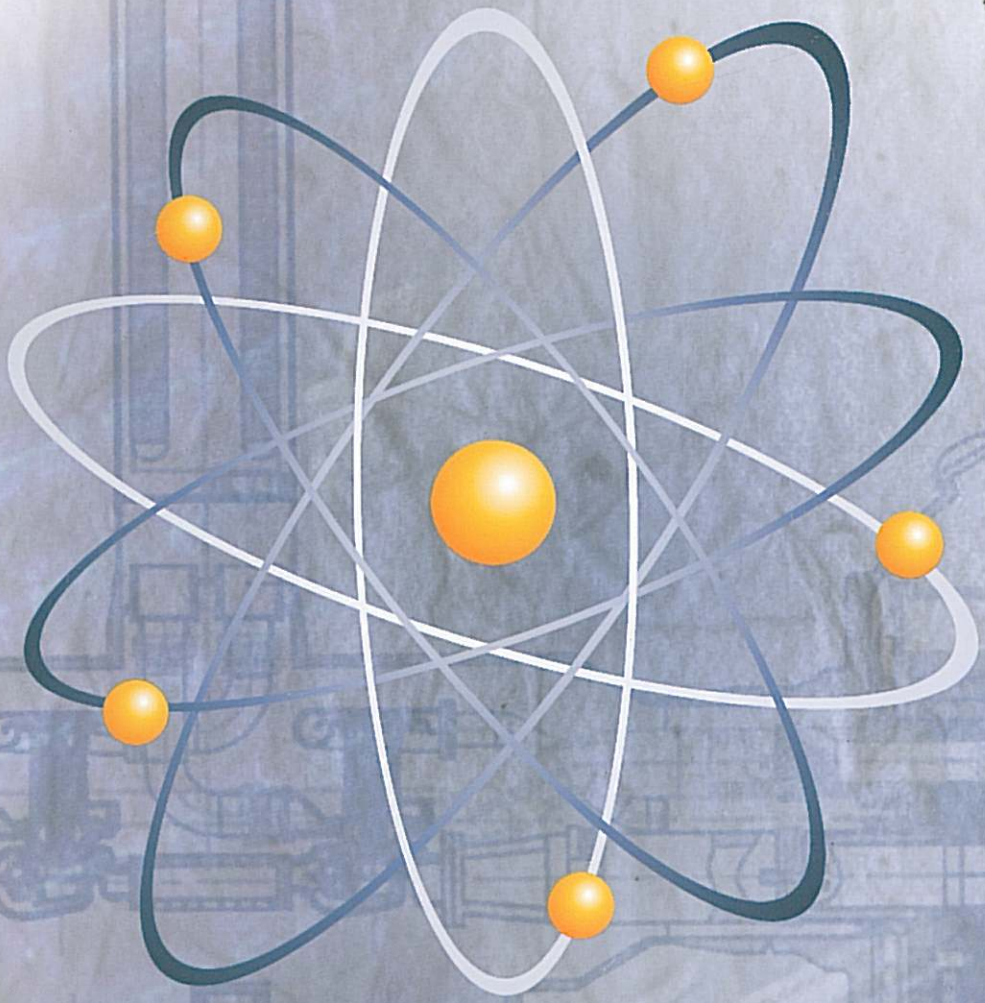
Annual Report 2001/2002



NATIONAL NUCLEAR REGULATOR

Mission:
To provide effectual national regulatory control for the protection of persons, property and environment against nuclear damage.

Vision:
To be recognised globally as a leading authority in nuclear regulatory control which applies best practices in human resource management and is transformed according to South African objectives.

This Annual Report has been produced as required by section 7 (1) (j) of the National Nuclear Regulator Act no 47, 1999

ABBREVIATIONS USED IN THIS REPORT

DEAT – Department of Environmental Affairs and Tourism
DME – Department of Minerals and Energy
DWAF – Department of Water Affairs and Forestry
EIA – Environmental Impact Assessment
EPLC – Emergency Planning Liaison Committee
EXCO – Executive Committee
FRAREG – Framatome Regulator's Group
IAEA – International Atomic Energy Agency
IDCC – Interdepartmental Co-ordination Committee
IDMC – Interdepartmental Disaster Management Committee
IRPA – International Radiation Protection Agency
JRC – Joint Review Committee
KEDC – Koeberg Environment Development Committee
KLBM – Koeberg Licensing Bases Manual
KLLC – Koeberg Licensing Liaison Committee
KNPS – Koeberg Nuclear Power Station
KSR – Koeberg Safety Review
MANCO – Management Committee
NECSA – South African Nuclear Energy Corporation
NERS – Network of Nuclear Regulators with Small Nuclear Programmes
NNR – National Nuclear Regulator
NNRA – National Nuclear Regulator Act
NUSSC – Nuclear Safety Standards Committee
PBMR – Pebble Bed Modular Reactor
PFMA – Public Finance Management Act
RASSC – Radiation Safety Standards Committee
SAR – Safety Analysis Report
TRANSSC – Transport Safety Standards Committee
UK NSD – United Kingdom Nuclear Safety Directorate
WASSC – Waste Safety Standards Committee
mSv – milliSievert
µSv – microSievert
Sv – Sievert

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THE PEOPLE AT THE HELM

DR M W MAKGOBA



Dr Makgoba is Chairperson of the NNR Board, President of the Medical Research Council and leader of the South African Aids Vaccine Initiative (SAAVI). He obtained an MBChB (Natal) with merit in Medicine, in 1976; a Doctorate of Philosophy in Human Immunogenetics at the University of Oxford in 1983; was elected Fellow of the Royal College of Physicians of London (F.R.C.P. Lond) in 1990 and a Fellow of the Royal Society of South Africa (F.R.S.S. Af), in 1994. He was Deputy Vice-Chancellor (Academic) and Ad Hominem Professor of Molecular Immunology at the University of the Witwatersrand.

MS N J MXAKATO-DISEKO



She is currently senior advisor to the Minister of Trade and Industry. She is a former South Africa Ambassador to the United Nations in Vienna, the Republic of Austria, the Republic of Slovenia and the Republic of Slovakia, and the South African Permanent Representative to the IAEA, South African Permanent Representative to the Comprehensive Nuclear Test Ban Treaty Organisation (CTBTO) and alternate South African Governor to the Governing Board of the IAEA. She holds a BA Hon/MA Politics, Philosophy and Economics from the University of Oxford.

She was the Deputy Chairperson of the NNR Board until her resignation in February 2002.



MR L D S THOBEJANE

Mr Thobejane is a previous Superintendent-General in the Department of Health and Welfare (Northern Province). He holds an MSc in Medical and Radiation Science. He previously worked for Eskom as Senior Nuclear Physicist, and consulted for the Department of Minerals and Energy, Department of Health and other governmental departments on health and policy issues before joining the Department of Minerals and Energy as Chief Director: Nuclear and Renewable Energy. He also served as acting Chief Executive Officer for the National Electricity Regulator. Mr Thobejane resigned from the Board in November 2001 after his appointment as CEO of NECSA.

(Resigned)



MS LB ZONDO

Zondo, the Chief Executive Officer of the NNR, educated in law, she practised as an advocate at the Johannesburg and Durban Bars. She obtained her B.Proc degree at the University of the North, her LLB at the University of Natal, Durban, and her LLM Public Law at the London School of Economics.

Prior to taking up her current position she worked as Secretary of the Preparatory Commission for the comprehensive Nuclear Test Ban Treaty Organisation, in Vienna, Austria



DR J M STEWART

Dr Stewart, the representative of organised business on the Board, is a mechanical engineering graduate of the University of the Witwatersrand, and is currently an independent consultant. He has 20 years' experience in mining-related research, including a doctoral thesis in human heat stress. He was head of the Chamber of Mines Research Organisation and thereafter spent 10 years in the Chamber as Mining Consultant, where his focus was mainly on policy issues in the areas of safety, environment, technology and the economics of the South African mining industry. His current consultancy work is concerned with sustainable development issues, mainly in relation to the mining industry.



MR E B MATHEBULA

currently Director: Atmospheric Protection and Chemicals Management with the Department of Environmental Affairs and Tourism. He holds a BSc in Environmental Technology with majors in Environmental Chemistry and Chemistry. He taught for eight years prior to joining the Department of Environmental Affairs and Tourism in 1997 as Manager: Hazardous Materials Impact in the Environment, including waste.



MR W D M FOURIE

(Alternate to Mr Mathebula)

Mr Fourie obtained his BA, BA Hons and UED from Potchefstroom University and a Diploma in Public Administration from Pretoria University. He has attended various national and international courses on environmental impact assessment and management. He worked for five years as a physics planner and for 20 years on environmental management, specifically with environmental impact legislation and regulations.

The people at the helm



MR B C WINKLER

Mr Winkler is a former Executive Officer of the NNR. He holds an MSc in Physics from the University of Stellenbosch. He was the first Safari I reactor Health Physicist. He is the Chairman of the ICRP Committee IV and has been a member of the Main Commission since 1996. He was a member of INSAG of the IAEA for the period 1996-1999.



MRS E K MOHAMED

Mrs Mohamed is a former Laboratory Superintendent in the Chemistry Department of the University of the Witwatersrand. She holds an advanced diploma in Chemistry from Paddington Technical College, London. Posts held previously were Laboratory Manager at Adcock Ingram Pharmaceuticals and Chief Chemistry Technician at the University of Lesotho.



MR R C LOCKWOOD

Mr Lockwood represents communities which may be affected by nuclear activities. He holds an NTC III certificate from Muizenberg Technical College. In 1992 he obtained an Authorised Coach certificate from the Eskom Training Board and a Nuclear Safety Awareness certificate from the National Calibration Service. He worked for Eskom at the Koeberg Nuclear Power Station from 1991-1996.



PROF S TAOLE

Prof Taole is Dean: Faculty of Science and Technology at the University of the North West. He holds a doctorate in solid state physics from the University of Ottawa and has contributed to numerous publications and conferences.



PROF K BHARUTH-RAM

Prof Bharuth-Ram holds a doctorate in nuclear physics from the University of Oxford. He is Professor in the School of Pure and Applied Physics at the University of Natal. He has co-authored over 120 international publications and international conference papers, and has received numerous scholarships and awards.



DR S W P DE WAAL

Dr de Waal, who serves on the Board as an official of the Department of Minerals and Energy, is the Director: Nuclear Safety in the Department. He is a qualified radiation biologist with 20 years' working experience in the South African nuclear industry. He is currently responsible for nuclear policy matters and the administration of legislation related to nuclear safety.



MR A H C H MOTAUNG

(Alternate to Dr de Waal)

Mr Motaung is a former Chief Director: Mine Health, Safety and Survey for the Department of Minerals and Energy. He holds a BSc Eng from the University of the Witwatersrand. He previously worked as a mining engineer, responsible for production, industrial relations, health and safety. He joined the Department of Minerals and Energy as a Director: Mine Safety, prior to taking up his current position.

(Resigned)



MR D P ELBRECHT

Based in Cape Town, Mr Elbrecht is Treasurer-General of the National Union of Mineworkers. He has been a NUM National Executive Committee member since 1994 and a national office bearer since 1997. He holds an NTC 6 certificate and worked as an artisan at Koeberg Nuclear Power Station for eight years. Other qualifications include, Associated In Management (AIM) at UCT Graduate School, EDP at Kagiso Leadership School, MDP at Stellenbosch Business School, IRDP at Stellenbosch Graduate Business School. He is Director of the Mineworkers Development Agency and the Elija Barayi Memorial Training Centre and a Trustee of the Mineworkers Investment Trust and Teba Fund.

CHAIRPERSON'S REPORT



Dr M.W. Makgoba - Chairperson

I have pleasure in delivering this report, in which the National Nuclear Regulator is able to report continued success in the fulfilment of the nuclear regulatory function, which it assumed on 27 February 2000 in terms of the NNR Act. The policy and decision makers felt that the broad functions of its predecessor organisation were best assigned to specialist organisations, leaving the National Nuclear Regulator to focus exclusively on matters relating to the safety of the public, workers, property and the environment. This has indeed proved to be valuable to the public of South Africa and to our nuclear-related industries alike, in the light of the field of operation over which regulatory and monitoring services are required.

Details of the finances of the NNR are provided elsewhere in this report. Suffice it for me to refer to the fact that the NNR derived most of its income from authorisation fees charged to holders of nuclear authorisations in respect of the effort put into the regulation of safety of their nuclear activities and to applicants for new nuclear authorisations. The total income of the NNR amounted to R39.2 million, of which R7 million is a direct contribution from the State.

The NNR's staff development programme, in which staff members – particularly those from a disadvantaged background – are provided with the opportunity to receive education and training in aspects of the nuclear industry, was extended during the year under review. It now includes the provision of support for courses in various aspects of radiation safety at the Universities of the North West and the Witwatersrand. I am confident that the foundations thus being laid will pay excellent dividends for South African industry and business in the years and decades to come, as this country takes its place in an increasingly globalised and technology-based world economy.

A notable feature of the NNR's culture is that of public awareness and participation. In respect of awareness building, the organisation contributed to the Koeberg emergency exercise held during the year, which despite inevitable public doubts, brought home to the public that its safety is continually being monitored and assessed, with the assurance of rapid response in the unlikely event of an accident occurring. In respect of public participation, the NNR encourages public debate on matters relating to nuclear safety, as required by the NNR Act. The past year has seen the NNR enhance the efficacy of its operations on all fronts, and accordingly I wish to place on record my appreciation to my fellow Directors and to our Management and Staff for their sustained efforts to meet the important objectives for which the organisation exists. South Africa faces dynamic challenges and opportunities within our borders and internationally in meeting the country's responsibilities in the nuclear safety field. The calibre of our directors and staff is high and most encouraging, and enables me to give the Government and the people of South Africa the assurance that the nuclear safety of the nation remains in sound hands.

Dr M W Makgoba
Chairperson

CHIEF EXECUTIVE OFFICER'S REPORT



Louisa B. Zondo
Chief Executive Officer

This report is the second annual report of the National Nuclear Regulator. It is also the first report covering my term in office as Chief Executive Officer.

When I assumed office I stated that my main and immediate task would be to lead the organisation through a complete shift from the culture of the past and its attendant public perceptions of secrecy and an unbalanced personnel complement, towards a culture of transparency, equality and equity, with sound management policies, systems and procedures.

Notwithstanding the challenging constraints on the rapid advancement of the NNR's transformation objectives, significant progress has already been made. I am pleased to have been able to rely on the support and guidance of the NNR Board of Directors, the Executive, management, as well as staff in general in advancing these objectives towards the transformation of the NNR.

One of the main transformation features has been the restructuring of the organisation, with the view to achieving complete alignment of the NNR's strategic objectives with its systems. In regard to the implementation of the NNR's Employment Equity Plan, it pleases me to report that directed effort was made to implement the plan during the year and good progress was achieved in this regard. It is regrettable however that the targets set in the plan have not yet been fully met.

The NNR regards staff development as an important investment for nuclear safety as well as for the future of the organisation. As such, this year the NNR allocated 3,5% of its personnel budget to training and development which covers bursaries, scholarships and the sponsoring of post-graduate courses in radiation-related subjects. Details are contained in the report of the Corporate Support Services Division.

Financial Resources

The NNR's main source of income is nuclear authorisation fees charged to holders of existing authorisations and applicants for new authorisations. The total income for the year increased marginally to R39,2 million (2001/2002), to which the State contributed R7 million. The financial statements reflect a loss of R3,33 million, which is mainly due to the post-retirement medical aid liability which the NNR has to provide for as a result of historical obligations towards staff.

Power Reactors

A major part of the NNR's regulatory functions related, as in past years, to the Koeberg Nuclear Power Station. Close liaison is maintained with international peer organisations as well as with the French Nuclear Safety Authorities regulating similar power stations, to ensure the safety of this facility, its workers and the communities living around it. Emergency exercises are conducted periodically to ensure the preparedness of Koeberg staff, municipal emergency structures and personnel to react rapidly to potential emergency situations. Such an exercise was held in February 2002, and is reported on in the relevant section of this report.

The NNR continued its focus on the licensing process for the Pebble Bed Modular Reactor (PBMR). The involvement of international expertise in the PBMR review process offers a unique opportunity for development and the transfer of skills to NNR. Recognising this fact, the NNR has began discussions with the relevant international consultants regarding the development and implementation of meaningful human resource development programmes.

Radioactive Waste Management and the Regulation of Natural Sources

Radioactive Waste Management is an essential aspect of the NNR's regulatory and monitoring task. The safe storage of spent nuclear fuel at Koeberg and of depleted radioactive materials is also detailed in this report.

