

NATIONAL NUCLEAR REGULATOR  
**ANNUAL REPORT**  
2009/10



MOST PEOPLE SAY THAT IT IS  
THE INTELLECT WHICH MAKES  
A GREAT SCIENTIST. THEY ARE  
WRONG: IT IS CHARACTER.

**Albert Einstein**  
THEORETICAL PHYSICIST



NATIONAL NUCLEAR REGULATOR  
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# THE BUTTERFLY EFFECT

The humble butterfly is a symbol of nature's delicate balance, flawlessly adapted to its natural environment.

If the fragile environmental balance is upset in anyway, the butterfly will sense it immediately and respond accordingly.

According to recent scientific study, 389 butterflies with *Aporia crataegi* accounting for 36.6 percent of all observations were recorded, taking into consideration other environmental factors that could affect the relationship between abundance and levels of radiation. The results showed that the abundance of butterflies decreased significantly with increasing levels of contamination.

[Moller and Mousseau, "Reduced abundance of insects and spiders linked to radiation at Chernobyl 20 years after the accident", The Royal Society, *Biol. Lett.* (2009) 5, 356-359.]

This scientific study shows that wherever there has been radiological contamination, butterfly populations have dramatically reduced, and remained that way for many years thereafter.

The presence of the butterfly in an environment is nature's yardstick through which to measure the level of radiation contamination. Therefore, the abundance of butterflies in an environment could be an indicator that the level of contamination is low or non-existent.

It is precisely because of the butterfly's sensitivity to its surroundings that the National Nuclear Regulator has chosen it as a symbol of environmental protection.

No matter what the environment our licensees operate in, we have a duty to ensure that the balance of nature is maintained.

If there is even the slightest disruption to nature's fragile balance, if any person is harmed or property damaged, we have not lived up to our promise. We can and will co-exist in harmony with nature.

IN WHATEVER ENVIRONMENT WE FIND OURSELVES,  
WE WILL KEEP PEOPLE SAFE, PROPERTY INTACT  
AND NATURE IN BALANCE.



Protecting People, Property & the Environment



LEARN FROM YESTERDAY,  
LIVE FOR TODAY, HOPE  
FOR TOMORROW. THE  
IMPORTANT THING IS NOT  
TO STOP QUESTIONING.

**Albert Einstein**

THEORETICAL PHYSICIST



Nuclear material and technology hold a promise of significant benefits in the fields of medicine, agriculture, electricity production and industry. The special risks posed by nuclear energy to the health and safety of persons and the environment must be carefully managed.



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WHEN IT COMES TO ATOMS,  
LANGUAGE CAN BE USED ONLY  
AS IN POETRY. THE POET, TOO,  
IS NOT NEARLY SO CONCERNED  
WITH DESCRIBING FACTS AS WITH  
CREATING IMAGES.

**Niels Bohr**  
PHYSICIST

**Bongiwe Mbebe**  
**Metallurgy Specialist**

Safety assessment review of submissions from nuclear installations in the area of Facility Condition Management.

**Quote:** "I have held many things in my hands, and have lost them all but whatever I placed in God's hands, that I still possess" Martin Luther King Jr.





**PART 1:**  
**INTRODUCTION**

# 1.

## SUBMISSION OF ANNUAL REPORT TO THE EXECUTIVE AUTHORITY

### STATEMENT OF RESPONSIBILITY

In terms of Section 7(1)(j) of the NATIONAL NUCLEAR REGULATOR Act (Act No. 47 of 1999), the NNR is required to submit to the Minister an annual public report on the health and safety related to workers, the public and the environment associated with all sites including, but not limited to, the prescribed contents.

Accordingly, this report articulates the performance of licensees or operators in assuring safety related to worker exposure to the effects of ionizing radiation, property and the environment as well as the role of the NNR in assuring that a credible system of nuclear safety is maintained.

In addition, the NNR is required to submit a set of Annual Financial Statements in terms of the Public Finance Management Act (Act No. 1 of 1999) and to provide assurance that the organisation keeps a full and proper record of its financial affairs.

The Board of Directors has pleasure in submitting this report in compliance with the above regulatory framework.

The Annual Financial Statements are the responsibility of the accounting authority, i.e. the Board of Directors of the NNR. The Auditor-General is responsible for independently auditing and reporting on the financial statements. The office of the Auditor General has

audited the entity's financial statements and the report appears on pages 110 to 147.

The Annual Financial Statements fairly present the state of affairs of NNR, its financial results, its performance against predetermined objectives and its financial position at the end of the year in terms of Generally Recognised Accounting Practices (GRAP) determined by the Accounting Practices Board, and in the manner required by the Public Finance Management Act, (Act No.1 of 1999) and the Companies Act, (Act No. 61 of 1973).

These Annual Financial Statements are based on appropriate accounting policies, supported by reasonable and prudent judgements and estimates.

The Board of Directors has reviewed the entity's budget and cash flow for the year ended March 2010. On the basis of this review, and in view of the current financial position, the Board of Directors believes that the NNR will be a going concern in the year ahead, and has continued to adopt the going concern on the basis of preparing the financial statements.

The Board of Directors sets standards to enable management to meet the above responsibilities by implementing systems of internal control and risk



management that are designed to provide reasonable, but not absolute, assurance regarding:

1. The safeguarding of assets against unauthorised use or disposal.
2. The maintenance of proper accounting records and the reliability of financial information used within the business or for publication.
3. Compliance with relevant legislative prescripts.
4. Effective and Efficient utilisation of resources.

These controls contain self-monitoring mechanisms, and actions are taken to correct deficiencies as they are identified.

The NNR systems of internal controls aim to provide reasonable assurance on the reliability of financial information presented in the Annual Financial Statements. Furthermore, because of changes in objective conditions, the effectiveness of internal financial controls may vary over time. The Board of Directors has reviewed the organisation's systems of internal control and risk management for the period 1 April 2009 to 31 March 2010.

In the opinion of the Board of Directors, the organisation's systems of internal control and risk management were effective for the period under review, and based on the information available to date, the Annual Financial Statements fairly represent the financial position of NNR as at 31 March 2010 and the results of its operations and cash flow information for the year.

