NRA is exercising the state control over the fulfilment of the requirements on safe utilisation of nuclear energy.

The main objective of the regulatory complex inspections at the Kozloduy NPP is the verification of the plant preparedness to perform important stages of the operations. Such inspections mainly focus on the organisation for the task, planned safety improvement modifications of systems and equipment, implementation of additional nuclear safety and radiation protection measures, programmes and scope of the maintenance activities and metal control of equipment and pipelines located at the primary and secondary circuits, etc.

In 2003, a total of 7 complex inspections were carried out at units 1-6, 47 prescripts (improvement notices) have been issued and 1364 man-hours were spent, distributed among the units, as follows:



UNITS	DATES	Prescripts	Man-hours
UNITS I - II	12-15 February 2003	8	224
UNIT II	25-26 March 2003	5	72
UNIT III	11-14 August 2003	8	224
UNITS I - IV	26-28 May 2003	5	72
UNIT IV	19-22 June 2003	8	256
UNIT IV	15-17 April 2003	4	48
UNIT VI	26-30 November 2003	9	468
TOTAL		47	1364

In compliance with the NRA annual inspection plan and in response to operating events, the following topical and reactive inspections have been performed:

- Overall status of units 1-2 and storage conditions of the spent nuclear fuel in the spent fuel pools, near the reactor;
- Organisation, procedures and effectiveness of the operating experience feedback system at units 1-4;
- Organisation and management of maintenance activities at unit 4 and plant preparedness for implementation of selected measures from the modernisation programme;
- Plant preparedness for implementation of selected measures from the modernisation programme at unit 4, including installation of systems for detection of foreign objects and early leak detection and the replacement of the computerised control system;
- Organisation and management of maintenance activities at unit 6 and the corresponding control of contractors by the Kozloduy NPP;
- An operating event at unit 2 related to reduced cooling capabilities of the spent fuel pool.
- After abolishing the authorisation process for outside contractors, according the Nuclear Act, the NRA staff carries out inspections over the Kozloduy NPP system for control of the activities implemented by contracted external organisations and the quality of the implemented work.

RESEARCH REACTOR IRT-2000

Important: With the assistance of the USA and the IAEA, 17 kg of highly enriched fresh fuel was returned to Russia



By decision of the Council of Ministers of 17 May 1999, the operation of the research reactor IRT-2000 was finally terminated. On the basis of detailed technical and cost-benefit analyses and feasibility study for the needs for a research reactor, in July 2001, the Council of Ministers made a decision on reconstruction of the IRT-2000 into a low-power reactor - 200 kW. In fulfilment of the conditions specified in the design permit for a low power reactor, at the end of 2003 the INRNE-BAS submitted to the NRA a technical safety justification report as a part of the licensing documentation. The NRA experts are reviewing this report with the assistance of experts from the UK Department of Trade and Industry.

The NRA is performing routine control over the maintaining of the reactor systems and equipment in an operational state, the safe storage of SNF, maintaining of personnel qualification, etc. In 2003, NRA performed a complex inspection of the nuclear safety and radiation protection arrangements at the reactor, including the quality management programme.



As a result of the joint efforts of the US Department of Energy, the IAEA and the NRA, in December 2003, the highly enriched fresh fuel from the reactor (17 kg of highly enriched uranium) was returned back to the Russian Federation. The operation was financed by the USA as part of the international initiative for reducing the use of highly enriched uranium in the civil area.

Seventy-three spent fuel assemblies and two experimental ones are stored on-site at the reactor storage pool, waiting to be returned back to Russia.



RADIOACTIVE WASTE REPOSITORY – NOVI HAN

Important: Radioactive sources stored at the RAWR – Novi Han are well protected against illegal actions



Radioactive waste generated from the use of radioactive materials in medicine, industry, science, etc. are stored at the Radioactive Waste Repository (RAWR) near the village of Novi Han.

In 2003, the NRA experts continued their work on review and assessment of the documentation from the RAWR safety improvement programme, including the implementation of safety measures from the reconstruction of the facility and the adjacent infrastructure and the performance of safety analyses and evaluations. The NRA experts reviewed and assessed a significant amount of documentation and analyses and as a result issued permits for temporary storage on-site of solid RAW and for construction of a decontamination centre for large vehicles and cargo.