The report also covers the activities of the NNR in regard to the regulation of natural sources of radioactivity as well as the transportation of radioactive materials, in the interest of worker and public safety.

I am happy to report that within the areas over which the NNR exerts its regulatory control function, no major problems occurred in respect of public health or the safety of workers, property and the environment during the year under review.

Regulatory Strategy Development

In order to support initiatives to develop regulatory strategy for the organisation, a new department - the Regulatory Research and Development Department - was created within the Regulatory Strategy Development Division. Its primary focus is to ensure that the NNR keeps abreast of developments, nationally and internationally and is therefore capable of establishing and maintaining appropriate standards and practices for the regulation of nuclear safety.

The Regulatory Strategy Development Division not only positions the NNR to comply with standards and implement best practices in the regulation of nuclear safety, but also focuses the NNR on maintaining its relevance in the African region and globally. International cooperation activities that the NNR has participated in at the regional and global level are also reported.

My staff and I are committed to continuously improve delivery on our mandate to protect the public, property and the environment against the risk of nuclear damage and will continue to meet our obligations as required by legislation and to the best of our ability.

Louisa B. Zondo
Chief Executive Officer

POWER REACTORS

The NNR continued to carry out a range of functions in regard to safety regulations at the Koeberg Nuclear Power Station, as well as the safety review of the PBMR nuclear license application. Below is a report of the activities undertaken in the period under review.

KOEBERG NUCLEAR POWER STATION

THE NUCLEAR FUEL MANAGEMENT STRATEGY

Presently the reactor Units 1 and 2 at Koeberg use fuel supplied by Westinghouse (USA) and Framatome (France). The NNR gave Koeberg approval to load fuel assemblies of the Westinghouse Robust Fuel Assembly design into the Unit 1 core during Outage 112 in October 2001. The NNR reviewed the deterministic accident analysis studies and found the risk to the public to meet the NNR criteria.

EMERGENCY PLANNING AND PREPAREDNESS (TECHNICAL BASIS)

During 2001 the National Nuclear Regulator finalized its report on the review of the technical basis for the Koeberg Emergency plan. This report concluded that the present emergency planning and preparedness arrangements at Koeberg were acceptable. Furthermore, the NNR concluded that despite the extensive technical and scientific work undertaken by both Eskom and the NNR, no compelling information had emerged which strongly supported a reduction in the present emergency planning zones around Koeberg. It concluded that the zones (for example the 16 km zone around Koeberg) (urgent protective action) should remain as they are.

The review, included canvassing the views, opinions and perspectives of a wider forum of public representation, which included inter alia the Cape Metropolitan Council (CMC) , local authorities, environmental groups, NGOs, the labour component, residents' associations etc. Feedback has been provided to various forums (the Koeberg Licensing and Liaison Committee, Nuclear Safety and Strategic Liaison Committee, Emergency Planning Liaison Committee and the Koeberg Environs Development Committee).

The review has been completed and highlights the fact that the viability of the Koeberg Emergency Plan is highly dependant on the availability of transport, road infrastructure and mass care facilities for evacuees. These aspects are being monitored and assessed in various forums such as the Koeberg Environs Development Committee (KEDC), the Emergency Planning Liaison Committee (EPLC), and the Emergency Planning Committee (EPC)

With the view to ensuring the viability of the Koeberg Emergency Plan, the NNR has requested the Blaauwberg Administration to include certain criteria arising from its technical basis report in the Blaauwberg Spatial Development Framework document.

OPTIMISATION OF THE KOEBERG NUCLEAR LICENCE

The NNR initiated a project with Eskom to reduce the administrative load (on both the NNR and Koeberg) caused by the number of licence change requests of low safety significance and to improve the scope of the Koeberg Nuclear Installation Licence according to experience gained over the past 16-18 years to cover.

A further objective was also to improve the format of the nuclear safety documentation at Koeberg in terms of transparency and compliance with licensing requirements and to make a clearer separation between requirements based on NNR standards and requirements relating to compliance with Eskom's provisions.

COMPLIANCE INSPECTIONS

In terms of section 5(d) of the NNRA one objective of the regulator is to provide assurance of compliance with the conditions of nuclear authorizations through the implementation of assisting of compliance inspection. The NNR implemented a compliance inspection programme which focused on the following main areas:

- Plant inspections/audits
- Plant Condition Management
- Licensing of Koeberg reactor operators
- Monitoring of radiation exposure to the workers at the plant and the public
- Environmental surveillance
- Radioactive waste management
- Emergency Exercise
- Plant occurrences/incidents

The NNR conducted approximately 700 inspections at Koeberg during 2001/2. Safety assessments were conducted on modifications and procedure changes involving of the order of 1000 items of correspondence.

A summary of the NNR's compliance assurance activities for 2001-2002 is given in Table 2 below, while the scope of the NNR's compliance inspection is summarized in Table 3.

The main concerns relate to the Koeberg training simulator and configuration control in the areas of project engineering and procedure development.

In terms of the overall NNR safety indicators, Eskom has generally responded to issues to the satisfaction of the NNR, with corrective actions and long-term plans to resolve the concerns. However, the indicators remain as they are in their state until the concerns are fully addressed or can be downgraded, depending on the corrective actions which have been proposed or implemented. The NNR continuously monitors implementation of these corrective actions. (see TABLE 1)

Plant Condition Management (PCM)

As in previous years, a series of specialist meetings were held at Koeberg Nuclear Power Station (KNPS).These meetings, ensure that the programmes for plant condition management and their implementation are kept within the confines of acceptable practice. Cognisance is continually taken of international experience and practice.

Stress corrosion cracking of pipe-work

Extensive stress corrosion cracking in the Type 304 stainless steel pipe-work was found in the low-pressure suction lines of the safety injection and containment spray systems of Units 1 and 2 at Koeberg. An inspection and repair/replacement programme has been implemented. The situation is being monitored by the NNR on a regular basis.

US nuclear power plant - Davis Besse Reactor Pressure Vessel(RPV) head concern

This power plant suffered a major integrity challenge to the Reactor Pressure Vessel as a result of a cracked and leaking Control Rod Drive Mechanism (CRDM) penetration tube. Prior to this incident all penetration tubes at Koeberg were inspected and shown to be free of any through-wall cracking, thus negating the likelihood of such an incident at Koeberg.

Licensing of Koeberg reactor operators

The NNR is responsible for licensing control room operators at an acceptable standard and for ensuring compliance with NNR requirements. The NNR's Koeberg Project Department discharges this responsibility by controlling, maintaining and administering the licensing of reactor operators at the power station. Only operators licensed by the NNR are permitted to manipulate the control room panels.

During this period, Initial Licence Examinations for Senior Reactor Operators (SROs) and Reactors Operators (ROs) were held in April/May 2001. They were administrated by Eskom following the process that the NNR has adopted in the past. Occupational exposure to radiation

Radiation exposures to personnel working at Koeberg are subject to control by the operational radiation protection programme. This programme ensures that control within the annual individual dose limit is achieved. In addition, the programme also serves to ensure that all doses are kept as low as reasonably achievable (ALARA).

The highest annual individual dose accrued during 2001 was 15.49 mSv, compared to the regulatory limit of 50 mSv per annum. The total annual collective dose to the workforce for the year was 2.31 person-sievert. The total occupationally exposed workforce during 2001 numbered 2264, indicating an average annual individual dose of approximately 1.02 mSv. Figure 1, below, illustrates the dose distribution arising from the individual exposures accrued during 2001.

ATTRIBUTE	DISCIPLINE/PROCESS				
	ASSESSMENT	OPERATING	ENGINEERING	PLANT CONDITION MANAGEMENT	RADIATION PROTECTION & EMERGENCY PLANNING
CODES & STANDARDS	Acceptability of Codes and Standards specific to discipline				
SAFETY CASE	Acceptability of Safety Case and Technical Bases as applicable				
COMPLIANCE	Level of compliance with conditions imposed by the safety case				
PROCESSES	Effectiveness of safety-related activities to ensure nuclear/radiation safety				
PLANT MANAGEMENT	Effectiveness of organisation, direction, follow-up, feedback, planning, resources, competencies to ensure nuclear/radiation safety				
CORPORATE	Effectiveness of corporate oversight processes				

TABLE 1

NNR compliance assurance activities 2001-2002

TABLE 2: NNR COMPLIANCE ASSURANCE ACTIVITIES 2001-2002

TECHNICAL ASSESSMENTS

MODIFICATIONS (25 assessed)

PERIODIC SAFETY REVIEW (Follow-up of several hundred actions over several years)

INTERNATIONAL ISSUES (Approx. 30 issues screened, 3 of significance for Koeberg)

IN-DEPTH INVESTIGATION OF INCIDENTS (3 over reporting period)

COMPLIANCE MONITORING

PLANT INSPECTIONS
- Engineering/Maintenance
- Operations & Radiation Protection - 400pa

AUDITS (NNR conducted 4 audits, monitored 8 conducted by Eskom)

ENVIRONMENTAL MONITORING (continues, quarterly readout of TLDs)

REACTOR OPERATOR LICENSING

WRITTEN EXAMINATIONS (annual)

SIMULATOR EXAMINATIONS (annual)

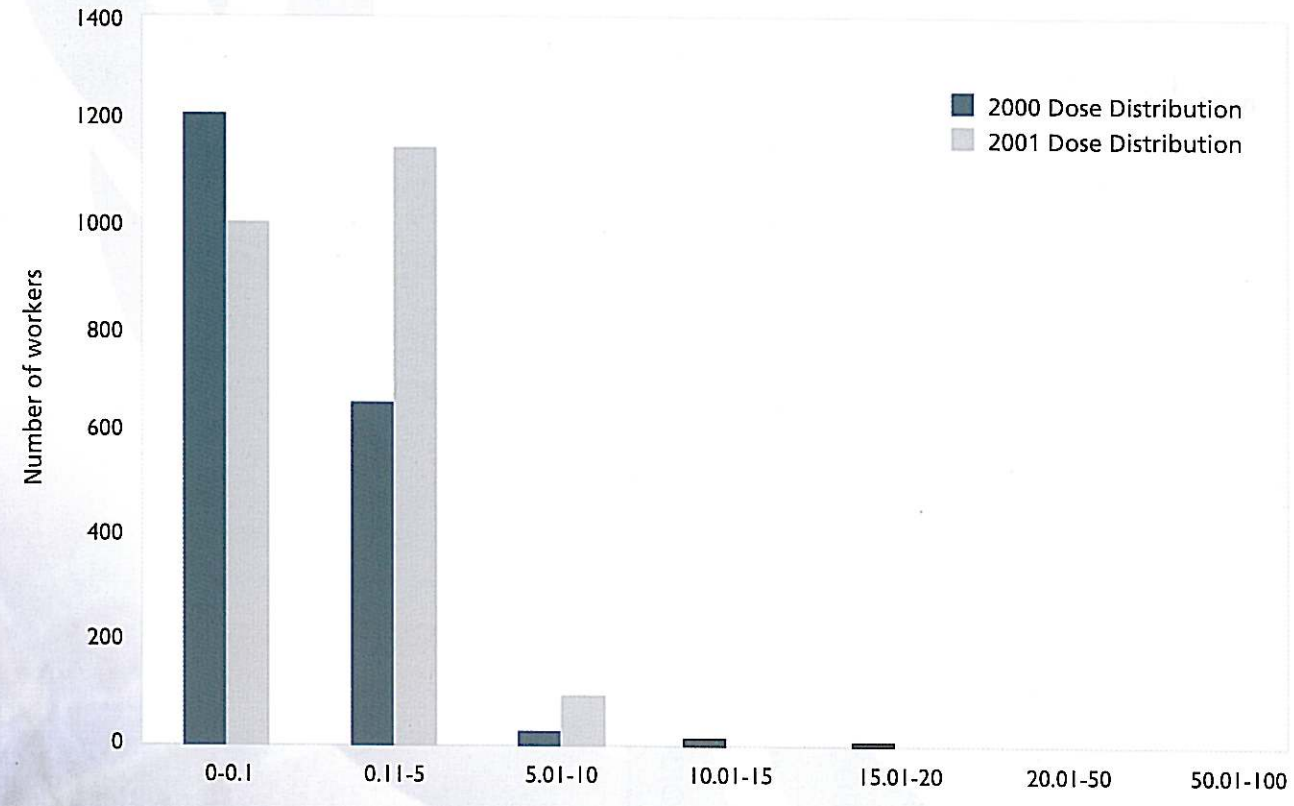
MEDICAL/PSYCHOMETRIC TESTING (120-140 individual assessments annually)

EMERGENCY PREPAREDNESS

ASSESSMENT OF TECHNICAL BASIS AND VIABILITY OF EMERGENCY PLANS AND PROCEDURES - ongoing assessment

EMERGENCY EXERCISE (NNR conducts one exercise approx. every 18 months)

FIGURE 1 - Number of Workers vs Dose bandwidth



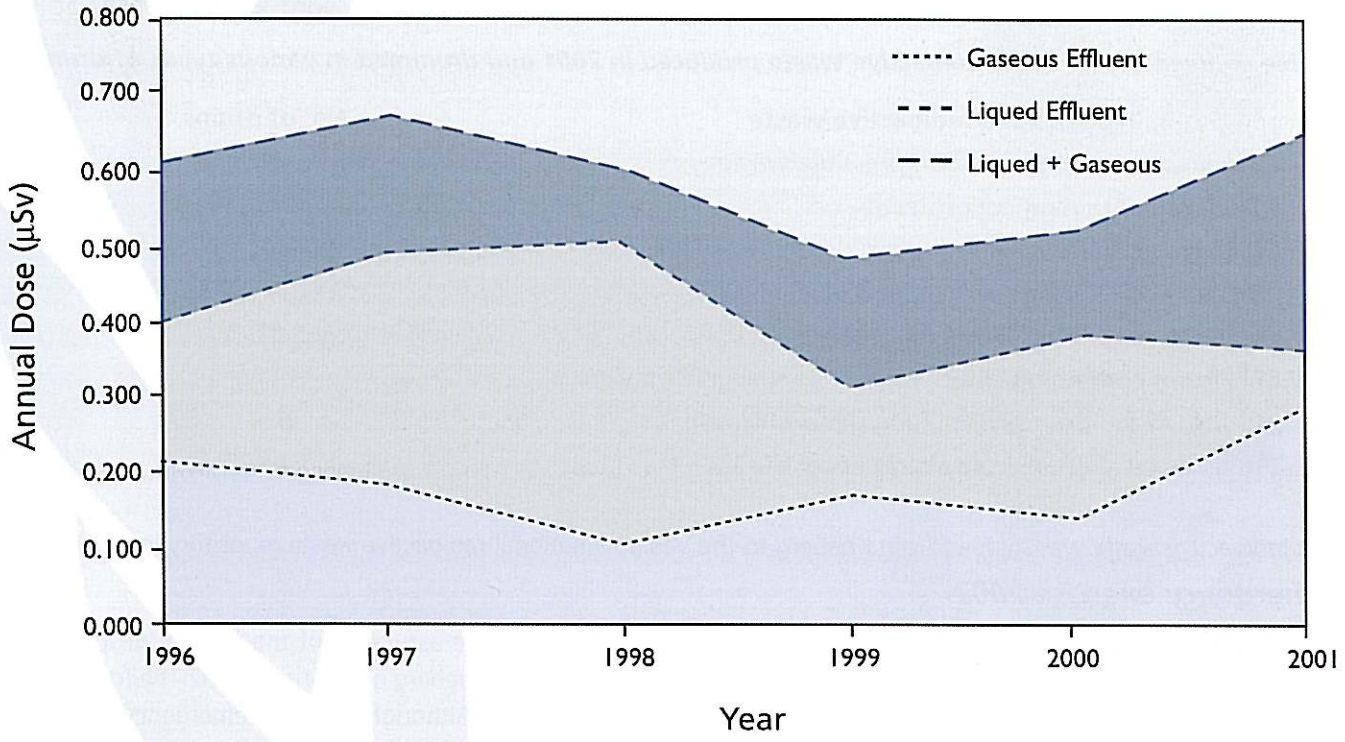
A major contribution to the total collective dose was the work performed during two refuelling outages in September 2001 and January 2002, during which 0.76 and 0.93 person-sievert respectively was accrued. The collective dose accrued as a result of the two outages contributed 73% of the total annual collective dose recorded for 2001.