The Annual Financial Statements for the year ended 31 March 2010, set out on pages 110 to 147, were submitted for auditing on 31 May 2010 and approved by the Board of Directors in terms of section 51(1) (f) of the Public Finance Management Act, (Act No.1 of 1999), as amended, and are signed on its behalf by:

Dr T Cohen  
Chairperson



Adv. B Mkhize  
Chief Executive Officer



## 2.

# CHAIRPERSON'S REPORT

The role of the National Nuclear Regulator (NNR) is to provide for the protection of persons, property and the environment against nuclear damage.

This Annual Report gives an account of the activities, including both successes and challenges, of the NNR for the period April 2009 to March 2010.

The NNR Board was successful in meeting and fulfilling its fiduciary duties during the period under review.

I am pleased to report that all nuclear facilities in the country were inspected and found to be generally compliant with the required safety standards, as stipulated in the NNR conditions of license. There were no nuclear accidents or incidents reported in South Africa during 2009/10.

The NNR fulfilled all its international obligations in the preceding year by attending all Safety Standards Committee Meetings of the IAEA. The NNR successfully presented the first South African Report to the International Atomic Energy Agency (IAEA) Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management in May 2009. In December 2009, the NNR successfully hosted the IAEA International Conference on Regulatory Effectiveness in Cape Town.

In areas where the organisation has not fully met its targets in the previous financial year, the Board has instituted necessary measures to improve performance in the following financial year. The measures include the appointment of a new CEO and institution of a rigorous performance management system for the organisation. In conclusion, I would like to thank the outgoing Board, the Executive committee as well as all NNR staff members for their continued dedication in providing for the protection of persons and the environment against nuclear damage in South Africa.

On a more personal note, I wish to thank my colleagues on the NNR Board for their support and guidance during the period under review.

Dr T Cohen  
Chairperson



**Dr Tracey Cohen**  
**Chairperson**



I am pleased to report that all nuclear facilities in the country were inspected and found to be generally compliant with the required safety standards, as stipulated in the NNR conditions of license. There were no nuclear accidents or incidents reported in South Africa during 2009/10.

## 3.

CHIEF EXECUTIVE OFFICER'S  
REPORT**3.1 INTRODUCTION**

During the financial year 2009/10 the NNR made significant top leadership changes by appointing three new executives, namely the Chief Executive Officer, Chief Technical Officer and Strategy and Stakeholder Relations Executive. In addition, a new Chairperson of the Board was appointed in the last quarter of the financial year.

The organisation managed to achieve approximately 70% of the planned strategic initiatives for 2009/10. Some of the areas that under-performed during this financial have been strengthened by the appointment of senior staff and new leadership.

The facilities and actions regulated by the NNR cover a diverse range of activities, including the operation of nuclear power reactors, research reactors, nuclear fuel fabrication, nuclear technology applications and the mining and processing of uranium and other radioactive ores.



The NNR has to exercise regulatory oversight over these facilities, including safety assessments and compliance inspections of authorised facilities, such as the Koeberg Nuclear Power Station, the Necsa nuclear installations and the mining and minerals processing facilities.

There were no significant incidents that occurred at these facilities and the NNR is satisfied that the said regulated facilities largely complied with the safety standards and regulatory practices, and that the protection of the workers, public and the environment was assured.

Although the NNR is generally satisfied with the overall compliance by authorisation holders with NNR requirements, over the past few years the organisation detected a trend of recurrence of noncompliance by some authorisation holders in the mining and minerals processing facilities. The NNR has engaged with these specific cases, in order to implement measures to ensure improved compliance. We are closely monitoring these holders and they have been tasked with reporting on a regular basis. The level of deviation is however not significant enough to close the facilities down.

**3.2 NEW AUTHORISATIONS****Certificates of Registration (COR)**

During the period under review, the NNR issued 23 COR for nuclear authorisation of mining and minerals processing facilities. NNR has now issued a total of 145 certificates of registrations of mining and mineral facilities.

**Adv. Boyce Mkhize**  
**Chief Executive Officer**

**Application for Nuclear Vessel License**

During the period under review the NNR granted Nuclear Vessel Licences to two nuclear powered military vessels, USS SAN JUAN from the United States of America and the HMS SCEPTRE from the United Kingdom Royal Navy. We are pleased to note that there was no adverse radiological exposure to the people, environment and property as a result of these visits.

**Authorisations for the Necsa Facilities**

As part of the Project to issue separate nuclear authorisations to the nuclear installations at Necsa, which are authorised under a single nuclear Licence NL-27, the NNR has issued a total of 15 nuclear installations licences out of the 42 required. The remaining licences will be issued during the next financial year.

Adv. B Mkhize  
Chief Executive Officer



# 4.

## CORPORATE GOVERNANCE REPORT

### 4.1 INTRODUCTION

The NNR is committed to the principle of good corporate governance and the practising of ethical standards in discharging its mandate. Corporate governance embodies processes and systems by which organisations are directed, controlled and held accountable. It is also concerned with the organisational arrangements that are in place to ensure an appropriate set of checks and balances.

### 4.2 BOARD OF DIRECTORS

The Board of Directors is appointed by the Minister of Energy (the Executive Authority) in terms of the NNR Act and as the Accounting Authority in terms of the Public Finance Management Act (PFMA).

The role of the Board is to ensure that the NNR carries out its mandate as set out in the NNR Act and the PFMA. The Board collectively directs the affairs of NNR whilst meeting the interests of the stakeholders including the Executive Authority. The Board is mindful of the requirement for accountability, honesty and transparency in fulfilling its fiduciary duties towards the stakeholders and the organisation. To this end, the Board is striving to ensure that the NNR complies with the obligation imposed by various laws and regulations that are applicable to the NNR and the Protocol on Corporate Governance.

The Board currently consists of eleven directors including the CEO who is independently appointed by the Minister of Energy in terms of the NNR Act. The Board Members, including the CEO, hold office for a maximum of three

years, but are eligible for re-appointment. On 1 December 2009, the Minister appointed a new Board, which included Dr T Cohen as new chairperson of the board.