In respect to the forthcoming RAWR licensing, an evaluation report of the experience gained, in facility operation, was submitted to the NRA. On the basis of the more accurate definition by the NRA of the structure and contents of the Safety Analyses Report, is expected an updated version of the report to be submitted to NRA in 2004.

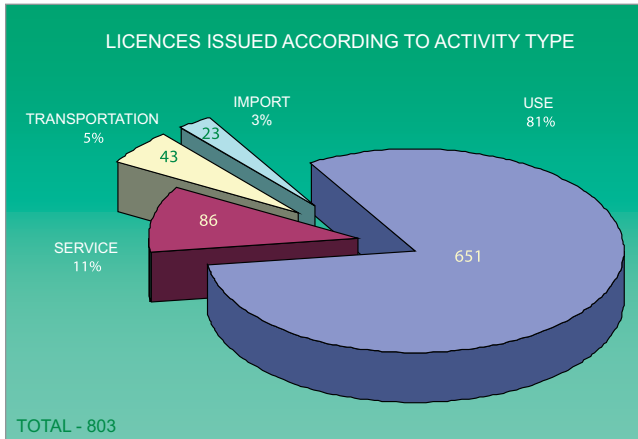


In response to the growing international concern on the possible use of dangerous sources by the international terrorism, the NRA continued to exercise double control over the physical protection system at the RAWR - Novi Han. The topical inspection carried out at the facility resulted in establishment of additional requirements towards the on-site physical protection arrangements.



SAFETY OF FACILITIES WITH SOURCES

Milestone: NRA makes all necessary efforts to protect the public from the harmful effects of radiation. In 2003, more than 600 inspections of sites with sources were performed, more than 800 sites were licensed and more than 400 activities obtained permits

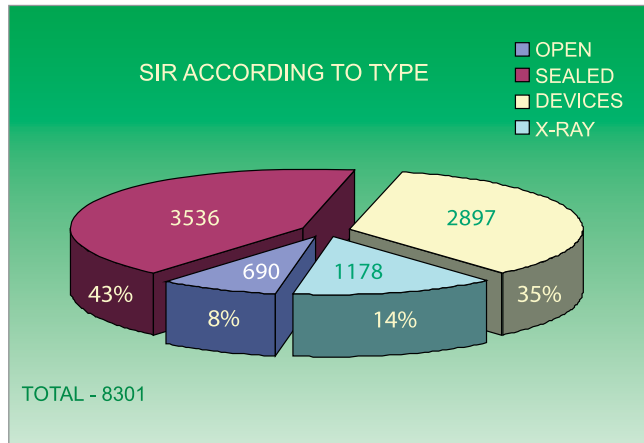


The NRA is implementing the state regulation and control over the activities and facilities with SIR and the corresponding generated RAW and alone or in co-operation with the specialised control bodies undertakes actions for mitigation and liquidation of the consequences from radiation incidents and accidents.

In 2003, in fulfilment of the Nuclear Act requirements, the process for licensing of the activities and facilities with SIR continued. In view of the large number of facilities with SIR, the NRA inspectors made severe efforts for issuing of the respective licenses. 803 licenses have been prepared and issued for facilities with sources. In addition, 108 permits have been issued for transport and 339 – for different activities, such as: siting, construction, assembling and testing of facilities with sources, temporary storage, import and export of radioactive material, including decommissioning of sites with radioactive material.

At the end of 2003, the overall number of registered and controlled by the NRA sources of ionising radiation is 8301 (open, sealed, X-ray devices, irradiators, non-destructive testing devices, accelerators, etc.) located at 1418 sites. Additionally, 741 sites with 122 252 radioactive smoke detectors are registered and controlled by the NRA.

For issuing of licenses and permits, to control the conditions related to them, and to verify the fulfilment of radiation protection requirements, the NRA inspectors perform planned and routine inspections at facilities



with SIR. Planned inspections (topical and complex) are carried out according to the NRA annual inspection plan, which is approved by the NRA Chairman. They are performed with the participation of representatives from the specialised control bodies using particular co-ordinated programmes. For the fulfilment of its control functions, the NRA owns and maintains the necessary measuring and other technical equipment. In 2003, the NRA inspectors performed 633 inspections at sites with sources of ionising radiation.