Public exposure

Various gaseous and liquid radioactive effluents are produced during the process of nuclear power generation. These effluents are treated by dedicated clean-up systems, which remove most of the radioactivity from the effluents prior to discharge into the environment. However, it is inevitable during the operation of any nuclear power station that small amounts of radioactivity will be released into the environment. Public exposure is controlled within strictly defined limits by the implementation of a radiological effluent management programme, which ensures that the discharges of radioactivity from Koeberg result in no significant risk to members of the public. A key feature of this programme is the control of radioactivity in effluent discharges within Annual Authorised Discharge Quantities (AADQ). In addition to the continuous monitoring of radioactivity in effluent, radiological surveillance of the environment is also carried out. In this way, independent and strict control on public exposure to radioactive releases is maintained.

Radioactivity in liquid and gaseous effluent discharges from Koeberg during 2001 contributed a total individual dose of 0.65 µSv to the hypothetically most exposed group. The dose as a result of gaseous and liquid effluent discharges was 0.29 µSv and 0.36 µSv respectively, which is well within the prescribed limit of 250µSv per annum (Figure 2).

FIGURE 2 - Variation in annual dose due to Koeberg effluent discharges



It is evident from the above results that the annual dose arising from Koeberg's effluent discharges has been consistently low at less than 1% of the prescribed dose limit. The radionuclides contributing the highest dose as a result of atmospheric and liquid discharges are shown in Table 3.

Table 3: Percentage of AADQ discharged in effluent during 2001

Atmospheric Transport Pathway		Liquid Transport Pathway	
Radionuclide	**% of AADQ**	**Radionuclide**	**% of AADQ**
^{134}I	62.81	^{58}Co	28.94
^{132}I	18.24	^{57}Co	47.18
^{3}H	35.49	^{125}Sb	35.00
^{135}I	10.86	^{110}mAg	8.03
		^{3}H	6.60

Environmental surveillance

The Koeberg Environmental Surveillance Programme, involving sampling and analysis of representative environmental media, is performed in order to verify that effective control has been maintained over effluent discharges.

The small amounts of radioactivity released from Koeberg could not be identified in either surface water inland or in sea-water. Sensitive gamma spectrometric measurements of biological materials, soil and air samples, vegetation and food, did not reveal any contamination of the environment, although very small quantities of 110mAg and 58Co, originating from Koeberg's operations, were found in some marine samples.

As a demonstration of the sensitivity of the equipment, natural radioactivity is routinely measured in the majority of samples in which none of the effluent activities are in evidence. Very small amounts of characteristic activities in Koeberg effluent could be identified in sewage sludge, while reportable activities of 131I, originating from the therapeutic or diagnostic medical treatment of local residents, were detected on various occasions in Melkbosstrand sewage sludge.

A widespread network of Environmental Thermo-Luminescent Dosimeters (TLDs) around Koeberg monitors the external exposure to active gaseous effluents from Koeberg. As in previous years, there were no indications of external radiation above normal background levels, whether close to the power station or further afield. The environmental surveillance programme confirmed adequate control over effluent discharges in the period under review.

Radioactive waste management

The generation of solid radioactive waste amounted to 117,25 m3 drummed in metal drums and 45,65 m3 drummed in concrete drums. The inventory of the drummed radioactive solid waste produced in 2001 is given in Table 4.

Table 4: Inventory of solid radioactive waste produced in 2001 and drummed in various types of drums.

Type of solid radioactive waste	No. of drums
C1 drums containing non-compressible waste	30
C1 drums containing concentrates	83
C1 drums containing resin	0
C2 drums containing resin	1
C4 drums containing filters	11
C2F drums containing filters	11
210 litre metal drums containing general trash	614
210 litre metal drums containing resin	149

No radioactive waste was shipped from Koeberg to the Vaalputs national radioactive waste repository in 2001.

Emergency exercise 2002

One of the responsibilities of the NNR in terms of the NNR Act is to provide assurance of the viability of the Koeberg emergency plan. To this end the NNR conducted an emergency exercise at Koeberg on February 2002.The focus of these exercises is varied in order to test different aspects of the emergency plan. Although the 2002 emergency exercise was designed to test both the on-site and off-site organizations (Koeberg and local authorities respectively), the main objective was to conduct a live test of the evacuation of people from within the 5 km zone of Koeberg to a mass care centre and the functioning of the mass care centre itself.

Planning for such an exercise commences months in advance with the identification of key objectives. It proceeds through detailed development, by the NNR, of the accident scenario for the plant on-site and off-site, the allocation of NNR umpires and their responsibilities, invitations to local and overseas visitors (including local media) to witness the exercise, planning meetings and separate briefing sessions held for umpires, participants and visitors.

Overall, the exercise went off smoothly. The NNR report on the exercise has been compiled. Some improvements have been proposed in the measures implemented at some centres.

Plant incidents (occurrences)

The NNR monitors occurrences at Koeberg in the following manner:

- Audits conducted on the Eskom processes relating to occurrences (i.e. plant monitoring, reporting, follow-up and close-out)
- Monitoring of the implementation of these processes
- Monthly meetings between Eskom and the NNR at which experience feedback is discussed
- Review of Eskom reports on experience feedback and safety indicators which reflect occurrences and trending thereof
- Direct assessment of selected significant occurrences.

International events are monitored by Eskom and the NNR. Eskom systematically scrutinises information from sources such as WANO (World Association of Nuclear Operators), INPO (International Institute of Nuclear Operators), IAEA (International Atomic Energy Agency), US-NRC (United States Nuclear Regulatory Commission) and EDF (Electricité de France). Apart from monitoring Eskom processes in this regard, the NNR similarly scrutinises information from the IAEA and information exchanged with other regulatory bodies through bilateral agreements.

Through the above means, the NNR satisfies itself that the processes implemented at Koeberg relating to occurrences are acceptable and that plant safety performance is acceptable.

The reporting and follow-up of problems, occurrences and events at Koeberg represent a thorough, fully procedurised and ongoing process of investigation. The duration of a given investigation until final close-out may vary from a few weeks to several months, depending upon the extent to which complicating factors are encountered.

PEBBLE BED MODULAR REACTOR PROJECT

Introduction

The Pebble Bed Modular Reactor (PBMR) is one of the technologies for which Eskom is conducting a feasibility study.

During the reporting period, the NNR continued to review a nuclear installation licence application submitted by Eskom for the prospective siting, construction, operation, decontamination and decommissioning of a demonstration unit of a 110 MWe electricity generating power station.

Should construction be approved it is proposed to locate the installation on Eskom property within the owner-controlled boundary of Koeberg Nuclear Power Station.

The proposed PBMR is a graphite-moderated helium-cooled reactor using a direct gas cycle to convert heat, generated by nuclear fission in the reactor and transferred to the coolant gas, into electrical energy by means of a helium turbo-generator. By design, provision has been made to accommodate the storage of spent fuel in the buildings for the 40-year design life of the plant and thereafter for a further period if so required. Radioactive material and waste will be managed and disposed of in accordance with Regulatory and Government legal requirements.

Licensing process

The nuclear licensing process provides the means by which the NNR regulates nuclear activities on a licensed site. In terms of the complexity of this project, a multi-staged licensing process has been adopted by the NNR. This is to acknowledge the developmental nature of the PBMR demonstration unit. The approach adopted entails that, following a satisfactory Regulatory Review of the application by the NNR, an initial Nuclear Installation Licence (NIL) will be issued to the applicant for the first stage of the process and a Variation to this NIL will be requested by the applicant, and issued by NNR following its satisfactory Regulatory Review, at each of the subsequent agreed licensing stages. A programme of staged licensing submissions will coincide with the application for a NIL variation (by means of a NIL Change Request) to proceed to the next phase. Each change request will need to be supported by a comprehensive safety justification, e.g. Safety Analysis Report, to demonstrate compliance with the NNR Regulatory safety requirements.

Each stage of the licensing process will indicate the NNR Hold & Witness Points that will form the prerequisites to proceed to the next licensing stage. The Quality Assurance (QA) Programme will ensure the traceability and credibility of results of the previous licensing stage, before issuing the next stage nuclear installation licence variation. The Licensing Programme will include inter alia the following major licensing stages:

1) Site preparation (PBMR NIL issued for the first stage)
2) Construction and manufacturing phase (NIL Variation)
    - Civil works
    - Installation of auxiliary systems
    - Installation of main power system
3) Nuclear fuel on site/ commissioning and start-up (NIL Variation)
    - Cold commissioning testing
    - Fuel load
    - Initial criticality
    - Low power testing
    - Full power testing
4) Operation (NIL Variation)
5) Decommissioning

Licensing requirements for the PBMR

The "Basic Licensing Requirements for the PBMR", which have been developed by the NNR and issued to the applicant (Eskom), describe the fundamental safety standards adopted by the NNR and provide some insight into their basis and establishment. They present the derived standards in terms of design and operational principles and in terms of quanti-

tative risk criteria, with both of which the design must comply. The document then describes the processes that the licensee must undertake to demonstrate compliance with the standards, essentially the requirements for licensing of the reactor.

Public participation in the licensing process

In terms of the NNR Act, the Chief Executive Officer of the NNR must direct the applicant for a nuclear installation licence to:

(a) serve a copy of the application upon:
- every municipality affected by the application, and
- such other body or person as the Chief Executive Officer determines, and

(b) publish a copy of the application in the Government Gazette and two newspapers circulating in the area of every such municipality.

Any person who may be directly affected by the granting of a nuclear installation licence pursuant to an application may make representation to the NNR Board on matters relating to health, safety and environmental issues connected to the application, within 30 days of the date of publication in the Gazette.

The above notifications/publishing were made on 19 January 2001. Approximately 500 identified Interested and Affected Parties (I&AP's)) were notified. In this particular instance the period for the public to make representations was extended to 90 days, with 19 April 2001 as the official cut-off date.

NUCLEAR TECHNOLOGY AND NATURAL SOURCES DIVISION

NUCLEAR TECHOLOGY AND WASTE PROJECTS

NECSA
SAFETY ASSESSMENT

The NNR approved 58 licence change requests submitted by NECSA during the reporting period. The following table indicates the areas covered by these requests.

NECSA submissions approved by the NNR during 2001/2002

Safety assessments	32
Facility operational technical specifications	3
Facility in-service inspection manuals	1
Radiation protection standards	4
Facility security manuals	1
Facility quality management manuals	2
Facility care and maintenance procedure	1
Transport containers (also revalidation of certificates)	4
Facility decommissioning & decontamination procedures	10
Total	58

SAFARI-1

tank-in-pool type, light-water-moderated and cooled, beryllium and water reflected research reactor designed and built as a general research tool, falling into the class of research reactors commonly known as Material Test Reactors (MTR).

The first Safety Analysis Report (SAR) for SAFARI-1, PEL-75, dates back to 1965 when operation of SAFARI-1 started.

An extensive re-assessment of the SAFARI-1 SAR was initiated by NECSA in 1998 to incorporate all changes and modifications previously approved by the NNR by way of Licence Change Requests (LCR's).

NECSA submitted the first revision of the SAR to the NNR during September 2000. Since then the document has undergone a series of iterations which NNR comment on the document have been incorporated.

Submission of the final revision of the SAR will be made in the next reporting period for final assessment and approval. Following this approval, the SAR will be incorporated into the NECSA licence.

PROPOSED PRODUCTION SMELTER AT NECSA

As a result of NECSA's previous operations, approximately 14 000 tons of uranium-contaminated scrap metal is presently stored on the Pelindaba site. The greater portion of this metal consists of about 36 000 separation elements, which, in accordance with non-proliferation agreements, must be destroyed completely. NECSA regards melting as the most appropriate and cost-effective method of achieving this.

In February 2001 NECSA submitted an application for a nuclear installation licence for a production smelter. In terms of the provisions of Section 21(3) of the National Nuclear Regulator Act the licence application was published in the Government Gazette and local newspapers. Further copies of the application were served on identified Government departments, local and provincial authorities, community-based organisations, organised labour groups, environmental groups and chambers of business and commerce. The licence application is still under consideration by the regulator.

The above-mentioned bodies were allowed a period of 30 days to comment on the licence application. Following a review of the comments received, the NNR Board in terms of Section 21(4) of the NNRA determined that there was a

need for further public debate. Public hearings are scheduled to take place in the next reporting period.

PROPOSED PBMR FUEL PLANT

In July 2000, NECSA submitted an application for a nuclear installation licence for the proposed manufacture of nuclear fuel spheres as well as non-fuel graphite spheres for the proposed Pebble Bed Modular Reactor.

The licence application was published for public comment in the first quarter of 2001.

The PBMR Fuel Plant Licensing Strategy was approved in March 2002. The safety assessment is still under consideration and a nuclear installation licence had not been issued by the end of the reporting period.

DISMANTLING AND DECOMMISSIONING (D&D) ACTIVITIES

As a consequence of the downscaling of activities on the NECSA site, operations at a number of facilities have been discontinued. Subsequent to such discontinuation, D&D activities are performed in three different phases:

1. Phase 1 covers facility shut down and minimum decommissioning activities such as the removal of the radioactive inventory to obtain a state of passive safety.
2. Phase 2 covers further decommissioning activities for the partial or complete removal and decontamination of process systems with the aim of restricted re-utilisation of facilities or reducing care and maintenance requirements.
3. Phase 3 covers the activities required for the clearance of facilities. Phase 3 decommissioning is the ultimate end point of decommissioning, after which a facility can be removed from regulatory control.

During the reporting period the major D&D activities approved by the NNR were:

- Phase 2 decommissioning of part of Area 62 of the Conversion Plant.
- Phase 2 decommissioning of Area 16 (Feed Waste and Product Area of the enrichment facility) and related facilities

PHYSICAL SECURITY

Following the events of 11 September 2001, NECSA was required to review the physical security measures for the NECSA facilities taking into account the effects of possible terrorist activities and their possible impact on nuclear facilities.

NECSA undertook to make significant upgrades of the site's physical security measures. These activities are still in progress and are due to be completed during the next reporting period.

COMPLIANCE ASSURANCE

INSPECTIONS AND AUDITS

During the reporting period NNR inspectors performed a total of 209 compliance inspections on the NECSA site. These inspections covered all aspects of the licensing conditions and five radiation protection audits in which the NNR participated as observers. During these inspections the percentage compliance was determined to be 92 percent.

EMERGENCY PLANNING AND PREPAREDNESS

In compliance with Section 38 of the National Nuclear Regulator Act, 1999 (Act No. 47 of 1999), NECSA has in place a comprehensive emergency plan. Over the reporting period two site emergency exercises, 63 building emergency exercises and five exercises were conducted by NECSA. These exercises tested the various aspects of the NECSA site emergency plan, in terms of possible chemical and radiological hazards.

In November 2001, the NNR conducted a comprehensive exercise to evaluate NECSA's emergency planning and preparedness. The objectives of the exercise were:

1. Evaluation of the effectiveness and implementation of the various aspects of the NECSA Emergency Plan.

2. Evaluation of communication between, and actions of, NECSA emergency functionaries.
3. Evaluation of communication with off-site emergency support functions.
4. Promotion of emergency conduct and safety awareness by NECSA personnel.

The NNR concluded that an appropriate level of emergency planning and preparedness was in place at NECSA.

INCIDENTS

Incidents/occurrences are classified as:

- Level 1, where immediate NNR notification is required,
- Level 2, where NNR notification is required within 24 hours, and
- Level 3, where NNR notification is required within 5 days.