During the period under review the following changes occurred to the Board of Directors:

1. Directors term of office expired and not renewed with effect 30 November 2009:
  - Prof May Hermanus (Chairperson) with effect from 30 November 2009
  - Ms Thandeka Mgoduso (Deputy Chairperson) with effect from 30 November 2009
  - Mr B Ramahlo with effect from 30 November 2009
  - Mr K Govender with effect from 30 November 2009
2. Directors term of office renewed for three years with effect from 1 December 2009:
  - Mr T Mofokeng was appointed deputy Chairperson
  - Prof. D van der Merwe
  - Ms D Kgomo
  - Ms J Yawitch
  - Mr N Lesufi
  - Mr D Elbrecht
  - Mr B Nemagovhani





**Dr T Cohen**  
**Chairperson**  
 Appointed  
 1st December 2009



**Mr T Mofokeng**  
**Deputy Chairperson**  
 Reappointed  
 1st December 2009



**Prof. D van der Merve**  
**Director**  
 Reappointed  
 1st December 2009



**Mr N Lesufi**  
**Director**  
 Reappointed  
 1st December 2009



**Mr J Leaver**  
**Director**  
 Appointed  
 1st December 2009



**Ms D Kgomo**  
**Director**  
 Reappointed  
 1st December 2009



**Ms M Liefierink**  
**Director**  
 Appointed  
 1st December 2009



**Mr B Nemagovhani**  
**Director**  
 Reappointed  
 1st December 2009



**Mr D Elbrecht**  
**Director**  
 Reappointed  
 1st December 2009



**Ms J Yawitch**  
**Director**  
 Reappointed  
 1st December 2009



**Adv. B Mkhize**  
**Chief Executive Officer**  
 Appointed  
 15th February 2010



**Ms B Laka**  
**Full Time Board Secretary**  
 Appointed  
 12th November 2007



3. Directors were appointed to the Board for a first term

- Dr T Cohen was appointed Chairperson with effect from 1 December 2009.
- Ms Mariette Liefferink was appointed as a non-executive director with effect from 1 December 2009.
- Mr J Leaver was appointed as a non-executive director with effect from 1 December 2009.
- Adv B Mkhize was appointed as Chief Executive Officer and Executive Director with effect from 15 February 2010.

#### 4.3 BOARD CHARTER

The Board of the NNR has adopted a Board Charter, which elaborates on the responsibilities of the Board of Directors, as set out in the above-mentioned Acts. It also defines the responsibilities of the Board as a unitary working group, as well as those of individual Directors, covering areas that are not explicitly dealt with in the Acts. The Board Charter is reviewed annually to ensure that it meets standards of best practice within the Regulator's unique environment as far as is reasonably possible.

#### 4.4 CODE OF PRACTICE AND CONDUCT

The Board of the NNR has adopted a Code of Conduct and good ethics, which requires the Board Members and Employees to conduct themselves with integrity, openness and accountability when dealing with all stakeholders. In terms of the Code, a declaration of interests must be made by the Board Members and staff of the NNR and updated on an annual basis. The code seeks to avoid real, perceived or potential conflict of interests.

#### 4.5 BOARD MEETINGS

The Board meets regularly and retains full and effective control over the organisation. Six scheduled Board meetings and five special meetings took place to discuss and review the NNR's operational performance and to address issues of strategic importance. The Board monitors management in implementing Board plans and strategies. Special Board meetings were convened to address amongst others, industrial relations and other governance issues that required Board resolutions between scheduled meetings. Members of the Executive Committee are periodically invited to attend Board meetings.

#### 4.6 COMMITTEES OF THE BOARD

The Board is advised and assisted by three Board Committees i.e. the Audit and Risk Management Committee, the Finance Committee and the Transformation and Development Committee. Board Committees are mechanisms that aid and assist the Board to discharge its responsibilities and its Directors in giving detailed attention to specific areas of their duties and responsibilities such as audit, risk management, human resources and finance. Board Committees meet at least once per quarter and all the Committees have adopted formal Terms of Reference and provide the required feedback to the Board through committee reports. Terms of References of Board Committee(s) are reviewed annually which is in line with best practices and good governance in order to ensure that they are still relevant.

The CEO is an ex officio member of all these committees. Executive Committee members are invited to attend relevant meetings of the various Committees as appropriate.



All Directors have access to the services of the Board Secretary, who inter alia, is responsible for ensuring that Board procedures are followed. April 2009 – March 2010

Names	Date of the meeting attended										
	24 Apr 2009	26 May 2009	25-26 Jun 2009	28 Jul 2009	18 Aug 2009	21 Oct 2009	12 Nov 2009	14 Nov 2009	26 Nov 2009	22 Jan 2010	28 Jan 2010
Prof. M Hermanus – Chairperson	P	A	P	P	P	P	P	P	P	N/A	N/A
Ms T Mgoduso Deputy Chairperson	P	P	A	A	A	A	P	P	P	N/A	N/A
Mr. B Ramahlo	P	P	P	P	P	P	A	P	P	N/A	N/A
Prof. D vd Merwe	P	P	P	P	P	A	P	P	P	A	P
Mr. D Elbrecht	P	A	P	P	P	P	A	A	P	P	P
Mr. K Govender	P	P	A	A	P	A	A	A	A	N/A	N/A
Mr. N Lesufi	P	P	A	A	P	P	P	P	P	P	P
Mr. G Clapisson	P	P	P	P	P	P	P	P	P	P	P
Ms. J Yawitch	A	P	A	P	P	A	P	A	A	A	A
Mr. T Mofokeng	P	A	P	P	P	P	P	P	P	P	P
Ms. D Kgomo	P	P	A	P	A	A	P	A	P	P	P
Mr B Nemaqovhani (appointed 1 July 2009)	N/A	N/A	N/A	N/A	N/A	P	P	P	P	P	P
Dr T Cohen - Chairperson (Appointed 1 Dec 2009)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	P	P
Mr J Leaver (appointed 1 Dec 2009)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	P	P
Ms M Lieferrink (appointed 1 Dec 2009)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	P	P

**P – Present, A – Apology, N/A – Not applicable**

#### 4.6.1 Transformation and Development Committee

The Transformation and Development Committee is responsible for determining human resources strategies and policies, and recommends these to the Board for approval. These include staff remuneration, human resources development as well as conditions of service, employment equity reports, performance management systems and any other organisational development initiatives.