EMERGENCY PLANNING AND PREPAREDNESS

Milestone: An effective system for response to nuclear and radiological emergencies has been established and operates in the Republic of Bulgaria

Emergency planning is a system for establishing and maintaining, at national and local level, of continuous preparedness for response to an accident, with the objective to guarantee to the maximum possible extent the protection of the personnel, the public and the environment. More than ten ministries and other authorities take active part in the process of establishing and maintaining of the emergency preparedness arrangements in the country.

All notifications for nuclear and radiation accidents at national and international level come in the NRA Emergency Centre. The NRA Emergency Team includes highly qualified and properly trained experts and maintains continuous preparedness for response to an emergency.



In the process of accession of Bulgaria to the European Union, in 2003, the NRA continued the preparatory work for the future installation in the country of the RODOS system (Real On-line DecisiOn Support system), including training of NRA experts as system operators.

In 2003, the NRA Chairman signed the ECURIE Agreement, between Euroatom, the candidate states and Switzerland for exchange of radiological information within the European Community. The joint activities with the State Agency for Civil Protection on installation of the system continue.



The preparedness for response to a nuclear or a radiological emergency is periodically tested through conducting national, local and international training drills and exercises. The organisation and reliability of information exchange between the NRA, the State Agency for Civil Protection and the Kozloduy NPP emergency teams was tested in December 2003, during a training exercise at the Kozloduy NPP.

An international training exercise for reporting of nuclear and chemical attacks, coded „INTEX 2003“, took place in March 2003. Specialists from the State Agency for Civil Protection, the NRA, the Ministry of Environment and Water and the National Institute on Metrology and Hydrology to the Bulgarian Academy of Sciences participated in the training.

Thirty-two emergency situations with radioactive sources occurred in the country during the year. Most of them constitute discovery of radioactive substances in scrap metal. NRA publishes the list of all emergencies and their descriptions at its web page.



INTERNATIONAL ACTIVITIES

Important: NRA actively assists the government in the negotiations on the accession to the European Union

During the year the NRA actively participated in the preparation for accession to the European Union. The NRA experts prepared and submitted to the leaders of the working groups on EU accession all necessary materials concerning the nuclear safety and radiation protection. The experts also took part in meetings and development of legal documents. Working group No 30 „Nuclear Safety“, led by NRA, prepared and submitted materials on the negotiating position of the Republic of Bulgaria in Chapter 22 „Environment“ which contributed for early finalisation of the negotiations and closure of the Chapter.



Important: Over 200 Bulgarian scientists and experts participated in regional training courses and workshops, organised by IAEA



In the year 2003, three international projects – Failed Fuel Assembly Detection and Measurement, Upgrading Reactor Pressure Vessel Surveillance Programme for Kozloduy NPP and densification under water AFR Spent Fuel Storage Facility were successfully completed. Nine projects are on going and two of them are directly addressed at strengthening the capabilities of NRA. According to the national priority, five new projects for technical co-operation for the period 2005-2006 were submitted to IAEA. These projects are in the following areas: strengthening of the capabilities of the regulatory body, Radioactive Waste Management, possibilities for development of nuclear energy in Bulgaria, reconstruction of the research reactor and the use of sources of ionising radiation in medicine.

NRA continues its active contribution to the decision making for the current and future IAEA activities by taking part in the regular meetings of the Board of Governors, regular sessions of the General Conference and the regional meetings of the IAEA member-states from Europe.

Over 200 Bulgarian scientists and experts participated in regional training courses and workshops, organised by IAEA, including specialisations and scientific visits. The participation of Bulgarian specialists in technical committees, expert, advisory and working groups continued during the year, which contributed considerably to the improvement of the activities in the Bulgarian institutions and organisations as well as for passing on to other countries the great Bulgarian experience in using and regulating nuclear energy. Different Bulgarian laboratories and institutes continue their participation in the IAEA research programme.