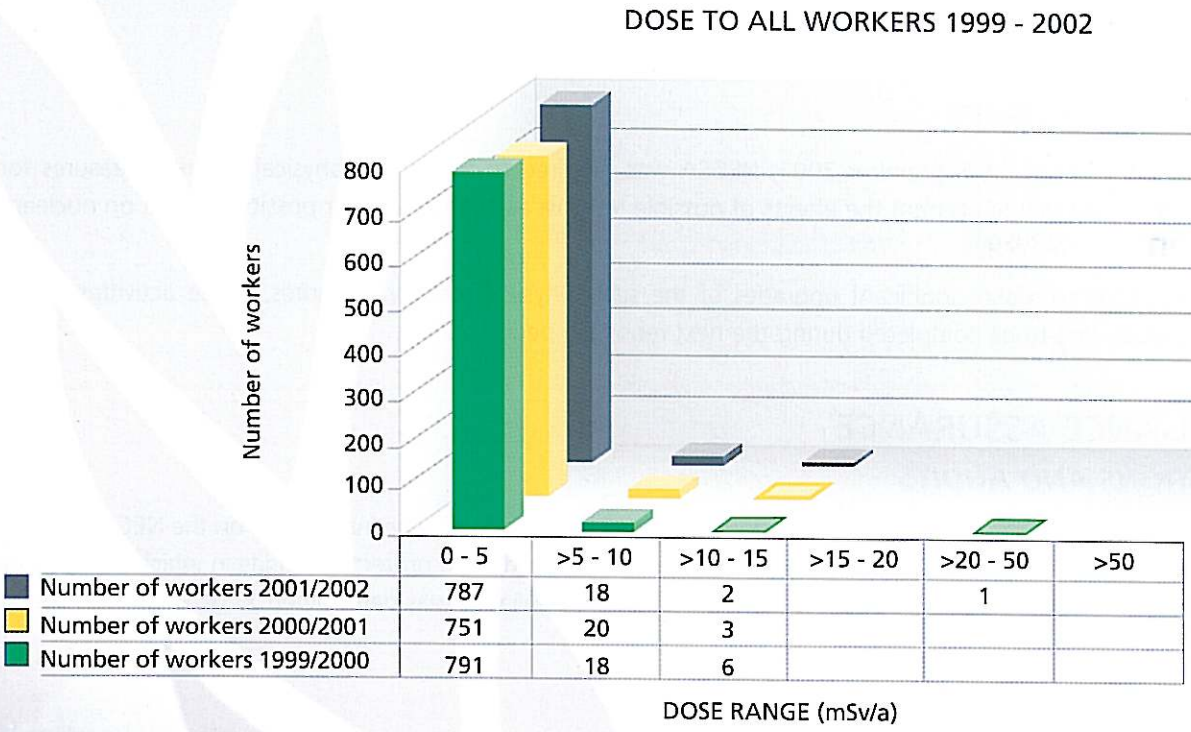
A total of 85 occurrences were reported during the reporting period. Of the reported occurrences, 58 were classified as level 3, and 27 were classified as level 2. No level 1 occurrences were reported during the reporting period.

OCCUPATIONAL EXPOSURE

The controls over occupational exposure were comparable to the best practice internationally and well within the ALARA objectives set by NECSA. The average effective radiation dose per occupationally exposed worker for 2001 was 0,61 mSv, which is 12% of the ALARA objective of 5 mSv/a.

Average Dose in reporting period (mSv)	0,61
Total Collective Dose (person - Sievert)	0,496

The maximum individual exposure was 20.73 mSv, which is well below the annual limit of 50mSv.



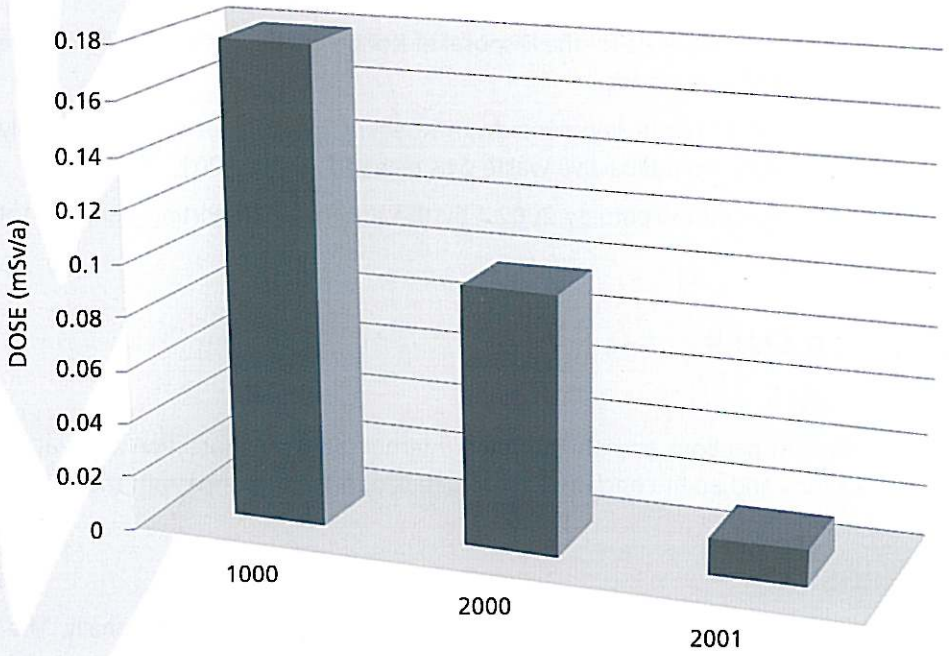
The figure above details the dose distribution for the past three years.

PUBLIC EXPOSURE

The maximum projected exposure to members of the public arising from liquid and gaseous effluent discharges was 0.021 mSv, which is well within the dose limit of 0,25 mSv/a. Liquid effluent discharges contributed 0,014 mSv and gaseous discharges 0,007mSv during the 2001 calendar year.

Following the concern regarding liquid effluent management reported last year, the liquid effluent management system at NECSA was revised. This resulted in a significant reduction of the dose attributed to liquid effluent releases into the Crocodile River.

PUBLIC EXPOSURE DUE TO LIQUID EFFLUENT RELEASES TO THE CROCODILE RIVER



The figure above compares the doses attributed to liquid effluent discharges into the Crocodile River for the last three years.

The following table summarises the gaseous effluent discharges for the 2001 calendar year.

Nuclide	Discharge (Bq)	Effluent Dose (mSv)
238U	1.30E+08	3.38E-05
239Pu	1.07E+08	1.05E-04
90Sr	1.15E+09	1.84E-06
131I	4.26E+11	6.82E-03
85Kr	2.10E+14	4.20E-05
3H	1.23E+10	1.35E-08
Total (all nuclides)		7.00E-03

ENVIRONMENTAL VERIFICATION

In compliance with licence requirements, various sample media are collected from the environment around the Pelindaba site. The sampling locations are based on the surrounding land use. Samples are analysed and results are submitted to the NNR on a quarterly basis.

In addition to the above programme undertaken by NECSA, the NNR conducts an independent environmental verification programme, the primary objective of which is to provide an independent determination of the levels of radioactivity surrounding the Pelindaba site.

The environmental verification programmes confirmed adequate control over effluent discharges during the period under review.

VAALPUTS SOUTH AFRICAN NATIONAL WASTE REPOSITORY

Vaalputs is the South African National Waste Repository, and is located 90 km south-east of Springbok in the Northern Cape.

SAFETY ASSESSMENT

The Post Closure Safety Assessment of Vaalputs for the Disposal of Koeberg Low and Intermediate Level Waste (ILW) was submitted to the NNR for review and acceptance.

Following the temporary suspension of waste shipments from Koeberg, which is at present the only waste generator sending radioactive waste to Vaalputs, no radioactive waste was received during 2001.

Shipments from Koeberg were resumed in February 2002. By the end of the reporting period a total of 1279 metal drums had been received.

COMPLIANCE ASSURANCE

INSPECTIONS AND AUDITS

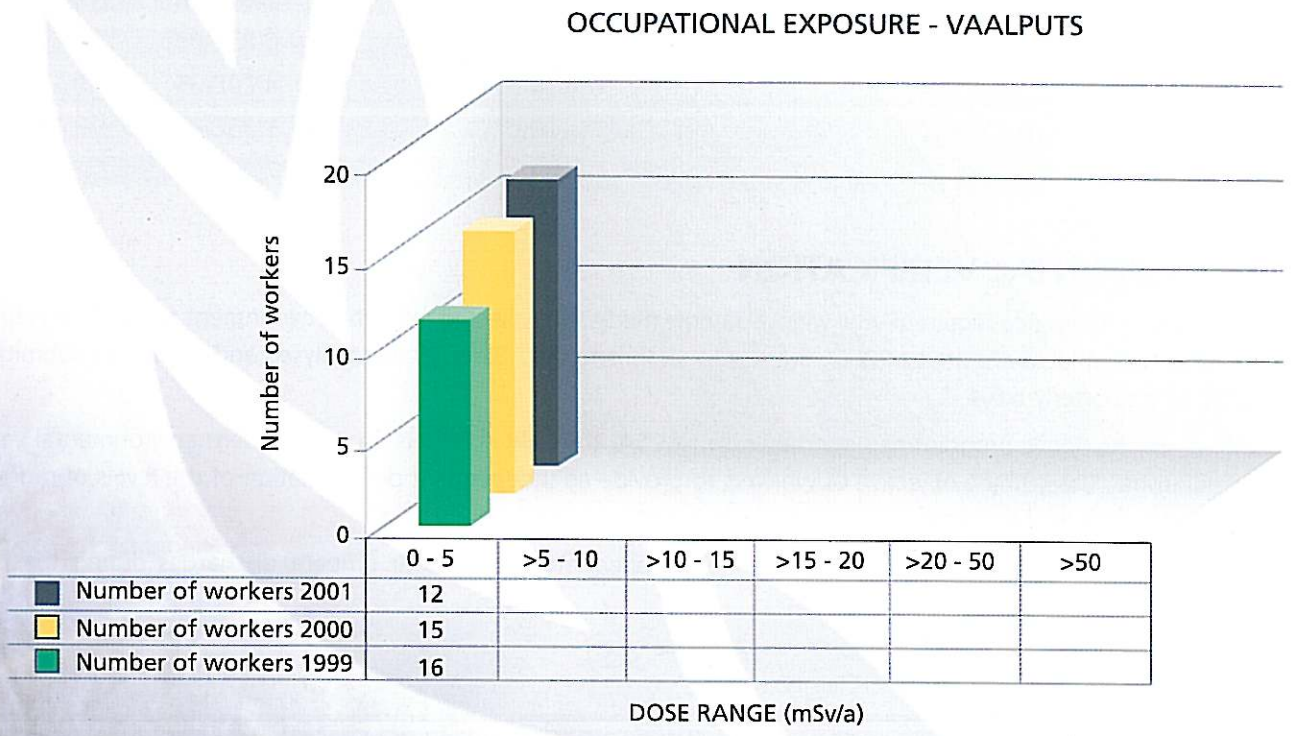
NNR inspectors undertook three inspections and attended the internal radiation protection audit at Vaalputs during the reporting period. The inspections and audit concluded that there is good compliance with the conditions of licence.

OCCUPATIONAL EXPOSURE

The controls over occupational exposure were comparable with the best practice internationally. The average effective radiation dose per occupationally exposed worker for 2001 was 0,55 mSv.

Maximum Dose (mSv)	1,29
Average Dose (m/Sv)	0,55
Total Collective Dose (person - Sievert)	0,00661

The Figure details the dose distribution for the past three years.



ENVIRONMENTAL VERIFICATION

A routine environmental monitoring programme on and around the Vaalputs site has been in place since 1984. This programme is conducted to confirm that there have not been any releases into the environment from the Vaalputs site. Due to the climate in the area, where the evaporation is about 36 times higher than the rainfall, the monitoring programme is mainly focused on borehole water, soil and vegetation.

Most of the nuclides were below the lower level of detection, and the detectable concentrations, mainly uranium, alpha and beta activity, were in the same order as in previous years.

From the environmental monitoring results it can be concluded that no measurable radiological impact from the Vaalputs National Waste Disposal Facility is detectable.

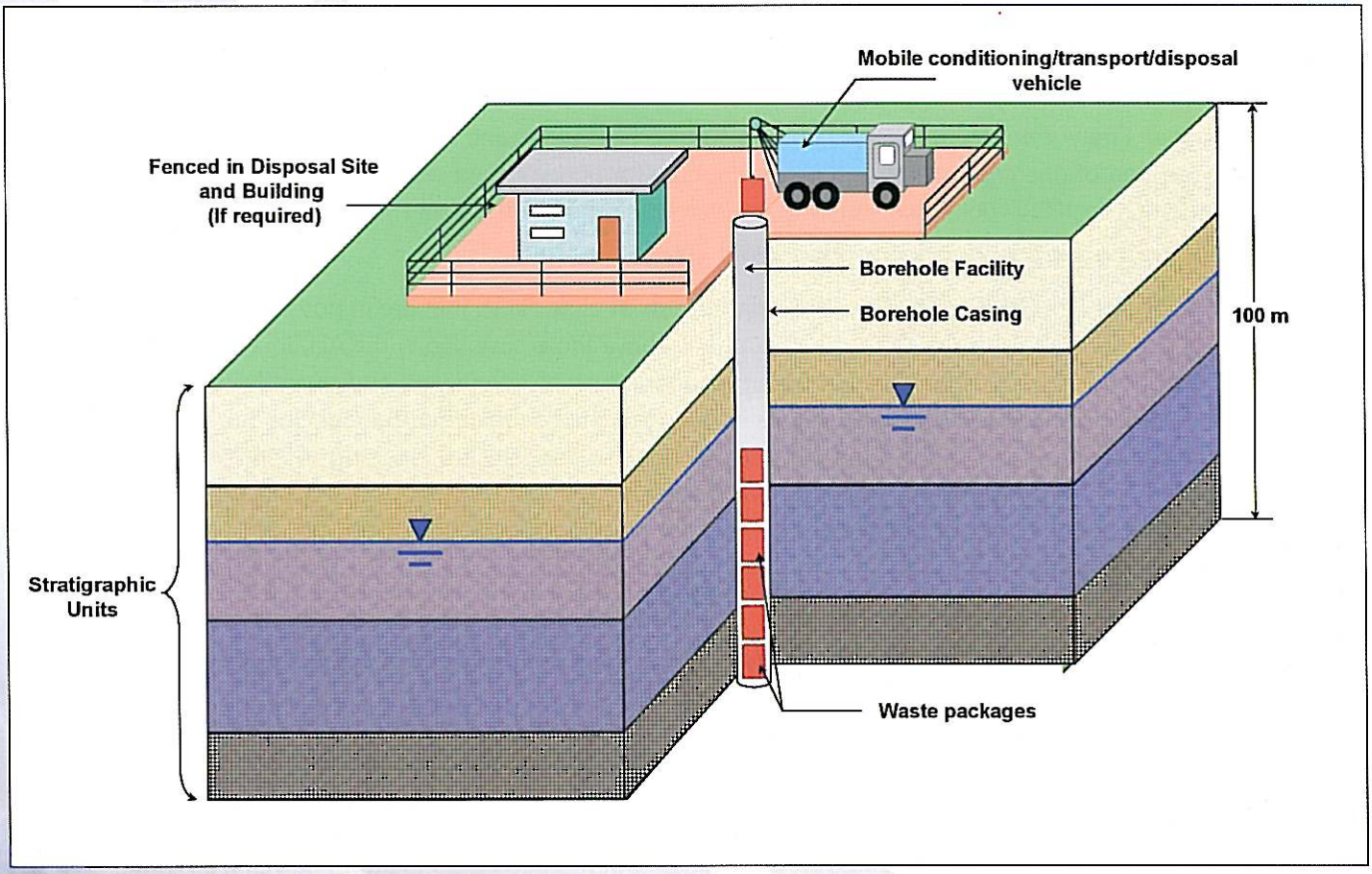
BOREHOLE DISPOSAL OF DISUSED SEALED RADIOACTIVE SOURCES (DSRS) INVESTIGATION

Under international cooperation the IAEA requested NECSA to undertake a Technical Cooperation (TC) investigation to demonstrate the feasibility of disposing of disused sealed radioactive sources (DRRS) in a borehole. Control over these sources is a major problem in many developing countries and accidents continue to occur. The proposed completion date for this investigation is the end of December 2003.

Since the IAEA specified that the investigation be subjected to regulatory control, NECSA requested the NNR to participate as a partner in the TC project.

Conceptually, the disposal concept comprises a borehole drilled down to a depth of the order of 100 m. The standard borehole (165 mm or 6,5 " in diameter) and the 100 m are guidelines. If required, wider boreholes can be drilled, while depths of less than 100 m could be acceptable on a site specific basis (see figure below).

Schematic representation of the borehole concept.



REGULATION OF NATURAL SOURCES

In the field of regulation of natural sources, the NNR regulates mining and mineral processing facilities where there ia a potential radiological hazard. The central objective of the RENS programme department is to ensure adequacy of the radiological protection regime and regulatory arrangements established for the protection of persons, property and the environment against possible damage from ionising radiation generated in mining and minerals processing.

SAFETY ASSESSMENTS

Since the NNR started to apply regulatory control over radiation hazards associated with the mining and processing of radioactive ores and minerals, considerable progress has been achieved with regard to the identification and quantification of such hazards. The efforts have been directed within two areas, namely those of exposure of workers engaged in the various activities (occupational exposure) and exposure of members of the public. Exposure of the latter can arise through effluent discharges, waste disposal practices releasing radioactively contaminated materials into the public domain, the use of contaminated land and the transport of radioactive materials in public areas.

Public safety assessments conducted by holders

To determine the control measures necessary to protect members of the public against radiation hazards, holders of nuclear authorizations were required to conduct a safety assessment. All of these safety assessments had been received from the holders by the end of the reporting period. The NNR had also received 97% of the radiation protection programmes for the public from these holders. These programmes, which are based on the safety assessments, are needed to reduce the possibility of exposure of members of the public.