The Transformation and Development Committee was made up of five non-executive Directors as follows:

- Ms T Mgoduso (Chairperson)
- Prof. D van der Merwe
- Mr B Ramahlo
- Mr D Elbrecht
- Mr N Lesufi

At a Board meeting held on 28 January 2010, the Board reinstated the Board Committees' membership. The Transformation and Development Committee currently consists of the following members:

- Mr N Lesufi (Chairperson)
- Prof. D van der Merwe
- Ms D Kgomo
- Ms M Liefferink



The Transformation and Development Committee convened four times during the year. Committee dealt with a number of staff issues, labour relations and human resource policies. Attendance at meetings was as follows:

#### Transformation and Development Sub-Committee

Date of the meeting attended	12 Jun 2009	8 Sept 2009	19 Nov 09	25 Mar 2010
Ms T Mgoduso	P	P	P	N/A
Prof. D vd Merwe	P	P	P	P
Mr. D Elbrecht	A	P	P	N/A
Mr. B Ramahlo	A	A	P	N/A
Mr. N Lesufi	P	P	P	P
Ms. D Kgomo	N/A	N/A	N/A	A
Ms. Liefferink	N/A	N/A	N/A	P

#### Audit and Risk Sub-Committee

Date of the meeting attended	12 Jun 2009	8 Sept 2009	25 Mar 2010
Mr. B Ramahlo	P	P	N/A
Ms. P Mzizi	P	P	P
Mr. N Lesufi	P	P	P
Mr. T Mofokeng	P	P	P
Ms. D Kgomo	N/A	N/A	P

*\*Ms P Mzizi is an independent audit and risk management committee member.*

#### 4.6.2 Audit and Risk Management Committee

The Audit and Risk Management Committee comprises of three non-executive Directors and one Independent Member. A non-executive Director chairs the committee. The Audit and Risk Management Committee assists the Board in overseeing:

- The quality and integrity of the financial statements and the disclosure thereof;
- The scope and effectiveness of the internal audit function; and
- The effectiveness of the organisation's internal controls.

The members of the previous Audit and Risk Management Committee are:

- Mr T Mofokeng (Chairperson)
- Mr B Ramahlo
- Mr N Lesufi
- Ms P Mzizi (Independent Member)

The current members of Audit and Risk Management Committee are:

- Mr T Mofokeng (Chairperson)
- Mr N Lesufi
- Mr B Nemagovhani

#### 4.6.3 Finance Committee

The Finance Committee assists the Board with all financial matters with a view to optimising the financial resources of the NNR. It is responsible for financial management reporting, organisational financial planning, budget developments and budget control. Furthermore, it is responsible for Information Technology and Information Management of the organisation.



**Paul Hinrichsen**  
**Senior Specialist:**  
**Radiation Protection**  
**and Transport Safety**

The Finance Committee previously comprised of the following three non-executive Directors:

- Mr K Govender (Chairperson)
- Mr D Elbrecht
- Mr T Mofokeng

The current Finance Committee members are:

- Mr B Nemagovhani (Chairperson)
- Mr J Leaver
- Mr D Elbrecht

The Finance Committee convened four times during the year. Attendance was as follows:

#### Finance Sub-Committee

Date of the meeting attended	16 April 2009	20 July 2009	13 Nov 09	20 Jan 2010
Mr. K Govender	P	P	P	N/A
Mr. D Elbrecht	P	P	P	P
Mr. B Nemagovhani	N/A	N/A	N/A	P
Mr. T Mofokeng	P	A	P	P

#### 4.7 EXECUTIVE COMMITTEE

The Executive Committee is constituted to assist the CEO to manage the entity in terms of the authority delegated by the Board and the NNR Act. Furthermore, the Executive Committee assists the Chief Executive Officer to guide and control the overall direction of the business and acts as a medium of communication and co-ordination between business units and the Board.

The Executive Committee comprised of five members for the reporting period:

- Mr G Clapison - Acting Chief Executive Officer (up to 14 February 2010)
- Adv Boyce Mkhize - Chief Executive Officer (Appointed 15 February 2010);
- Ms Ramasela Moloto - Chief Financial Officer;
- Mr Mnonoki Msebenzi -Chief Technical Officer; (Appointed 1 May 2009)
- Mr Joseph Mwase - Strategy and Stakeholder Executive (Appointed 1 June 2009)
- Ms Lesego Mashishi - Human Resource Executive;

The Board Secretary and Internal Audit Manager are ex officio members of the Executive Committee.

#### 4.8 BOARD REMUNERATION

The remuneration of the Board members is determined by the Minister of Energy and is reviewed annually. The Board members are paid for attending Board and sub-committee meetings. The details of the remuneration for the year ending 30 March 2010 are stated in Note 13 to the Annual Financial Statements on pages 138 to 139.





**Avinash Singh**  
**Senior Regulatory**  
**Officer – Nuclear**  
**Technology Waste**  
**Projects (NTWP)**

#### **4.9 INDEPENDENCE OF THE BOARD**

The independence of the Board is achieved and maintained through a number of measures including the following:

- Board members being remunerated only for attending meetings;
- Separation of position of the Chief Executive Officer and Chairperson;
- All Board Committees being chaired by non-executive Directors; and
- The Board having access to independent external advice at the cost of the organisation.

#### **4.10 COMPLIANCE**

##### **4.10.1 Public Finance Management Act**

##### **4.10.1.1 Financial Planning and Management**

During the period under review, all financial reporting processes were carried out in accordance with the requirements of the National Nuclear Regulatory Act of 1999 (Act No. 47 of 1999), the Public Finance Management Act, (Act No. 1 of 1999) (PFMA), the Treasury Regulations and Generally Recognised Accounting Practice (GRAP).

The Strategic Plan and the Business Plan, with accompanying budgets, were prepared, approved by the NNR Board and submitted to the Minister of Energy for approval, as required in terms of the PFMA.

Section 17 of the NNR Act states that, for purposes of the regulation of the nuclear regulated entities, NNR funds, inter alia, include authorisation fees, determined by the Minister. The final step in the development process of the NNR Strategic and Business Plans, with accompanying budgets, is the determination of the levies to be imposed on the regulated entities. The total cost for regulatory activities in each of the regulated entities is used as one of the elements in determining the authorisation fees for each entity.



#### 4.10.1.2 Internal Audit

The internal audit department provides an independent, objective assurance, as well as consulting services designed to add value to, and improve the organisation's operations. It also assists the Board in determining whether the NNR network of risk management, control and governance processes, as designed and represented by management, is adequate and functioning in a manner to ensure, inter alia, that:

- Risks are appropriately identified and managed;
- Significant financial, managerial and operating information is accurate, reliable and available on time;
- Resources are acquired economically, used efficiently and are adequately protected; and
- that programmes, plans and objectives are achieved.

Opportunities to improve management control, service delivery and the organisation's image, as identified during audits; are communicated to the appropriate level of management.