Important: In 2003 eight Bulgarian specialists were sent to the Joint Institute for Nuclear Research (JINR) – Dubna, 13 Bulgarian projects were approved for financing and 17 topics received grants

In 2003, the Republic of Bulgaria participated in the Committee of the Representatives Plenipotentiaries of the JINR member-states and in the meetings of the Financial Committee of JINR, as well as in the development of the research programme of the Institute. During the year 8 Bulgarian specialists were sent for long-term work in JINR and their total number reached 22. The co-operation with JINR was extended in the form of three-month and short-term employment of Bulgarian scientists and specialists in the institute aimed at their participation in experiments, joint tasks, scientific meetings and other activities.



13 projects of Bulgarian institutes were approved during the year, universities and other organisations to be financed by JINR budget. This kind of co-operation is a successful way of achieving maximum results with effective utilisation of the resources. In addition, 17 topics proposed by Bulgarian scientists, working in JINR, received financing.

Important: Bulgaria joined the OECD Halden reactor project



In September 2003, an Agreement was signed between the NRA and the Institute for energy technology – Norway for joining of Bulgaria to the Halden reactor project of the OECD Nuclear Energy Agency (NEA). The Agreement was approved by a Decision of the Council of Ministers. The Halden reactor project is the biggest joint project of the OECD forming an international technical network for safety of nuclear reactors, monitoring and control of NPPs and assessment and improvement of the human factor during operation.

Important: Bilateral co-operation with Germany, Japan and ICTP- Trieste continues

Seven Bulgarian experts participated in courses, workshops and working groups organised by the German Federal Ministry of Environment, Protection of Nature and Nuclear Safety, the International Centre for Theoretical Physics (ICTP) – Trieste, and JEPIC – Japan. The experts discussed problems of public involvement in the licensing process, residual life-time assessment, human errors in nuclear facilities, physical protection from terrorist actions, etc.



TRAINING

Important: New Training Centre in NRA



On 7th of April Mr. Massoud Samiei, Head of the Europe Section of the Department of Technical Co-operation of the IAEA, opened the new Training Centre at the NRA. The main financing for the construction and provision of necessary equipment of the centre came from the NRA budgeted for the period 2001-2003 and is more than 200 thousand BGN. Part of the equipment, comprising 30 000 USD, was provided by the US NRC, through the IAEA, under a project for strengthening the NRA capabilities.

Important: At the new Training Centre, the NRA hosts a lot of international meetings, training courses and workshops



With the new Training Centre, the NRA set the beginning of implementation of a programme for intensive training of the new personnel. The national and international technical meetings, training courses and workshops aim at acquainting the personnel with the national and international regulatory practices, requirements of the new legislative framework, development of legal documents according to ASUNE and the European legislation, etc.

8 - 10 July – A regional meeting was held at the NRA headquarters, organised jointly with the IAEA, on the subject „Development of national strategies for strengthening of the control of Sources of Ionising Radiation“. National institutions from Bulgaria and the region, responsible for development of national strategies for control and mitigation of consequences of incidents with SIR participated in the meeting.

24 - 26 September – National workshop „New strategies in the technical co-operation with IAEA“. The newest tendencies, aspects and criteria of IAEA for conducting technical co-operation were presented.

5 - 8 October – NRA is a host of IAEA technical meeting „Delayed projects in the nuclear energy field“. Leading experts from countries with temporary stopped projects in the nuclear energy field exchanged information and opinions for successful completion of these projects. Such project for Bulgaria is Belene NPP.

16 October – pupils ninth grade from „Ivan Vazov“ school in Sofia visited the Training Centre in NRA. They were told about the radiation phenomena, the cases when radiation is dangerous and the possibilities for protection.

5 - 7 November – with the help of IAEA, the NRA held a national training course on „Radiation protection during gamma and X-ray non-destructive testing“. Representatives from over 40 companies performing non-destructive testing were acquainted with the international requirements for work with non-destructive testing devices and the process of licensing.