Worker safety assessments conducted by holders

As with the protection of the public against radiation hazards, the steps in establishing protection of workers also require a safety assessment to be conducted. Based on the safety assessment, a radiation protection programme must be established. Such programmes must include a monitoring programme, which must demonstrate that doses to individual workers are maintained as low as reasonably achievable and are below dose limits.

All the required safety assessments for workers on surface operations and underground were submitted to the NNR. With the exception of one radiation protection programme for underground workers, all the submissions of the operational radiation protection programmes for workers were submitted to the NNR by the end of the reporting period.

Assessments conducted at unauthorised sites

The NNR Act requires the NNR to regulate radiation hazards at all facilities that are in possession of and or which handle radioactive materials with radioactivity concentrations above those specified in the Act. In addition the NNR has also received a number of reports from various companies and industries, identifying and quantifying radiation hazards at their facilities. Additionally, the NNR conducted its own investigations regarding the radiation hazards at such facilities. These industries include zircon and phosphate users, facilities where activities involving thorium-bearing alloys used in the aviation industry are undertaken, water treatment facilities, oil and gas facilities, coal burning power stations as well as facilities associated with building materials. Additionally, working groups have been set up to address issues related to the phosphate and zircon industries.

CONDITIONS OF AUTHORIZATION

Issuing of authorizations

In terms of the NNR Act, all mining and minerals processing facilities must be issued with certificates of registration. During the reporting period, two more nuclear authorizations, in the form of certificates of registration, were granted to mining and minerals processing facilities, whilst no authorizations were surrendered. At the end of the reporting period, the number of mining and minerals processing facilities and users of small quantities of radioactive material authorised by the NNR was:

Holder in the category	Number
Mining and minerals processing facilities	62
Users of small quantities of radioactive material	23
Scrap re-cyclers	9
Total	**94**

Certificates of exemption

No certificates of exemption were issued during the reporting period. Authorization change requests. Sixty-one authorization change requests were approved during the reporting period. These involved procedures and programmes required in terms of authorization conditions.

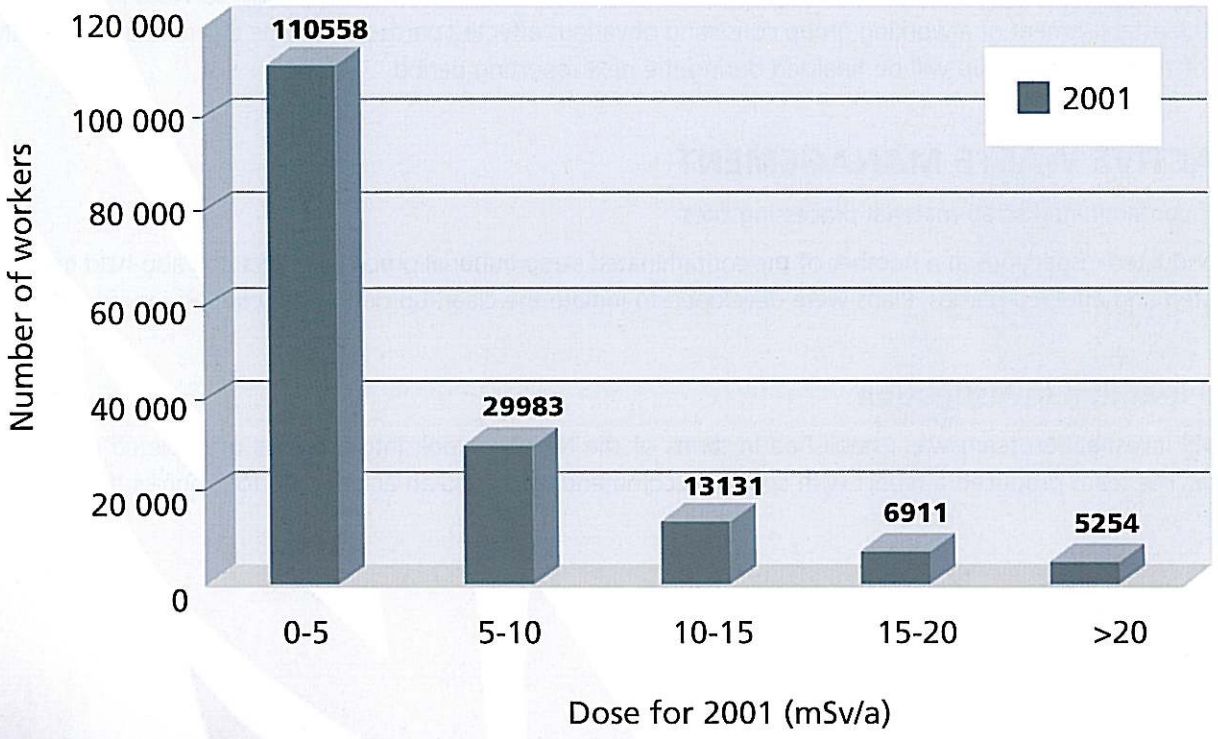
COMPLIANCE ASSURANCE

Throughout the reporting period the NNR conducted a series of inspections focusing on:

- Maintenance and demolition of plants which process or have processed radioactive material;
- The release of equipment from licensed facilities as scrap or for repair;
- The implementation of control programmes at holders' facilities where dose limits could be exceeded.

Worker exposure

The graph below represents the distribution of doses reported by holders for 2001 annual dose reports.



From the above it is clear that a significant number of workers could potentially exceed the dose limit. In terms of implementing control programmes and associated monitoring programmes, the focus fell on those holders' facilities where dose limits could be exceeded. Working groups consisting of independent radiation protection and ventilation specialists as well as representatives of the NNR, the Department of Minerals and Energy, the respective mines and mine labour, have previously been established at mines where dose limits could be exceeded. This was done in an effort to find ways in which the doses to the workforce could be reduced.

Waste management programmes

Under the conditions of authorization, holders are required to report the following information regarding the quantities of waste generated during the reporting period. These figures so reported are summarised in the Table below.

Type	Quantity (tons)
Contaminated scrap metal	~3 000 000
Slimes material	460 098 000
Waste rock	3 093 544 600

Transport of radioactive material

The table below contains the quantities of radioactive material transported from the various authorized facilities during the calendar year 2001. These consignments were all transported in accordance with the IAEA Transport Regulations.

Type	Quantity (tons)
Scrap metal	~2 000 000
Ammoniumdiurinate (ADU) slurry	~2 000
Baddelyite	~4 000
Zirconia	~3 000

Scrap management

The illegal trafficking of radioactively contaminated scrap metal remained a major concern to the NNR. During the reporting period, the NNR convened a workshop with interested and affected parties to discuss a way forward in this regard. This led to the establishment of a working group consisting of various affected parties under the chairperson of the NNR. The report of this working group will be finalized during the next reporting period.

RADIOACTIVE WASTE MANAGEMENT

Clean-up of contaminated scrap material processing sites

The NNR conducted inspections at a number of the contaminated scrap material processing sites and also held meetings with interested and affected parties. Plans were developed to initiate the clean-up during the coming reporting period.

Depleted uranium investigation

An NNR/DME investigation team was established in terms of the NNRA to look into the uses of depleted uranium in South Africa. The team produced a report with specific recommendations and an action plan to progress these recommendations.

REGULATORY STRATEGY DEVELOPMENT

Regulatory Research and Development

Regulatory Research and Development (RRD) is a new department created to address the regulatory research and developmental needs of the NNR. This department is mandated to consolidate all research and development efforts to ensure that the NNR is kept abreast with developments, nationally and internationally. Its work focuses on regulatory research, e.g. safety standards, regulatory requirements and practices, guidance documents etc..

Progress has been made with three research projects, relating to two specific areas, which were outsourced to private consultants.

The first project addresses the background radioactivity concentration in soil, water and air in South Africa. The purpose of this project is to determine the background radioactivity concentration. Such determination is important because the philosophy of radiological protection requires the regulation of the exposure that is above background. The exercise will thus provide information to help determine average regional and national background radioactivity concentrations and distributions.

A three-day workshop for town planners, environmental officers, union representatives and interested individuals from NGOs and the private sector was held by the NNR . The workshop, which was aimed at raising awareness amongst stakeholders, was designed to address basic concepts on background radiation, different instruments for measuring background radiation in water, soil and air, and the methodology for conducting a national background radiation survey.

The second project encompasses the compilation of all indoor and outdoor radon data measured in South Africa. Again this project is aimed at establishing the background radon concentration indoors and outdoors in South Africa. The results will be recorded in a database to be available to interested users. The results so far suggest that limited indoor radon data were obtained from previous research studies performed by a number of institutions such as Universities. Further indoor measurements were also available from mining companies which took the measurements as a component of their public hazard assessments. Data had been measured by a number of different methods, and these differences were duly noted and considered in the database. The data obtained to date on radon concentration indicates a need for further research in this area. Already the NNR has been made aware of certain parts of the country that may have high indoor concentrations of radon due for example, to geological features.

As a consequence of the need to do further indoor radon research, another project was initiated to develop to a strategy for the deployment of radon and gamma monitors to measure the distribution of the radon and natural gamma exposure of the South African population. The strategy should encompasses the whole country, and not only areas possible affected by mining operations. This project has been completed and its recommendations are currently being considered.

TRANSPORT

The transport of radioactive material is an international issue, and South Africa has its share of international trade in radioactive material. As the national competent authority for South Africa, in terms of Section 7 (h) of the NNRA, the NNR chose to adopt the latest version of the IAEA Regulations on the safe transport of radioactive materials. The implication was that, from 1 July 2001, all transport of radioactive material by air (as defined in TS-R-1) had to comply with the requirements of TS-R-1 with immediate effect. For all other transport modes, compliance was required from 1 July 2001, but with a transition period to December 31 2001. This is in line with international thinking.

A great deal of preparatory work was undertaken prior to implementation of the new transport regulations so as to proactively identify any potential problems. This preparation included discussions with South African Civil Aviation Authority, Southern African Maritime Safety Authority, Spoornet and various bodies associated with the training of transport workers in South Africa. The transition has gone ahead without problems.

A transport course for the mining area, dealing with the implementation of the new transport regulations, was successfully completed.

During this period the NNR, as the national competent authority (in terms of the NNR Act) for the IAEA'S Regulations for the Safe Transport of Radioactive Material, issued a number of certificates. The NNR is a member of the IAEA's Transport Safety Standards Committee and is actively involved in the drafting and amendment of transport regulations.

The RRD department has been actively involved in the supervision of students from the University of the North West doing their masters degrees in applied radiation and science technology.

There has been close cooperation with the Department Minerals and Energy with regard to the drafting and finalization of national safety standards.

LABORATORY

It is important for the NNR to conduct an independent verification analyses of environmental samples in order to ensure that the levels of exposure surrounding these sites are acceptable for the protection of persons, property and the environment. Consequently, the National Nuclear Regulator has established a laboratory for routine verification analysis of samples from authorized facilities. A set of samples is received for analysis every month from Koeberg and NECSA and occasionally from the mines. A full radionuclide analysis is performed on every sample, using a gamma spectrometer. The NNR reports are compared to the results submitted by NECSA and Koeberg, as a compliance and quality assurance check.

COMMUNICATION AND LIAISON

The activities subjected to regulatory control by the National Nuclear Regulator continued to be of interest to a broad spectrum of parties, both within the work force associated with regulated activities, communities living around licensed facilities and within the general public at large. As part of the NNR communications strategy increased effort has been expended to engage workforce and communities around licensed facilities

PUBLIC PARTICIPATION AND OUTREACH ACTIVITIES

The NNR engaged in a wide range of processes to ensure meaningful public participation in its review of nuclear authorisation applications as well as to strengthen its communication, liaison and outreach efforts.

Public participation

The NNRA requires public participation in all new authorization applications. As a result, systems were put in place to handle the public participation processes relating to the Pelindaba smelter and the PBMR applications

A document has been developed detailing the terms of reference for public participation. The document incorporated input from various stakeholders and was approved by the Board.

Interaction Between the NNR and Labour Unions at Koeberg

Three meetings were held with representatives of the organisations in the course of the reporting period. The unions raised a number of safety concerns which were taken up by the NNR with Eskom and resolved satisfactorily. The NNR also made presentations to the unions on various matters such as:

- International operator training review
- Spent fuel re-racking project
- Pebble Bed Modular Reactor
- Safety culture
- Outages.

Meetings between NNR and other organisations

Koeberg Environs Development Committee (KEDC)

The purpose of this meeting (held bimonthly) is to discuss issues relating to developments in the vicinity of Koeberg which could impact on nuclear operation. Examples of issues are urban developments in the Atlantis Growth Corridor, demographics and infrastructure requirements imposed by the Koeberg emergency plan, applications for rezoning and other developments which could result in an increase in the population challenging the population limitations. The meeting is chaired by NNR and attended by Eskom management, representatives of local municipalities (now Cape Town Unicity) and Disaster Management.

Emergency Planning Liaison Committee (EPLC)

The NNR hosts this meeting involving Eskom, NNR, local and provincial authorities and civil protection organizations three times a year. At this meeting matters relating to nuclear emergency planning, technical bases, organizational matters, infrastructure, training, the annual emergency exercise, public relations etc are discussed.

South African Utility Regulator Association

The NNR has participated in the process to establish a national association of utility regulators (SAURA). The association was established, inter alia, to bring together similarities and synergies which exist in regulating across different sectors and to encourage co-operation between regulatory authorities for the benefit of all involved. A constitution of the association was formalized by all involved parties on 15 March 2002.

Schools scientific project

This year's project focuses on three themes: 1. How a nuclear power plant works; 2. Career choices i.e. physicist,

mechanical, electrical and civil engineers etc; 3. Nuclear safety and the role of the NNR. The project will be concluded with a prize-giving ceremony towards the end of the year 2002.

Annual lecture

Highlights of the year in regard to external liaison activities included the visit by Mr Juka Laaksonen, the Director General of Stuk - the Finish nuclear safety authority - who presented the annual lectures of the NNR in both Johannesburg and Cape Town where he spoke about the Finish experience of nuclear waste management and final disposal. The lecture was well attended by experts in the field, both licence holders, workforce and the general public.

INTERNATIONAL PARTICIPATION AND LIAISON

Delegation from Korea

The NNR hosted a delegation from Korea at its offices in Centurion. The main purpose of the meeting was to explore the possibility of concluding an agreement for an exchange of technical information and co-operation in the regulation of nuclear safety. A formal agreement between the two organisations is under discussion.

International liaison on PBMR

At the onset of the PBMR project, the NNR recognized that in order to undertake the necessary work associated with the licensing of the PBMR, it was necessary to bolster the NNR staff, whose current expertise is more focused on Light Water Reactor (LWR) technology as opposed the High Temperature Gas-cooled Reactor (HTGR) technology of the PBMR. The NNR has identified organizations in Germany, Japan and the United Kingdom able to provide technical services to the NNR and to transfer their expertise to NNR staff.

The NNR is also actively involved in an International Atomic Energy Agency (IAEA) consultancy working group which is developing an international standard on the safety and licensing aspects of HTGRs.

As part of the PBMR Detailed Feasibility Study (DFS), an independent review covering technical and engineering aspects, safety, safeguards, nuclear waste, economic viability and macro- and socio-economics was undertaken by a government-appointed independent review team. The NNR, at the request of the independent review team, provided some insights into the safety and licensing aspects of the PBMR.

International Participation

The NNR attended the second meeting of the Framatome Regulators Group (FRAREG) in France. National Regulators from France, Belgium, South Korea, China and South Africa constitute this group. The meeting was preceded by the yearly bi-lateral meeting between the French nuclear regulatory authorities (DSIN) and the NNR.

The NNR has initiated a comparison of the Koeberg Probabilistic Risk Assessment (PRA) with those of similar French and Belgian plants. The first workshop to define the scope and methodology of the comparison took place in September 2001 with the participation of the nuclear regulatory authorities of Belgium (AVN) and France (DSIN/IPSN). This initiative will assist the NNR in the review/benchmarking of the Koeberg PRA and in establishing confidence in the quality of the new PRA. The next workshop is scheduled for 6-7 May at the NNR office in Centurion.

The NNR was invited by the USNRC to participate in a workshop on High Temperature Gas-cooled Reactor (HTGR) safety and research issues, which was held in the USA from 10-12 October 2001. A presentation on the licensing of the PBMR in South Africa was made by the NNR at the meeting. The focus of the workshop was to identify key HTGR safety issues and the need for future research, including independent tools and data that the USNRC would need to develop to support licensing reviews of new HTGR designs.