#### 4.10.1.3 Risk Management

The Board is responsible for governing risk management processes in accordance with corporate governance requirements. During the period under review, an annual risk assessment was conducted, with the following objectives:

- Providing the Board with the assurance that significant business risks are systematically identified, assessed and reduced to acceptable levels, in order to achieve an optimal risk reward balance;
- Making risk identification and risk management an integral part of the daily activities of every person in the organisation.

The NNR enterprise-wide risk management process is guided by the following key principles:

- A clear assignment of responsibilities, as well as accountability
- The existence of a common enterprise-wide risk management framework and process
- The identification of uncertain future events that may influence the success of business plans and strategic objectives
- The integration of risk management activities within the organisation, as well as across its value chains

The NNR integrated risk management implementation approach, inter alia, entails the development of strategic, functional and process risk profiles. Strategic risk is typically defined as those risks that may influence the achievement of strategic business objectives. Similarly, functional and process risks are defined as risks that may influence the achievement of functional and process objectives respectively.

The NNR is committed to the principle of good corporate governance and the practising of ethical standards in discharging its mandate.





**Michelle Kleinhans**  
**Senior Specialist Quality**

Assist with the implementation and maintenance of the NNR integrated Management System. Implementation and maintenance of the NNR Document Control Process.

**Philosophy:** I have a passion for protection of the environment for future generations.

**Pamela Sue-Ellen  
Mampa**  
**Receptionist**



## 5A.

## CORPORATE PROFILE

The National Nuclear Regulator is mandated to provide for the protection of persons, property and the environment against nuclear damage by establishing safety standards and regulatory practices.

## VISION

To be a leading and impartial authority for the regulation of the safe use and handling of nuclear and radioactive materials.

## MISSION

To provide and maintain an effective and efficient national regulatory framework for the protection of persons, property and the environment against nuclear damage through:

- Application of safety standards and regulatory practices and;
- Implementation of human resources and transformation practices best suited to the nuclear regulatory needs of South Africa.

## VALUES

**Excellence:** In all aspects of service delivery

**Ethical Conduct:** Evidenced by integrity, valuing cultural diversity, honesty, compassion, trustworthiness, respect and fairness

**Professionalism:** Displayed through commitment, questioning attitude, dedication, responsibility, accountability and being proactive

**Credibility:** Commanded through consistency, objectivity, impartiality, confidence, transparency, competence and knowledge base



Protecting People, Property & the Environment





**Joe Mwase**  
**Executive Strategy & Stakeholder Relations**

Facilitates strategy development, stakeholder relations and engagement for the National Nuclear Regulator.

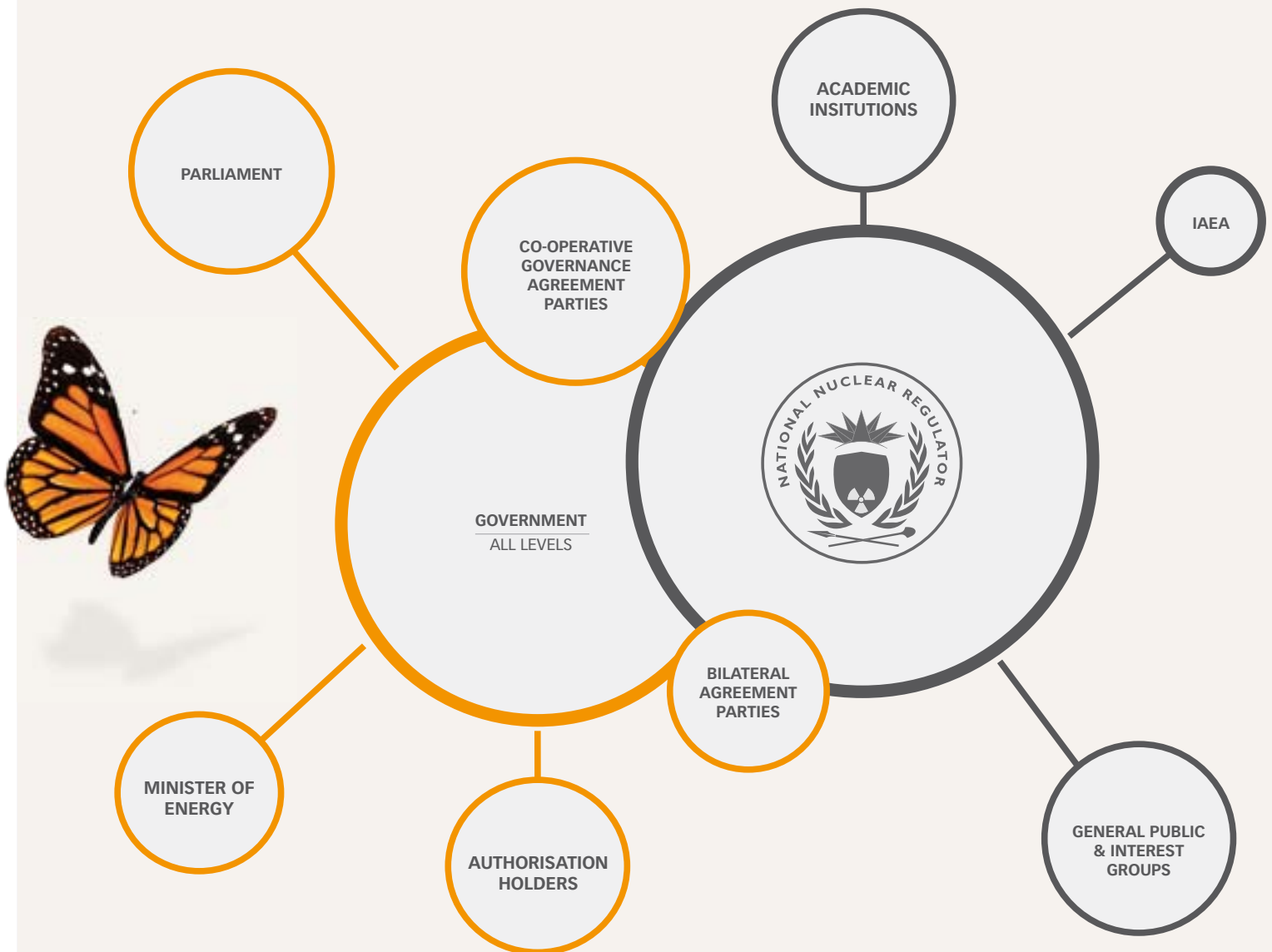
**Quote:** It's a love thing - When all is said and done, everything we do out of love defines us.