01 - 05 December – NRA, jointly with IAEA, held a work meeting on the subject „Discussion on safety during disposal of obsolete sealed SIR in near surface repositories“. There was a thorough discussion on the safety assessment methodology for such repositories and the participants visited RAWR – Novi Han. ■



SECONDARY LEGISLATION

Important: The Council of Ministers adopted a Rate Tariff for the Fees Collected by NRA according to the Nuclear Act and Regulation for the Fees Payment Procedure

After entry into force of ASUNE, NRA prepared a programme for development of the secondary legislation, according to the two-year time limit, set in the Act. The programme includes the responsible persons and the deadlines for the development of 19 secondary legal documents (18 Regulations and 1 Rate Schedule) in the area of the safe use of nuclear energy and ionising radiation, safe management of RAW and SNF, physical protection, emergency planning and preparedness, etc. The IAEA IRRT mission and the Peer Review of AOG expressed a high opinion of the programme.



The NRA implements systematic approach for the optimal use of the available human resources in developing legal documents. The objective of NRA is to bring the requirements in the area of nuclear safety and radiation protection into full compliance with the EU legislation and the IAEA requirements. The regulatory approaches in the European countries with developed nuclear energy are also taken into account.

In September 2003, the Council of Ministers approved two of the 19 normative documents – Rate Tariff for the Fees Collected by NRA under the Act and Regulation for the Fees Payment Procedure. The Regulation and the Rate Schedule guarantee the stable financing of NRA within the framework of the national budget.

At the end of 2003, all Regulations included in the programme were in an advanced stage of development and internal review. The intention is to submit the drafts in one package for co-ordination with the ministries and the institutions concerned. Thus, synchronisation and interrelation between the secondary legislation, its simultaneous entry into force and standardisation of the specific terminology will be achieved.



WITH CONCERN ABOUT THE PROTECTION OF PERSONNEL, PUBLIC AND ENVIRONMENT

Important: During the year, NRA continued the successful co-operation with the executive authorities based on mutual respect and understanding

The NRA performs its activities in co-operation with all specialised control bodies and their regional structures. During the year, the NRA experts participated in working groups for development and updating of legal documents and in the preparation of the National Report on fulfilment of the obligations of the Republic of Bulgaria on the Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management as well as in mitigation of the consequences of SIR incidents and in international projects.



Together with the Ministry of Environment and Water, radiation gamma background monitoring at the Kozloduy NPP site and the surroundings is carried out. Experts from both authorities analyse and assess the information about liquid and gaseous releases of radioactive substances in the atmosphere and hydrosphere. Besides, nuclear facilities and sites with SIR, environmental parameters (water, soil, food, fodder, vegetation, etc) are subject of radiation monitoring. The following conclusions can be made:

- Gamma background in the NPP surroundings is at the level of natural values and does not present additional risk for the public and the environment;
- Gaseous and liquid radioactive releases are negligible and do not have impact on the flora and fauna in the area;
- There is no change in the activity of the soil, vegetation, milk, meat, fish, potable water and agricultural production.

Jointly with Ministry of Health, through the National Centre for Radiobiology and Radiation Protection, the safe use of SIR and the personnel exposure are monitored. There are no cases of exceeding the permitted individual dose. The larger part of the exposure of personnel from NPP and external organisations is due to maintenance activities that are part of the modernisation programme. The maximum effective individual dose is 18.21 mSv for monitored person from external organisation, who has performed maintenance activities at units 1-6. The collective personnel dose from internal and external exposure is 3.086 manSv for 6283 monitored persons and is lower than the value for 2002.



Important: There are no cases of illicit traffic of nuclear material and radioactive substances identified

The co-operation with the Ministry of Internal Affairs aims at improving the physical protection and fire safety of nuclear facilities, strengthening the control at the national borders and inside the country regarding the illicit traffic, illegal moving and storage of nuclear material and radioactive substances. There are no cases of illicit traffic of nuclear material and radioactive substances identified.

NRA, together with the State Agency for Civil Protection, has mitigated 32 incidents with SIR. In all of them the appropriate measures were taken and exposure of the personnel and the public was avoided. An international training exercise for reporting of nuclear and chemical attacks, coded „INTEX 2003“, took place in March 2003. Specialists from the State Agency for Civil Protection, the NRA, the Ministry of Environment and Water and the National Institute for Metrology and Hydrology to the Bulgarian Academy of Science participated in the training.