The NNR continued with its active participation in various IAEA initiatives, e.g. AFRA Nuclear Safety Standards, as well as participation in international conferences and training courses.

Network of Regulators of Countries with Small Nuclear Programmes (NERS)

The NNR hosted the Network of Regulators of Countries with Small Nuclear Programmes (NERS) meeting which provides a forum for regulators with small nuclear programme. Countries which attended the meeting included Belgium, Czech Republic, Finland and Hungary. The IAEA was also represented. In this meeting common challenges were shared and regulators had an opportunity to learn from each other. The next meeting will take in the Czech Republic later in 2002.

IAEA regional information seminar

The NNR played a vital role in the organisation of the IAEA regional information seminar which was hosted by DME and held in Cape Town towards the end of 2001. The seminar was aimed at giving information to members of the public on a wide range of topical issues in nuclear technology and its applications in addressing human needs.

IAEA fellowships/scientific visits

The NNR cooperates with various countries in Africa by providing facilities for the training of personnel under the auspices of IAEA fellowships and sponsored scientific visits. The hosting of such visitors is testimony to the role and good reputation of the NNR as well as its contribution to the African Renaissance.

CORPORATE SUPPORT SERVICES DIVISION

ORGANISATIONAL STRUCTURE OF THE NNR

The NNR embarked upon a restructuring exercise during the reporting period. The following five core groups were established during the process:

(a) Power Reactor Division

The division has two departments, namely:

- Koeberg Nuclear Power Station Programme
- Pebble Bed Modular Reactor Programme

(b) Nuclear Technology and Natural Sources Division

The division has two departments, namely:

- Regulation of Natural Sources Programme
- Nuclear Technology and Waste Projects Programme

(c) Corporate Support Services Division

The division has two departments, covering the following functions:

- Human Resources and General Administration
- Finance, Information Technology and Information Services

(d) Regulatory Strategy Development Division

The division is comprised of a number of specialist services in the following areas:

- Legal Services
- Communications
- Board Secretariat
- Regulatory Research and Development

(e) Assessment Group

The technical assessment function previously performed by the Reactor Assessment Department and the Scientific and Technical Assessment Department have been grouped together in one Assessment Group. The Assessment Group will render technical assessment functions to all the technical programmes.

PERSONNEL STRUCTURE OF THE NNR

Staff Category	Number
Chief Executive Officer	1
Senior Manager	4
Assessment Coordinator	1
Programme or Departmental Manager	6
Process Coordinators	8
Regulatory Officers and Specialists (all levels)	43
Administrative, secretarial and support staff	19

The restructuring process has not been fully implemented. It is envisaged that the process will be finalised before the end of October 2002.

STAFF QUALIFICATIONS

Qualifications	Number of staff
Doctorate	8
Masters	11
Honours	18
Baccalaureate	13
Diploma	15
Matric	15
Sub-matric	1

EMPLOYMENT EQUITY

The NNR strictly applied its Employment Equity Plan during the reporting period. However, the NNR was not able to meet all targets.

The breakdown by race and gender for all staff and for management is indicated in the table below.

Representivity – total staff

Total NNR composition	Number and percentage	
White males	40	(49.4%)
Black males	21	(25.9%)
Black females	8	(9.8%)
White females	12	(14.9%)
Disabled	3	(3.7%)
Management		
Senior Management		
• White males	3	(60.0%)
• Black males	1	(20.0%)
• Black females	1	(20.0%)
• White females	0	(0.0%)
Management		
• White males	5	(50.0%)
• Black males	4	(40.0%)
• Black females	1	(1.0%)
• White females	0	(0.0%)

TRANSFORMATION POLICY AND PLAN

The NNR conducted a comprehensive transformation audit as part of the development of its Transformation Policy and Plan. The audit was conducted with the assistance of a firm of consultants specialising in the area of transformation.

The audit was conducted and the policy and plan developed through a consultative process, involving staff and staff representative groups at various levels and stages throughout the process.

The results of the transformation audit and the Transformation Policy and Plan were used to inform the process of developing the NNR's Strategic Plan on matters relating to transformation.

Staff representative bodies

Transformation Committee

At the initiative of the Board's transformation committee, the staff of the NNR established a staff transformation committee to monitor the implementation of transformation initiatives in the organisation. The transformation committee

fully participated in all the initiatives of the NNR relating to transformation, including the restructuring process, recruitment and selection, performance review processes, progression and promotion review meetings and the review of NNR policies and procedures.

Staff Association Union

The NNR Staff Association registered as a union during the reporting period. The Staff Association Union was involved in all the initiatives of the NNR affecting the conditions of employment of its members. As with the Transformation Committee, the Union was involved in matters relating to transformation, including the restructuring process, recruitment and selection, performance review processes, progression and promotion review meetings and the review of NNR policies and procedures.

CAPACITY BUILDING

Staff development

The NNR regards staff development in a very serious light and has allocated approximately 3.5% of its personnel budget to staff training and development. Priorities in allocating resources for training and development gave specific emphasis to the accelerated training of staff from the designated group.

Bursary scheme

NNR provided bursaries to five students during the reporting period. All the bursaries were granted to students from the previously disadvantaged group. Bursaries were allocated as follows:

- Mechanical engineering (University of Durban)
- Civil engineering (University of Cape Town)
- Electrical engineering (University of Durban-Westville)
- Radiation Science (University of the North West)

In addition, the NNR sponsored two students enrolled for the post-graduate degree in radiation science (masters level) at the University of the North-West. The students were assigned projects by the NNR as part of their final M.Sc dissertation. Both students have since successfully completed their courses. The NNR recruited one of them as a radio-chemist

University involvement

Post-graduate course in nuclear safety

The NNR continued its support of the post-graduate course in nuclear safety at the University of the Witwatersrand. The course was aimed mainly at training staff who will work on the PBMR project. The course was developed and presented by the NNR, NECSA, Eskom and the Pebble Bed Modular Reactor Company PTY Limited, and was facilitated by the Schönland Centre at the University of the Witwatersrand. One staff member of the NNR successfully completed the course.

Post-graduate course in radiation science (University of the North-West)

The NNR continued to provide technical and administrative support to the post-graduate course in radiation science at the University of the North-West. NNR staff provided lectures and training material in support of the course.

Post-graduate course in radiation protection (University of the Witwatersrand)

The NNR continued to provide technical and administrative input into the post-graduate course in radiation protection at the University of the Witwatersrand. NNR staff provided lectures and training material in support of the course.

GOVERNANCE

Main Board

The membership of the main Board of the NNR is detailed in the section people at the helm.

Board subcommittees

The Board appointed four standing committees to deal with specific issues, namely.

(a) Audit Committee

The membership and functions of the Board's Audit Committee are detailed in the Directors' report.

(b) Transformation and Development Committee

The NNR Board appointed two standing sub-committees, namely the Transformation sub-committee and the Human Resources, Development and Remuneration sub-committee to deal with matters relating to transformation and human resources, staff development and remuneration.

It was decided during the course of the year that, as a result of significant overlap in the matters dealt with by the respective committees, the two committees should be amalgamated into a single committee. The NNR Board approved the amalgamation, and the Transformation and Development sub-committee held its first meeting in June 2001.

The members of the two committees were retained. The members of the Transformation and Development sub-committee are

Chairperson

Prof S H Taole

Members

Ms E K Mohammed
Mr L D S Thobejane (resigned on 1 November 2001)
Mr R Lockwood
Dr S W P de Waal
Mr B C Winkler
Prof K Bharuth–Ram (appointed to replace Mr LDS Thobejane)

The Transformation sub-committee met twice during the reporting period.

The Human Resource, Development and Remuneration Subcommittee met twice during the reporting period, the Transformation and Development Subcommittee three times.

(c) Board committee on NNR Restructuring

The purpose of the committee on NNR Restructuring is to advise the NNR Executive on matters relating to the restructuring process that it has entered into as part of its transformation initiatives and to facilitate improved relations between the NNR Executive and staff representative bodies on matters relating to the restructuring process. The members of the committee are:

Chairperson

Prof S H Taole

Members

Mr B C Winkler
Ms E K Mohammed

The committee met three times during the reporting period.

(d) Committee on Emergency Planning

The committee was established to advise the Board on matters relating to emergency planning issues at the Koeberg Nuclear Power Station. The members of the committee are:

Chairperson

Mr ACH Mataung / Mr DP Elbrecht

Members

Mr RC Lockwood

Mr BC Winkler

The committee met 6 times during the reporting period.

AUDITOR-GENERAL

REPORT OF THE AUDITOR-GENERAL TO PARLIAMENT ON THE FINANCIAL STATEMENTS OF THE NATIONAL NUCLEAR REGULATOR FOR THE YEAR ENDED 31 MARCH 2002

1. AUDIT ASSIGNMENT

The financial statements as set out on pages 40 to 56, for the year ended 31 March 2002, have been audited in terms of section 188 of the Constitution of the Republic of South Africa, 1996 (Act No. 108 of 1996), read with Sections 3 and 5 of the Auditor-General Act, 1995 (Act No. 12 of 1995) and Section 17(8) of the National Nuclear Regulator Act, 1999 (Act No. 47 of 1999). These financial statements, the maintenance of effective control measures and compliance with relevant laws and regulations are the responsibility of the accounting authority. My responsibility is to express an opinion on these financial statements, based on the audit.

2. NATURE AND SCOPE

2.1 Audit of financial statements

The audit was conducted in accordance with Statements of South African Auditing Standards. Those standards require that I plan and perform the audit to obtain reasonable assurance that the financial statements are free of material mis-statement.

An audit includes:

- examining, on a test basis, evidence supporting the amounts and disclosures in the financial statements,
- assessing the accounting principles used and significant estimates made by management, and
- evaluating the overall financial statement presentation.

Furthermore, an audit includes an examination, on a test basis, of evidence supporting compliance in all material respects with the relevant laws and regulations which came to my attention and are applicable to financial matters.

I believe that the audit provides a reasonable basis for my opinion.

3 AUDIT OPINION

3.1 Audit of financial statements

In my opinion, the financial statements fairly present, in all material respects, the financial position of the National Nuclear Regulator at 31 March 2002 and the results of its operations and cash flows for the year then ended in accordance with generally accepted accounting practice and in the manner required by the Public Finance Management Act, 1999 (Act No. 1 of 1999).

4. EMPHASIS OF MATTER

Without qualifying the audit opinion expressed above, attention is drawn to the following matters:

4.1 Matters affecting the financial statements

4.1.1 Going concern

The Regulator incurred a total deficit of R3 328 893 during the year ended 31 March 2002. This deficit together with the accumulated deficit from the previous year resulted in the Regulator's liabilities exceeding its assets by R5 876 696 as at 31 March 2002. These conditions, along with other matters as set forth in note 11 of the financial statements, indicate that the Regulator is technically insolvent which may raise doubt about the entity's ability to continue as a going concern.

5. APPRECIATION

The assistance rendered by the staff of the National Nuclear Regulator during the audit is sincerely appreciated.



T. Eloff
for **Auditor-General**
Pretoria
31 July 2002

Audit Committee Report for the year ended 31 March 2002

1. Responsibilities

The Board of Directors has the overall responsibility to ensure that the organisation has and maintains effective, efficient and transparent systems of risk management and internal control. The responsibility to ensure the adequacy and effectiveness of these systems is delegated to the Audit Committee. The Audit Committee is an advisory committee of the Board, operating as overseer with an independent and objective stance. Notwithstanding the delegation of certain functions to the Audit Committee, the Board remains ultimately responsible for ensuring that systems of internal control are developed, implemented and maintained.

2. Governance

The Board appointed the following members of the Audit Committee:

Chairperson

Dr J M Stewart (Director on the NNR Board)

Members

Mr J Bone (Independent specialist)
Mr E B Mathebula (Director on the NNR Board)

The Audit Committee met five times during the period under review.

3. Internal Control Systems

The members of the Audit Committee believe that the NNR's Executive has demonstrated through its reporting mechanisms and internal audit arrangements, that its system of internal control is adequately designed to cover organisational risks, financial risks and operating risks. The control systems provide reasonable, but not absolute, assurance that the organisation's assets are safeguarded, that transactions are authorised and recorded properly, and that material errors and irregularities are either prevented or detected timeously. These controls are monitored throughout the organisation by the management and employees with the necessary segregation of authority and duties.

In the course of investigations undertaken and the review of detailed reports provided by the internal auditors and NNR management, the members of the Audit Committee have not become aware of any significant weakness or deficiency in the organisation's system of internal control.

4. Internal Auditing

Internal Audit provides a supportive role to management and the Audit Committee by identifying and evaluating significant exposures to risk and contributing to the improvement of risk management and control systems.

The internal audit function is responsible for independently and objectively evaluating the organisation's system of internal controls at a detailed level and to bringing any significant business risks and exposures to the attention of management and the Audit Committee through the provision of comprehensive internal audit reports.

5. Financial Statements

Having reviewed and evaluated the financial statements in the annual report, the members of the Audit Committee believe that they fairly present the state of affairs of the organisation, its business, financial results, and its financial position at the end of the financial year.



Dr J M Stewart
CHAIRPERSON

DIRECTORS' REPORT

1. NATURE OF BUSINESS

The National Nuclear Regulator (NNR) was established in terms of Section 3 of the National Nuclear Regulator Act, 1999, (Act No. 47 of 1999) to:

a) provide for the protection of persons, property and the environment against nuclear damage through the establishment of safety standards and regulatory practices;

b) exercise regulatory control related to safety over –

1) the siting, design, construction, operation, manufacture of component parts, and the decontamination, decommissioning and closure of nuclear installations; and

2) vessels propelled by nuclear power or having radioactive material on board which is capable of causing nuclear damage, through the granting of nuclear authorizations;

c) exercise regulatory control over other actions to which the Act applies, through the granting of nuclear authorizations;

d) provide assurance of compliance with the conditions of nuclear installations through the implementation of a system of compliance inspections;

e) fulfil national obligations in respect of international legal instruments concerning nuclear safety and to ensure that provisions for nuclear emergency planning are in place.

2. OPERATING RESULTS

The total income of the NNR was R39,70 million (2001: R38, 96 million) including the State contribution of R7,0 million (2001: R7,23 million). Figures provided for the financial period ending March 2001 reflect a 13-month period, whereas the figures provided for the financial year ending March 2002 reflect the normal 12-month period.

The major contributor to income is nuclear authorisation fees.

The gross operating loss for the year of R3,33 million (2001: R5,98 million) is mainly due to the provision for the post-retirement medical aid liability of R3,89 million (2001: R 4,94 million).

3. GENERAL REVIEW OF BUSINESS AND OPERATIONS DURING THE ACCOUNTING PERIOD

Address of the National Nuclear Regulator

Physical address:	Second Floor Old Mutual Centre Embankment Road Centurion
Postal address:	PO Box 7106 Centurion 0046
Telephone	(012) 674-7100
Facsimile	(012) 663-5513
E-mail	nnr@nnr.co.za

Overview of operations

The NNR's strategy is to implement responsible and effective regulatory control. It accomplishes this by developing and implementing regulatory standards and practices that are comparable internationally. Quantitative and qualitative

assessment techniques and safety assurance programmes are applied in an efficient and cost-effective manner.

The activities of the NNR are carried out within the mandate provided by the NNR Act and in line with broad government policy. In this regard, the NNR has worked closely with a number of government departments, giving effect to the principles of co-operative governance and intergovernmental relations as contemplated in the Act.

In discharging its mandate, the NNR continued to implement government policy regarding transformation. In this regard, the NNR has developed a transformation policy and plan. The implementation of the policy and plan forms the basis of the NNR's strategic plan, which will be implemented during the forthcoming financial year.

The NNR remained committed to capacity building initiatives, ensuring that people from the previously disadvantaged groups are given an opportunity to enter the nuclear industry. Public participation in the regulatory process continued to be a high priority and it is envisaged that more initiatives will be undertaken in the future to ensure that the public is informed about regulatory and safety-related matters, and that it is involved in the regulatory processes.

By conducting safety assessments, monitoring compliance with conditions of licence and authorisations, and inspecting activities on a regular basis, the NNR has been able to ensure the introduction of appropriate measures to maintain safety margins and to provide assurance of nuclear safety nationwide.

The NNR was successful in significantly improving its financial management controls during the reporting period and achieved its objective of providing management and the Board of Directors with detailed accounting statements on a monthly basis.

The method of charging an hourly-based nuclear authorisation fee to holders of nuclear authorisations in the mining and minerals industry again resulted in uncertainty regarding the income to be received from this sector. This uncertainty makes it difficult for management to plan expenditure and remain within income received.