The vision of NNR is to be a leading and impartial authority for the regulation of the safe use and handling of nuclear and radioactive materials.

# 5B.

## HOW THE NATIONAL NUCLEAR REGULATORY WORKS

The NNR has a duty to interact with stakeholders in South Africa and in the global community.





**Dr Jean Joubert**  
**Coordinator: Engineering**  
**Configuration Management**

**THE KEY OBJECTIVES OF THE NNR ARE:**

- (i)** Establishing safety standards and regulatory practices;
- (ii)** Exercising regulatory control related to safety over the siting, design, construction, operation, manufacture of component parts, and decontamination, decommissioning and closure of nuclear installations;
- (iii)** Granting of nuclear authorisations;
- (iv)** Providing assurance that the conditions of nuclear authorisations are complied with through a system of compliance inspections;
- (v)** Fulfilling national obligations with respect to international legal instruments concerning nuclear safety; and
- (vi)** Ensuring that provisions for nuclear emergency planning are in place.

## 5C.

## HISTORICAL DEVELOPMENT OF THE NATIONAL NUCLEAR REGULATOR

## 1963

The Nuclear Installations (Licensing and Security) Act of 1963 establishes a regulatory function that is vested in the Atomic Energy Board (AEB).

## 1970

AEB establishes a separate Licensing Branch to perform the scientific technical functions associated with regulatory control of safety. It appoints the Nuclear Safety Advisory Committee, consisting of experts from Government Departments, Academic Institutions and the private sector

## 1982

The Nuclear Energy Act, No. 92 of 1982 establishes the Atomic Energy Corporation of SA Limited (AEC) to succeed the AEB. AEC retains the regulatory body, under a separate independent Council for Nuclear Safety (CNS). The role of CNS is to monitor the work of the AEC's Licensing Branch.

## 1988

In June 1988 the Nuclear Energy Amendment Act is promulgated. The Act establishes the Council for Nuclear Safety (CNS) as an independent juristic person.

## 1993

In 1993 the Nuclear Energy Act, Act No. 131 of 1993 is promulgated. This includes a promotional entity (AEC) and regulatory entity (CNS).

The objects of the CNS are limited to the protection of persons from nuclear damage through the regulation of nuclear installations and other activities involving radioactive material.

## 1999

1999 Nuclear Energy Act establishes the South Africa Nuclear Corporation (Necsa) as a wholly owned state entity. The role of Necsa includes regulatory functions.

The implementation and application of the Safeguards Agreement and any additional protocols entered into by the Republic and the International Atomic Energy Agency in support of the Nuclear Non-Proliferation Treaty is acceded to by the Republic.

The National Nuclear Regulator, Act, Act no 47 of 1999 establishes the National Nuclear Regulator (NNR).

The objects of the NNR have been expanded to include the protection of persons property and the environment against nuclear damage through the establishment of safety standards and regulatory practices.



In the 1990's the nuclear regulatory system was reshaped to become aligned with international norms and the new South African democratic dispensation.



**Dr Ian Korir**  
**Senior Specialist, Nuclear Engineering**

Involved in nuclear safety assessments and evaluations that ensures the public, workers, and the environment are adequately protected from radioactive damage at nuclear and non-nuclear facilities and activities, through design control measures applied to reactor physics, thermal-hydraulic and accident analyses.

**Quote:** "The ultimate measure of a man is not where he stands in moments of comfort and convenience, but where he stands at times of challenge and controversy."  
Martin Luther King Jr.

## 5D.

A BRIEF HISTORY OF  
NUCLEAR ENERGY

The concept of the atom has existed for many centuries. But only recently have we begun to understand and harness the enormous power it contains.

## 1895 - 1932 DISCOVERY

- 1895** Wilhelm Roentgen of Germany accidentally discovers a new and different kind of ray. These rays were so mysterious that Roentgen named them "x-rays." He received the first Nobel Prize in Physics in 1901 for this discovery.
- 1896** Henri Becquerel discovers that pitchblende, an ore containing uranium, causes a photographic plate to darken.
- 1897** J.J. Thomson discovers the negatively-charged electron. This was the first indication that atoms have internal structure. He received the Nobel Prize in Physics in 1906 for this discovery.
- 1898** Discovery of radioactive elements radium and polonium by Marie Curie, a two-time Nobel Prize winner in Chemistry and Physics.
- 1899** Ernest Rutherford discovered two kinds of rays emitting from radium - alpha rays and the more penetrating beta rays.
- 1903** Becquerel shares Nobel Prize for Physics with Pierre and Marie Curie for 1896 discovery of natural radioactivity.
- 1904** Rutherford discovers that alpha rays are heavy positively charged particles. In 1908, he is awarded a Nobel Prize in Chemistry for his work.
- 1905** Albert Einstein develops theory of relativity. The most significant event of the 20th century was Einstein's developing the formula of  $E=mc^2$ .
- 1909** Hans Geiger and Ernest Marsden, under the direction of Ernest Rutherford, bombard gold foil with alpha particles and observe that while most pass right through to a detector on the other side, a small fraction of the alpha particles are deflected backward.
- 1911** Rutherford discovered the nucleus of the atom.
- 1913** Niels Bohr published the theory of atomic structure, combining nuclear theory with quantum theory.
- 1915** Albert Einstein's general theory of relativity is published. The theory proposes that gravity, as well as motion, can affect the intervals of time and of space.