In the Training Centre of NRA were given a series of lectures on radiation protection and ecology for training the personnel of the administration. Practical exercises with radiometric equipment and work with individual means for of protection were performed, too.

Important: The presentation of the Report of the Republic of Bulgaria on the Joint Convention is thorough and interesting



The meeting was arranged in five groups of countries. Bulgaria was in group number two, together with France, Spain, Romania, Luxembourg and Denmark. The Bulgarian delegation, led by the Chairman of NRA Prof. Dr. Sc. Emil Vapirev, included representatives from NRA, Ministry of Energy and Energy Resources, Ministry of Health, National Centre for Radiobiology and Radiation Protection, Kozloduy NPP, State Agency for Civil Protection, Radioactive Waste Repository – Novi Han and from the Institute for Nuclear Research and Nuclear Energy to the Bulgarian Academy of Science.

During the meeting, the Bulgarian delegation presented the National Report and the main subjects of the preliminary questions and also gave information on the questions arisen during the discussions. The final report for Bulgaria marked that the Bulgarian presentation had been thorough and interesting. For the next Report on the Joint Convention in 2006 recommendations were made and specific areas of interest were outlined.



PUBLIC RELATIONS

Important: The EC Peer Review is described as the event of the year in the energy field by the media



The Peer Review of the Atomic Questions Group in the European Commission for the Kozloduy NPP units 3 and 4 was in the focus of the public and media interest. It was conducted in November 2003. In connection with the importance of this event, the interest of the mass media in the NRA activities was significant regarding the preparation and conducting the Peer Review as well as the results from it. The foreign information agencies „France presse“, „Space war“ and „EU business“ emphasized in their analyses that the public opinion in Bulgaria is against shutting down of units 3 and 4 of Kozloduy NPP.

In June the IAEA conducted IRRT mission in NRA. The press came out with the following headlines: „Regulatory body showed good practices to the world experts“, „IAEA mission found out that NRA is politically independent and has competent personnel“.



Series of visits of leading western experts preceded the Peer Review of units 3 and 4 of Kozloduy NPP. Invited by NRA, Mr. Kenneth Brockman, Head of the IAEA Nuclear Installations Safety Department visited the country from 18 to 21 of October 2003.



Several days later, in the period 28-30 October, Ms. Judith Melin, Director General of SKI /Swedish Nuclear Power Inspectorate/ and Chairperson of WENRA, visited Bulgaria.

The visits of the experts were widely discussed in the Bulgarian press.

- The licenses for operation of Kozloduy NPP units 3 and 4 came in the focus of public interest, as well as the discussions on continuing the construction of the second nuclear power plant near the town of Belene.

- The Peer Review is the event of the year in the energy field, according to the inquiry among the journalists from the Bulgarian mass media.



ABBREVIATIONS:

AFR	■	Away-From-the-Reactor
ASUNE	■	Act on the Safe Use of Nuclear Energy
AOG	■	Atomic Questions Group
BAS	■	Bulgarian Academy of Science
CONCERT	■	Co-operation Nuclear Central And Eastern Regulatory Team
EC	■	European Commission
EU	■	European Union
IAEA	■	International Atomic Energy Agency
ICTP	■	International Centre for Theoretical Physics
INRNE	■	Institute on Nuclear Research and Nuclear Energy
IRRT	■	International Regulatory Review Team
IRT	■	Research Reactor on Thermal Neutrons
JINR	■	Joint Institute for Nuclear Research
NEA	■	Nuclear Energy Agency
NPP	■	Nuclear Power Plant
OECD	■	Organisation for Economic Co-operation and Development
RAW	■	Radioactive Waste
RAWR	■	Radioactive Waste Repository
RAWTF	■	Radioactive Waste Treatment Facility
RODOS	■	Real On-line DecisiOn Support
SFSF	■	Spent Fuel Storage Facility
SIR	■	Sources of Ionising Radiation
SKI	■	Swedish Nuclear Power Inspectorate
SNF	■	Spent Nuclear Fuel
UK	■	United Kingdom
US	■	United States
USA	■	United States of America
USD	■	United States Dollar
WENRA	■	Western European Nuclear Regulators Association
WWER	■	Water-Water Energy Reactor



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