In an effort to normalise this situation, the NNR undertook a study to determine the costs relating to each of the projects for the regulation of which it is responsible, as well as the costs that should reasonably be allocated to the State. The NNR discussed the proposed method of charging nuclear authorisation fees with the Industry Forum on Radiation, which represents all holders of nuclear authorisations and nuclear licenses in South Africa, and reports that it was supported in its efforts to normalise the charging of fees. On the basis of this study, the NNR submitted proposals to the Minister to fix nuclear authorisation fees in terms of Section 28 of the National Nuclear Regulator Act. The fees for the 2002/2003 financial year have since been approved by the Minister and published in the Gazette. This measure will greatly improve the NNR's ability to manage its expenditure and remain within the income received.

Appointment of new Chief Executive Officer

The vacant position was filled in an acting capacity by Messrs J Leaver and N D Moloi until 1 September 2001 when the new CEO, Ms L B Zondo, took office.

Organisational re-structuring

The NNR embarked upon a restructuring process as part of its transformation initiative. The main objectives for the organisational restructuring were to reduce the number of levels of management in the structure and to optimise the operations of the NNR.

The first objective was met by removing the positions of General Manager, Deputy General Manager and Division Head from the management structure and retaining only the levels of Chief Executive Officer, Senior Manager and Manager. The position of Deputy Manager was redefined and will in the new structure be called Process Coordinator.

The organisational structure approved by the Board is included in this report.

4. EVENTS AFTER YEAR END TO DATE OF THIS REPORT

The NNR directors are not aware of any matter or circumstance which may have arisen since the end of the financial year, not otherwise dealt with in the annual financial statements, which significantly affects the position of the organisation or the results of its operations.

5. MAJOR CHANGES IN THE NATURE OF FIXED ASSETS OR CHANGES IN THE POLICY RELATING TO THE USE OF FIXED ASSETS

The directors are not aware of a change in the nature of fixed assets or changes to the policy relating to the use of fixed assets.

6. DISCLOSURE OF DIRECTORS' EMOLUMENTS

NAME	ANNUAL REMUNERATION
Non-Executive Directors	
Dr M W Makgoba (Chairperson)	Nil
Ms N J Mxakato-Diseko (Vice Chairperson)	R4 872
Prof K Bharuth-Ram	R20 086
Dr S W P De Waal	Nil*
Mr D Elbrecht	Nil
Mr R Lockwood	R25 922
Mr E B Mathebula	Nil*
Ms E K Mohammed	R18 036
Dr J M Stewart	Nil
Prof S H Taole	R13 291
Mr L D S Thobejane	R15 428
Mr B C Winkler	R41 121
Executive Directors	
Ms L B Zondo (Chief Executive Officer)	R342 762

Note

* Directors who are members of the government service do not receive emoluments.

Changes in membership

Ms N J Mxakato-Diseko resigned with effect from 1 February 2002.
Mr L D S Thobejane resigned with effect from 1 November 2001.

Alternate Directors

The following members served as alternate members:
Mr ACH Mataung (alternate to Dr SWP de Waal)
Mr WDM Fourie (alternate to Mr EB Mathebula)

7. STATEMENT OF RESPONSIBILITY

The Board of Directors has the overall responsibility to ensure that the organisation has and maintains effective, efficient and transparent systems of financial and risk management and internal control. The Board is responsible for keeping full and proper records of the financial affairs and preparing financial statements for each financial year in accordance with generally accepted accounting practice.

8. GOING CONCERN

The NNR is required to make provision for a liability which it has in respect of post-retirement medical benefits for certain categories of staff.

The liability resulted from a decision by the Board of the erstwhile Council for Nuclear Safety to provide medical aid benefits to members of staff who were in the employ of the NNR on or before 31 December 1995, and who retire from the service of the NNR.

However, the benefit only accrues when qualifying members of staff retire, and as such the NNR is not compelled to have the resources to fund the full liability at this stage. The NNR is providing for the subscription fees of qualifying pen-

sioner members through the annual budget allocation received from Treasury, and is paying the subscription fees on a monthly basis.

9. MATERIAL LOSSES THROUGH CRIMINAL CONDUCT AND IRREGULAR, FRUITLESS AND WASTEFUL EXPENDITURE

The NNR has not suffered material losses through criminal conduct or irregular, fruitless or wasteful expenditure. As such, no criminal or disciplinary steps have been taken, neither have any losses been recovered or written off.

10. RETIREMENT FUND

The NNR has not disclosed any liabilities in terms of AC 116 in its financial statements. At the time of the last actuarial valuation conducted in July 2000, the Fund was 96% funded. Measures were implemented to increase the funding level to 100% within a three-year period. The NNR believes that the Fund is now fully funded.

Measures have been implemented to perform annual valuations of the Fund in order to ensure compliance with AC 116.

11. PERFORMANCE RESULTS

	PERFORMANCE OBJECTIVE	TARGET	ACHIEVED	NOTES
1.	Develop a more proactive system of nuclear related risk management (including standards development practices, problem identification data bases, methodology and tools).	75%	50%	Good progress was made with the development of standards, the development of databases and assessment tools and methodologies.
2.	Develop a holistic compliance assurance system.			
2.1	To undertake compliance inspections and audits	1594	1353 (85%)	Compliance inspection programmes to verify compliance with conditions of authorisation are developed annually. Of the 1594 inspections and audits scheduled for the year, 1353 were conducted.
2.2	Achieve compliance with conditions of authorization	100%	92%	During compliance inspections it was determined that 92% of the holders of nuclear authorisations and licenses complied with conditions of authorisation.
2.3	Ensure all workers comply with the worker dose limit of 50 mSv/a	It is calculated that 1265 mine workers exceeded the limit of 50 mSv/a	Approximately 99% success was achieved if the number of workers who exceeded the dose limit is compared with the total number of workers in the mines that are regulated by the NNR	50 milliSievert per annum (mSv/a) represents the maximum dose limit to which a worker should be exposed per annum. The matter is being addressed.
2.4	Ensure compliance with public dose limits of 0,25 mSv/a (Koeberg and NECSA)	0,25 mSv/a	100% compliance	No member of the public was exposed above the limit of 0,25 mSv/a.
3.	Develop a plan to authorise new projects (including new authorisations and authorisation change requests).			
3.1	To achieve measurable progress on authorisation of new projects:			
	3.1.1 Interim Radioactive Waste Storage Facility	75%	50%	The NNR received an application to authorise an Interim Waste Storage Facility at NECSA. A safety assessment was conducted and the request from the holder was approved.
	3.1.2 PBMR Fuel Fabrication Plant	60%	50%	The NNR received an application to authorise the PBMR Fuel Fabrication Plant. An objective was determined that 60% of the safety case would be reviewed by the end of the year. The NNR managed to complete 50% of the objective (83% of the objective was met)
	3.1.3 NECSA Smelter	80%	50%	The NNR received an application to authorise the Smelter at NECSA. An objective was determined that 80% of the safety case would be reviewed by the end of the year. The NNR managed to complete 50% of the review (63% of the objective was met).
	3.1.4 PBMR Reactor First stage licensing: • Finalisation of Safety Case Philosophy	100%	100%	The NNR managed to complete the objective of performing the review of the Safety Case Philosophy for the first stage licensing of the PBMR Project.

11. PERFORMANCE RESULTS continued

	PERFORMANCE OBJECTIVE	TARGET	ACHIEVED	NOTES
	• Review of Safety Analysis Report (Rev1)	100%	75%	An objective was set to complete the review of the Safety Analysis Report (Rev1). The objective could not be achieved as a result of the late submission of the report by the applicant and also delays in the NNR overseas consultants in providing their review comments.
4.	Develop a plan to authorise existing projects.			
4.1	Review operational radiation protection programmes and waste management programmes from all mining and minerals processing facilities within NNR-determined time frames.	105 programmes were scheduled for receipt during the year	103 programmes were received and reviewed during the year (98%)	
4.2	Review authorisation change requests, modification requests and other requests from holders within NNR-determined time frames. • Koeberg • NECSA	776 authorisation change requests were received 127 authorisation requests were received from holders	768 of the requests received were reviewed by the NNR within the NNR-determined time frames (99% compliance) 95% of the authorization change requests received were reviewed during the reporting period	
5.	Develop a plan to improve safety assessments and the overall authorisation process.			
5.1	Finalise review of SAFARI Safety Re-Assessment Report	100%	80%	The NNR has set an objective to finalise the SAFARI safety assessment report. 80% of the review has been completed.
5.2	Finalise review of the Vaalputs Long-term Safety Assessment	100%	85%	The NNR has set an objective to finalise the review of the Vaalputs long-term safety assessment. 85% of the review has been completed.
6.	Develop a plan for the rehabilitation of contaminated sites.	100% develop-ment of plan for rehabilita-tion	80%	The NNR identified all the contaminated sites The NNR has entered into discussions with affected parties in order to imple-ment the plan. It is envisaged that preparations for the implementation of the plan will be completed during the next financial year and that the clean-up of sites will commence.
7.	Conclude co-operative governance agreements with other organs of State.	Conclude at least 1 co-operative gover-nance agreement	0	The NNR set an objective to conclude a co-operative governance agreement with the Mine Health and Safety Directorate of the Department of Minerals and Energy. Good progress was made with the agreement and a first draft agreement has been developed. It is envisaged that the agreement will be concluded during the next financial year. Progress was also made with an agreement between the NNR and the Department of Water Affairs.

11. PERFORMANCE RESULTS continued

	PERFORMANCE OBJECTIVE	TARGET	ACHIEVED	NOTES
8.	Develop a programme for institutional co-operation with other stakeholders.	50%	50%	The NNR has identified the stakeholders with whom it needs to establish institutional co-operation, and has started with the development of a programme to conclude agreements with these institutions.
9.	Develop a plan to promote the safety culture in relation to the management of nuclear-related risks.	100%	70%	A draft plan has been developed by the Communications Department. It is envisaged that the plan will be completed early in the next financial year, after which the Department will implement the plan.
10.	Develop a proactive communication plan to disseminate information to all relevant stakeholders (including NNR image enhancement and technical information).	100%	80%	A communications plan has been approved by the NNR Board. The plan will be implemented during the next financial year. A quarterly newsletter has been established. Two newsletters have been published and distributed to stakeholders.
11.	Re-prioritise the NNR's involvement in external capacity building initiatives and develop a plan to empower the institutions to become self-sustainable.	80%	60%	The NNR continued its involvement in capacity building initiatives by contributing financial resources, lecturing and technical support in respect of three post-graduate university courses, directly related to the nuclear industry, presented at the University of the Witwatersrand and the University of the North-West. The NNR has set an objective to assist the tertiary institutions to become self-sustainable to present the courses in future.
12.	Develop a plan to achieve effective internal communication (including communication between management and staff and between NNR management and the Board).	100%	60%	A communications protocol has been developed and approved by management. The implementation of the protocol will commence during the next financial year.
13.	Develop a plan to improve Human Resource management practices (including competitive remuneration, Human Resource availability, alignment of internal policies with changes in legislation, development of new policies and internal capacity building).	Review 50% of NNR Administrative procedures	80%	An objective was set to review at least 50% of the NNR's administrative procedures relating to Human Resource policy and procedure. 80% of the procedures scheduled for review during the year were completed.
14.	Develop a plan to improve business management practices (including team building interventions, alignment with changes in legislation, business performance management and integrated planning and control systems).	Develop infrastructure within the NNR to improve business management practices.	50% of the objective to establish infrastructure to take responsibility for business management practices was met	Recognising the need for improved business management practices, the NNR established a position for a Business Management Officer. The position will be filled during the next financial year. The NNR has, as an interim measure, employed a short-term consultant to assist it with the development of business management practices.

BOARD OF DIRECTORS
CHIEF EXECUTIVE OFFICER
Snr Manager Nuclear Technology and Natural Sources Division
Nuclear Technology and Waste Programme
Regulation of Natural Sources Programme
Snr Manager Power Reactors Division
Pebble Bed Modular Reactor Programme
Koeberg Programme
Snr Manager Regulatory Strategy Development Division
Regulatory Research and Development
Communication
Executive Support
Snr Manager Corporate Support Services
Finance
Human Resources and Administration
Assessment Coordinator
Assessment Group

BALANCE SHEET as at 31 March 2002

	Notes	2002 *Year ended 31 Mar 2002* R	2001 *For the period 24 Feb 2000 to 31 Mar 2001* R
Assets			
Non-current assets			
Property, plant and equipment	3	2,476,132	2,073,572
Current assets		12,612,791	13,119,816
Trade and other receivable	4	5,058,172	5,741,004
Cash and cash equivalents		7,554,619	7,378,812
		15,088,923	15,193,388
Equity and liabilities			
Accumulated deficit		(5,876,696)	(2,547,803)
Non-current liabilities			
Post retirement medical benefits	5	17,667,343	14,253,206
Current liabilities		3,298,276	3,487,985
Trade and other payable		1,443,919	1,762,312
Provisions	7	1,854,357	1,725,673
		15,088,923	15,193,388

Centurion
15 July 2002

L B Zondo
Chief Executive Officer

M W Makgoba
Chairperson

Income Statement for the year ended 31 March 2002

	Notes	2002 *Year ended 31 Mar 2002* R	2001 *For the period 24 Feb 2000 to 31 Mar 2001* R
Operating income	8.1	**39,234,496**	38,100,973
Operating cost	8.2	**43,029,278**	44,939,102
Operating deficit		**(3,794,782)**	(6,838,129)
Interest received		**465,889**	858,036
Total deficit		**(3,328,893)**	(5,980,093)

Statement of Changes in Equity for the year ended 31 March 2002

	Notes	Income funds R
Balance at 23-02-2000		3,453,666
Change in accounting policy	10	(21,376)
Restated balance		3,432,290
Deficit for the period		(5,980,093)
Balance at 31-03-2001		**(2,547,803)**
Deficit for the period		**(3,328,893)**
Balance at 31-03-2002		**(5,876,696)**

Cash Flow Statement for the year ended 31 March 2002

	Notes	2002 *Year ended 31 Mar 2002* R	2001 *For the period 24 Feb 2000 to 31 Mar 2001* R
Cash flows from operating activities		**1,866,977**	(632,136)
Cash utilised by operations	12.1	**1,401,088**	(1,490,172)
Interest received		**465,889**	858,036
Cash outflow from investment activities		**(1,691,170)**	(939,871)
Acquisition of fixed assets		**(1,691,170)**	(1,034,875)
Proceeds on disposal of obsolete assets		**-**	95,004
Net increase / (decrease) in cash and cash equivalents		**175,807**	(1,572,007)
Cash and cash equivalents at beginning of the period		**7,378,812**	8,950,819
Cash and cash equivalents at end of the period	12.2	**7,554,619**	7,378,812

Notes to the Financial Statements

1 Change of name

The National Nuclear Regulator Act (Act 47 of 1999) came into effect on the 24th of February 2000 and resulted in the name of the Council for Nuclear Safety being changed to the National Nuclear Regulator.
The National Nuclear Regulator Act makes provision for the first financial year of the Regulator to commence on the date of promulgation on 24 February 2000 until 31 March 2001. This resulted in the financial year 1999/2000 being shortened with the 2000/2001 financial year being longer than 12 months.

2 Accounting policy

The following are the principal accounting policies of the organisation which are consistent in all material respects with those applied in the previous year, except as otherwise indicated. The financial statements have been prepared on the historical cost basis.
The accounting policies are in accordance with generally accepted accounting practice, except as other wise indicated.

2.1 Presentation

The financial statements are presented in South African Rands. Unless otherwise indicated, all amounts in the annual financial statements are presented rounded to the nearest R1.

2.2 Revenue

Revenue comprises of authorisation fees, contributions from the state, interest received, and other special projects.
Revenue is recognised on the accrual basis.
Contributions from the state are accounted for in the period to which the allocation is associated.

2.3 Property, plant and equipment

Property, plant and equipment is stated at historical cost less depreciation. Depreciation is calculated on the straight line method to write off the cost of each asset over its estimated useful life to residual value as follows:

Property - land	Not depreciated
Property - buildings	20 years
Office furniture	10 years
Office equipment	5 years
Computer equipment	3 years
Scientific and technical equipment	5 years
Computer software	3 years

Buildings were not depreciated previously and the effect of the change in accounting policy is disclosed in note 10.

2.4 Bursaries

Expenditure on bursaries is written off in the Income Statement in the year in which it was incurred.

2.5 Leased assets

Leases under which the risks and benefits of ownership are effectively retained by the lessor are classified as operating leases. Obligations incurred under operating leases are charged to the income statement in equal instalments over the period of lease.