- 1918** Rutherford proposes the existence of another subatomic particle, the positively-charged proton.
- 1919** Rutherford bombarded nitrogen gas with alpha. The transmutation of nitrogen into oxygen was the first artificially induced nuclear reaction.
- 1925** First Cloud chamber photographs of nuclear reactions.
- 1927** Werner Heisenberg states the uncertainty principle, which states that it is not possible to simultaneously determine the position and momentum of a particle.
- 1929** Ernest O. Lawrence conceives idea for the first cyclotron, a device that greatly increased the speed with which protons could be hurled at atomic nuclei.
- 1931** Discovery of deuterium (heavy hydrogen) which is present in all natural hydrogen compounds including water.
- 1932** The neutron discovered by English physicist and Nobel Laureate James Chadwick. He also studied deuterium, known as heavy hydrogen, and is used in nuclear reactors.
- 1934 - 1977 INNOVATION**
- 1934** Enrico Fermi irradiated uranium with neutrons. He believed he had produced elements beyond uranium, not realising that he had split the atom, thus achieving the world's first nuclear fission. He won the Nobel Prize in Physics for this discovery in 1938.
- 1938** Demonstration of nuclear fission by Otto Hahn and Fritz Strassman.
- 1939** USA President Roosevelt received a letter from Albert Einstein on the possibility of a uranium weapon.
- 1940** American physicists demonstrated that neutrons captured by uranium-238 lead to the creation of elements 93 and 94, neptunium and plutonium. It was confirmed that plutonium was fissionable, thus usable for a bomb.
- 1942** Demonstration of first self-sustaining nuclear chain reaction Enrico Fermi and Leo Szilard in a laboratory at the University of Chicago. The first demonstration reactor was called the Chicago Pile 1.
- 1945** Test of first of the first atomic bomb at Alamogordo, New Mexico, USA. A month later, USA drops an atomic bomb on Hiroshima and three days later drops another one on Nagasaki. World War II ended days later.
- 1949** In South Africa, the Atomic Energy Act created the Atomic Energy Board which later became the Atomic Energy Corporation (AEC).
- 1951** First usable electricity from nuclear fission produced at the National Reactor Station, now called Idaho National Laboratory. The hydrogen bomb is invented during the same year.
- 1953** President Dwight Eisenhower unveils his "Atoms for Peace" program, proposing an international agency to develop peaceful nuclear technologies.

**1954** The world's first Nuclear power plant built for civilian purposes, the USSR Obninsk Power plant comes online. It generated around 5 megawatts of electricity directly to a power grid.

**1956** The world's first commercial nuclear power station, Calder Hall in Sellafield, England was opened with an initial capacity of 50 MW.

**1957** President Eisenhower signs into law the Price-Anderson Act, legislation to protect the public, utilities and contractors financially in the event of an accident at a nuclear power plant.

**1957** The International Atomic Energy Agency (IAEA) was launched. South Africa is one of its founding member states.

**1963** The Enrico Fermi Fast Breeder Reactor goes critical for the first time. The reactor is a 60 MWe, sodium-cooled, fast-spectrum reactor designed to breed more plutonium-239 than it consumes.

**1977** Construction of the first nuclear power station in the African continent started in Cape Town, South Africa.

#### 1979 - 1986 FIRST NUCLEAR ACCIDENTS

**1979** A major accident occurs at Three Mile Island nuclear plant's Unit 2 near Harrisburg, Pa. Damage is limited to inside the reactor and no one is injured. Minimal radioactive material is released.

**1986** The worst nuclear power plant accident in history occurs at Chernobyl Nuclear Power Plant's number 4 reactor in Ukraine. This is the only level 7 event on the International Nuclear Event Scale (INES). The nuclear reactor in the Chernobyl disaster was an RBMK graphite-moderated reactor.

#### 1993 - PRESENT RENAISSANCE

**1993** Prime Minister F.W. de Klerk announces that South Africa had successfully developed nuclear weapons, and then voluntarily destroyed them before signing the NPT in 1991.

**1996** The Treaty of Pelindaba is signed by 49 of the 53 members of the Organisation of African Unity. It creates an African nuclear-weapons-free zone.

**1996** Kashiwazaki-Kariwa 6, the world's first Advanced Boiling Water Reactor, begins commercial service in Japan - ahead of schedule and under budget.

**2000** The last of the reactors at the Chernobyl nuclear power plant are shut down.

**2005** The International Atomic Energy Agency and its head Dr Mohamed ElBaradei win the Nobel Peace Prize.

Einstein publishes his special theory of relativity. He postulates the mathematical formula  $E=mc^2$ , which demonstrates that mass can be converted to energy.



In 2007, Dr Margaret Mkhosi made history at The Ohio State University in Columbus Ohio, by becoming the first black woman to obtain a PhD in Nuclear Engineering.

The title of her dissertation was “Computational Fluid Dynamics Analysis of Aerosol Deposition in Pebble Beds”.

**Dr Margaret Mkhosi**  
**Nuclear Engineer:**  
**Accident Analysis and**  
**PSA 2**

Perform assessment of accident analysis and Level 2 PSA aspects of nuclear reactors, plant systems and nuclear facility behavior under design and beyond design conditions, to ensure safe and reliable design and operation.

**Quote:** “The vision that you glorify in your mind, the ideal that you enthrone in your heart-this you will build your life by, this you will become.” James Allen

SCIENCE CANNOT SOLVE THE  
ULTIMATE MYSTERY OF NATURE.  
AND THAT IS BECAUSE, IN THE LAST  
ANALYSIS, WE OURSELVES ARE A  
PART OF THE MYSTERY THAT WE  
ARE TRYING TO SOLVE.

**Max Planck**  
PHYSICIST



**Dudzile Mlotshwa**  
**PA to the HR Executive**

Coordinates meetings, visits, functions, travel and presentations for the HR Executive.

**Philosophy:** If you wish to develop a peaceful state of mind, watch your manner of speech. Start each day by affirming peaceful, contented and happy attitudes and your days will tend to be pleasant and successful.