2.6 Post retirement pension benefit

The NNR operates a defined benefit fund, the assets of which are held in a trustee-administered fund. The Fund is generally funded by contributions from employees and the organisation, whose contribution is charged against income in the year to which they relate. All shortfalls or surpluses are recognised in the Income Statement in the period to which they relate. The NNR has not disclosed any liabilities in terms of AC 116.

2.7 Post retirement medical aid benefit

The entity has a post retirement medical aid liability in respect of certain categories of employees. The post retirement medical benefit obligation, the related current service cost and where applicable, past service cost are determined by using the projected unit credit method. Actuarial gains and losses are recognised as income or expenses in the year it is incurred.

2.8 Comparative figures

Where necessary, comparative figures have been adjusted to conform with changes in the presentation in the current year.

Notes to the Financial Statements

3 Property, plant and equipment

	2002 Year ended 31 Mar 2002			2001 For the period 24 Feb 2000 to 31 Mar 2001		
	R	R	R	R	R	R
	Cost	Accumulated Depreciation	Book value	Cost	Accumulated Depreciation	Book value
3.1 Carrying totals as at the beginning of year / period	**9,897,678**	**(7,824,106)**	**2,073,572**	**9,040,590**	**(6,792,074)**	**2,248,516**
Furniture	543,660	(261,055)	282,605	548,794	(242,035)	306,759
Office equipment	701,107	(456,928)	244,179	702,437	(405,996)	296,441
Computer equipment	5,886,118	(4,987,221)	898,897	5,120,670	(4,106,143)	1,014,527
Scientific and technical equipment	2,339,293	(2,086,838)	252,455	2,241,189	(2,016,524)	224,665
Computer software	-	-	-	-	-	-
Property - Buildings	213,750	(32,064)	181,686	213,750	(21,376)	192,374
Property - Land	213,750	-	213,750	213,750	-	213,750
3.2 Additions	**1,691,170**	**-**	**1,691,170**	**1,034,875**	**-**	**1,034,875**
Furniture	36,084	-	36,084	23,260	-	23,260
Office equipment	106,193	-	106,193	158,316	-	158,316
Computer equipment	829,951	-	829,951	732,874	-	732,874
Scientific and technical equipment	-	-	-	120,425	-	120,425
Computer software	718,942	-	718,942	-	-	-
Property - Buildings	-	-	-	-	-	-
Property - Land	-	-	-	-	-	-
3.3 Disposals	**(2,677,041)**	**2,592,441**	**(84,600)**	**(288,511)**	**138,696**	**(149,815)**
Furniture	(31,236)	20,509	(10,727)	(8)	8	-
Office equipment	(212,868)	207,810	(5,058)	(185,390)	43,036	(142,354)
Computer equipment	(2,334,852)	2,295,389	(39,463)	(103,113)	95,652	(7,461)
Scientific and technical equipment	(98,085)	68,733	(29,352)	-	-	-
Computer software	-	-	-	-	-	-
Property - Buildings	-	-	-	-	-	-
Property - Land	-	-	-	-	-	-
3.4 Depreciation	**-**	**(1,204,010)**	**(1,204,010)**	**-**	**(1,061,877)**	**(1,061,877)**
Furniture	-	(47,680)	(47,680)	-	(52,402)	(52,402)
Office equipment	-	(87,258)	(87,258)	-	(103,932)	(103,932)
Computer equipment	-	(774,632)	(774,632)	-	(832,287)	(832,287)
Scientific and technical equipment	-	(75,607)	(75,607)	-	(62,568)	(62,568)
Computer software	-	(208,145)	(208,145)	-	-	-
Property - Buildings	-	(10,688)	(10,688)	-	(10,688)	(10,688)
Property - Land	-	-	-	-	-	-
3.5 Adjustment	**-**	**-**	**-**	**110,724**	**(108,851)**	**1,873**
Furniture	-	-	-	(28,386)	33,374	4,988
Office equipment	-	-	-	25,744	9,964	35,708
Computer equipment	-	-	-	135,687	(144,443)	(8,756)
Scientific and technical equipment	-	-	-	(22,321)	(7,746)	(30,067)
Computer software	-	-	-	-	-	-
Property - Buildings	-	-	-	-	-	-
Property - Land	-	-	-	-	-	-
3.6 Carrying totals as at the end of year / period	**8,911,807**	**(6,435,675)**	**2,476,132**	**9,897,678**	**(7,824,106)**	**2,073,572**
Furniture	548,508	(288,226)	260,282	543,660	(261,055)	282,605
Office equipment	594,432	(336,376)	258,056	701,107	(456,928)	244,179
Computer equipment	4,381,217	(3,466,464)	914,753	5,886,118	(4,987,221)	898,897
Scientific and technical equipment	2,241,208	(2,093,712)	147,496	2,339,293	(2,086,838)	252,455
Computer software	718,942	(208,145)	510,797	-	-	-
Property - Buildings	213,750	(42,752)	170,998	213,750	(32,064)	181,686
Property - Land	213,750	-	213,750	213,750	-	213,750

The property (building and land) consist of an office block situated on erf 3187 Melkbosch Strand in the Blaauberg Municipality, Cape Division, Western Cape Province. It was acquired on deed of sale dated 3 October 1996 at the cost of R 427 500,00 and registered in the name of the Regulator on 22 April 1998. The present value is estimated at R 427,500.00

Notes to the Financial Statements

	2002 *Year ended 31 Mar 2002* R	2001 *For the period 24 Feb 2000 to 31 Mar 2001* R
4 Trade and other receivables		
Trade receivables	**5,211,201**	5,540,200
Less: Provision for doubtful debts	**(339,493)**	(417,230)
Net trade receivables	**4,871,708**	5,122,970
Pre-payments	**24,032**	47,728
Other debtors	**162,432**	570,306
	5,058,172	5,741,004

5 Post-retirement medical benefits

The NNR has a commitment to pay the monthly subscriptions to the medical scheme in respect of staff members who were in its employment on or before 1 July 1990 and who retire from its service. It also has a commitment to pay a portion of the subscription to the medical scheme in respect of those members of staff who joined the NNR between 1 July 1990 and 31 December 1995 and who retire from its service. The NNR has no liability towards members of staff who joined after 31 December 1995 and who retire from its services. The liability is valued actuarially at an interval of not more than three years using the projected unit credit method. The liability was last actuarially valued during 2001.

The following assumptions were made by the actuary in calculating the liability at balance sheet date:

Interest rate per annum	10%	10%
Inflation rate per annum	7%	7%
Medical inflation rate per annum - long term	10%	10%
Medical inflation rate per annum - current year	15%	30%
Members with which benefits have not yet vested	42	42
Members with vested benefits	20	20
Average years for non-vested liability to become vested	10	11
	R	R
Liability		
Present value of the obligation (unfunded)	**20,500,000**	17,400,000
Unrecognised past service - non-vested benefits	**(2,832,657)**	(3,146,794)
Liability recognised in balance sheet	**17,667,343**	14,253,206
Movements in net liability		
Opening net liability	**14,253,206**	9,739,000
Expense recognised in income statement	**3,887,740**	4,938,679
Contributions paid	**(473,603)**	(424,473)
Closing net liability	**17,667,343**	14,253,206

6 Post retirement pension benefit

The NNR has not disclosed any liabilities in terms of AC 116. At the time of the last actuarial valuation, conducted in July 2000, the Fund was 96% funded. The NNR has implemented measures to increase the funding level to 100% over a period of three years and believes that the Fund is now fully funded. Measures have been implemented to perform annual valuations to ensure compliance with AC 116.

7 Provisions

Movements in provision		
Opening balance	**1,725,673**	1,638,100
Adjustment	**128,684**	87,573
Closing balance	**1,854,357**	1,725,673

Notes to the Financial Statements

		2002 *Year ended 31 Mar 2002* R	2001 *For the period 24 Feb 2000 to 31 Mar 2001* R
8	**Operating loss**		
	Operating loss is stated after taking into account the following:		
8.1	**Revenue**	**39,234,496**	38,100,973
	State contributions	**7,002,000**	7,230,000
	Authorisation fees	**30,129,394**	29,496,951
	Special projects	**1,860,047**	1,347,615
	Other	**243,055**	26,407
8.2	**Expenditure**		
8.2.1	**Auditors remuneration**		
	Audit fees	**26,696**	189,274
8.2.2	**Depreciation**	**1,204,010**	1,061,877
	Office furniture	**47,680**	52,402
	Office equipment	**87,258**	103,932
	Computer equipment	**774,632**	832,287
	Scientific and technical equipment	**75,607**	62,568
	Computer software	**208,145**	-
	Property - buildings	**10,688**	10,688
8.2.3	**Consultants**	**2,717,767**	2,852,887
	Fees for technical services	**1,779,262**	2,269,931
	Fess for secretarial services	**938,505**	582,956
8.2.4	**Staff costs**	**28,882,215**	29,347,652
	Salaries, allowances and annual payments	**24,831,021**	24,187,420
	Post retirement benefits	**3,887,740**	4,938,679
	Current service cost	**700,000**	540,000
	Interest cost	**1,740,000**	1,320,000
	Net Actuarial loss recognised in year	**1,133,000**	2,764,000
	Past service cost - non-vested benefits	**314,740**	314,679
	Provisions for:	**163,454**	221,553
	Accumulated leave (staff)	**128,685**	87,573
	Annual bonuses (staff)	**34,769**	133,980
8.2.5	**Operating leases**	**1,928,834**	1,863,847
	Office building	**1,614,976**	1,604,507
	Equipment	**231,160**	171,765
	Vehicles	**82,698**	87,575
8.2.6	**Loss on scrapping of assets**	**84,600**	54,811
8.2.7	**Bursaries**	**350,074**	402,280
8.2.8	**Other operating costs**	**7,835,082**	9,166,474
	Total expenditure	**43,029,278**	44,939,102
9	**Future operating lease commitments**		
9.1	Equipment	**190,627**	4,452
	Vehicles	**46,828**	-
	Property	**2,687,608**	2,687,608
	Less than 12 months	**2,925,063**	2,692,060
9.2	Equipment	**491,061**	260,565
	Vehicles	**19,885**	356,056
	Property	**2,673,208**	5,360,816
	More than 12 months but less than 60 months	**3,184,154**	5,977,437

Notes to the Financial Statements

	2002 *Year ended 31 Mar 2002* R	2001 *For the period 24 Feb 2000 to 31 Mar 2001* R
10 Change in accounting policy		
The accounting policy for depreciation of buildings was changed during the year. Buildings is depreciated over its estimated useful life of 20 year to residual value whereas it was not depreciated in the previous years. This is done to comply with generally accepted accounting practice. The effect of the change is as follows:		
Increase in net deficit	**10,688**	10,688
Restatement of opening accumulated deficit in respect of prior year adjustment:		
Increase in accumulated deficit	**32,064**	21,376

11 Going concern

The NNR is required to make provision for a liability it has in respect of post retirement medical benefits for certain categories of staff. In order to comply with the provisions of AC 116, the provision has to be made in a prescribed way, this has resulted in a situation where the liabilities technically exceeds the assets.
The liability resulted from a decision by the Board of the erstwhile Council for Nuclear Safety to provide medical aid benefits to staff who were in the employ of the NNR on or before 31 December 1995, and who retire from the services of the NNR.
The NNR applied to the Minister of Finance to establish a fund for purposes of pre-funding this liability, however, this request was denied and the NNR was instructed to pay for this liability on a "pay as you go" basis by providing for the expenditure on an annual basis.

12 Notes to the cash flow statement

	2002 *Year ended 31 Mar 2002* R	2001 *For the period 24 Feb 2000 to 31 Mar 2001* R
12.1 Cash utilised by operations	**1,401,088**	(1,490,172)
Operating deficit	**(3,328,893)**	(5,980,093)
Adjustment for :		
Interest received	**(465,889)**	(858,036)
Depreciation	**1,204,010**	1,061,877
Net loss on disposal of obsolete assets	**84,600**	54,811
register	**-**	(1,873)
Increase in Provisions	**3,542,821**	4,601,779
Leave pay	**128,684**	87,573
Post retirement	**3,414,137**	4,514,206
Working capital changes	**364,439**	(368,637)
Decrease in accounts receivable and pre-payable	**682,832**	1,304,509
	(318,393)	(1,673,146)
12.2 Cash and cash equivalents at the end of the period	**7,554,619**	7,378,812
Bank balance and cash	**7,554,619**	7,378,812

Notes to the Financial Statements

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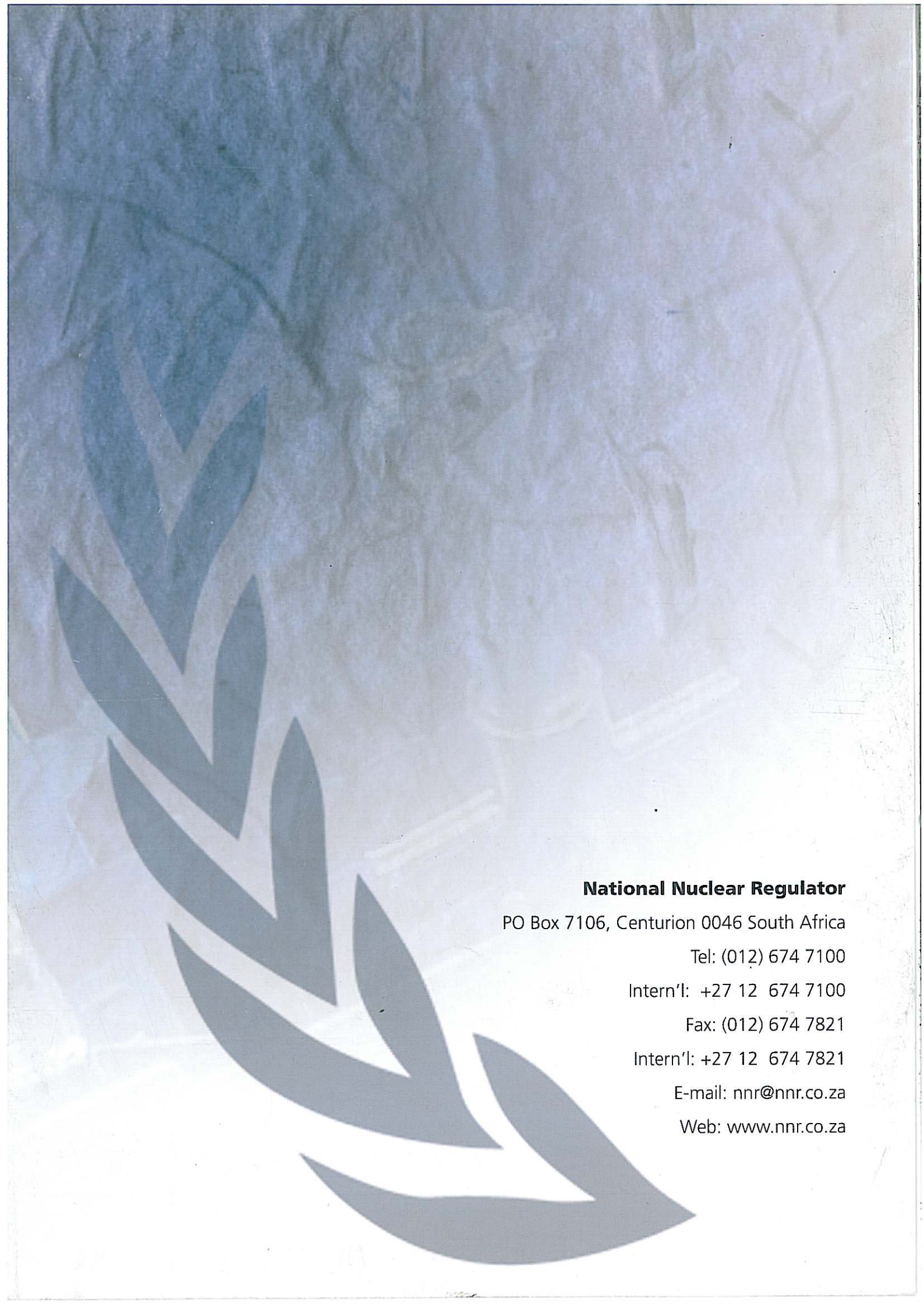
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Depreciation	**1,204,010**	1,061,877
Net loss on disposal of obsolete assets	**84,600**	54,811
Adjustment on asset register	**-**	(1,873)
Increase in Provisions	**3,542,821**	4,601,779
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Bank balance and cash	**7,554,619**	7,378,812

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