**PART 2:**  
**HUMAN CAPITAL**



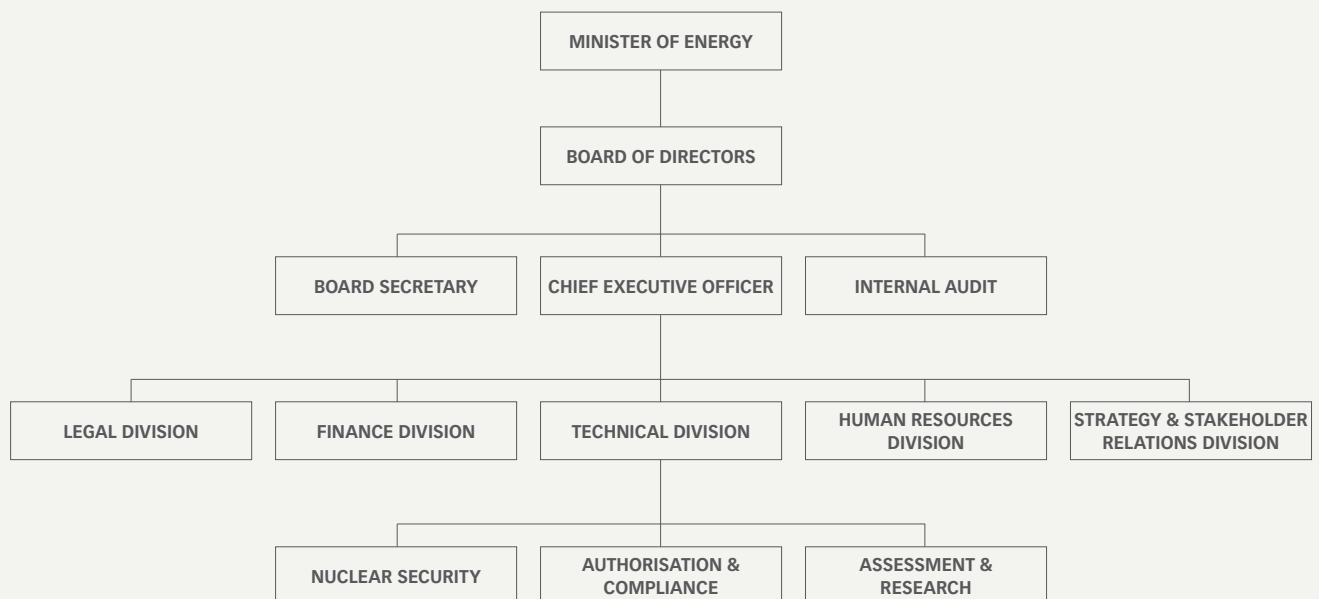


## 6. NNR ORGANISATIONAL STRUCTURE

The National Nuclear Regulator is governed by a Board of Directors which reports to the Minister of Energy. As part of sound corporate governance the Board is assisted by a fulltime Board Secretary and an Internal Auditor.

The implementation of organisation's strategy is managed by a Chief Executive Officer and a team of

executive managers. The key regulatory functions of granting nuclear authorisations, conducting compliance assurance inspections and reviewing safety cases are organized under the technical division. The administrative functions are undertaken by the human resources division, finance division, legal department and the strategy and stakeholder relations division.



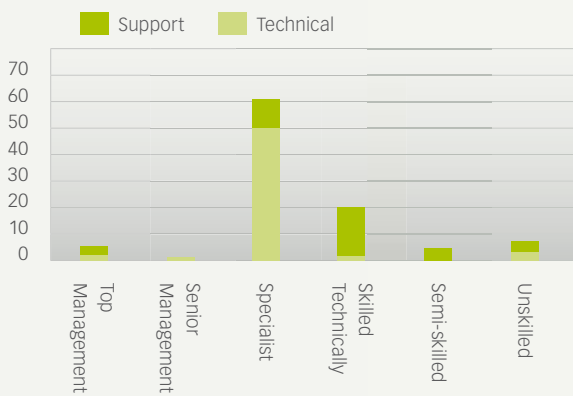
The organisation has been structured to optimise the use of available resources to deliver its mandate of providing for the protection of people, property and the environment against radiological hazards.

# 7A.

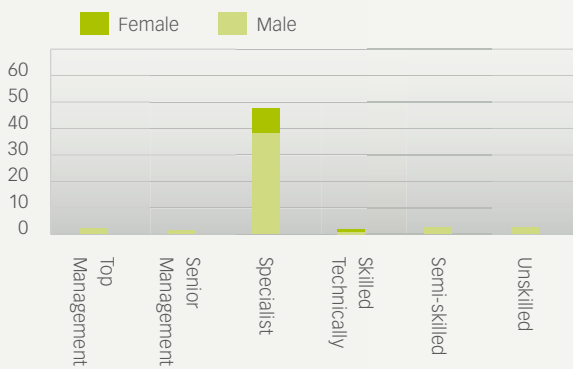
## HUMAN CAPITAL

### 7.1 EMPLOYEES BY MANAGEMENT LEVELS

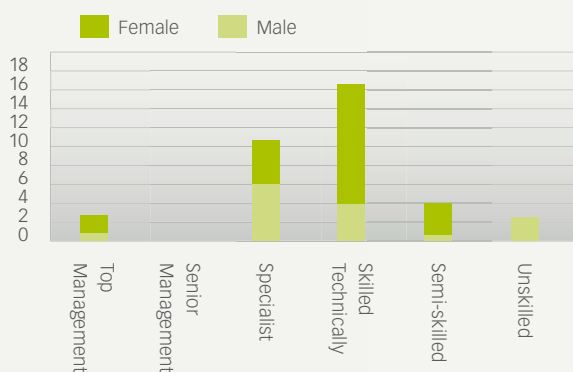
**FIGURE 1: Employees by Management Level**



**FIGURE 2: Technical Employees by gender**



**FIGURE 3: Employees in Support Division by Gender**



**Philiswa Sakwe**  
Human Resource  
Officer



**Lesego Mashishi**  
HR Executive

**TABLE 1: EMPLOYMENT EQUITY PROFILE**

Senior /Top Management/
Managers
Professionals/Specialists
Administration/Semi-skilled Staff
GRAND TOTAL
Employees with disabilities
Overall % of staff with disabilities

**7.3 NNR STAFF COMPLEMENT**

There was a total staff complement of 94 at the end of the financial year under review. During this period there were eight employees appointed, one resignation, one retirement, one dismissal and one death.

The technical division constitutes 61% of the total employees. The percentage of Black employees in the technical division is 69%. Overall, NNR female employees constitute approximately 39% of the total staff complement. There are no females in the senior management level of the technical division. This is largely due to the skills deficiency in the industry. There are however efforts made to enhance the skills in this area to attract and develop suitable candidates in this category through various interventions.

Notwithstanding the challenges with regard to technical capacity, the NNR still managed to execute its regulatory mandate.

**7.4 BASIS OF REMUNERATION**

The NNR uses the Paterson job grading system and employees are remunerated on a Total-Cost-to-Company basis so as to facilitate greater salary-package flexibility, competitiveness in the market, as well as payment of an equitable rate for services rendered. This strategy is of assistance in recruiting and retaining talent, by giving





The NNR spent approximately 1.2% of its total salary cost on training and development of employees.

Male				Female				Total	% Black	% Female
African	Coloured	Asian	White	African	Coloured	Asian	White			
3	1	0	1	2	0	0	0	7	85%	28%
1	2	2	2	2	0	0	1	10	70%	30%
17	6	1	15	12	1	1	2	55	69%	29%
4	0	0	2	9	1	0	6	22	63%	72%
25	9	3	20	25	2	1	9	94	68%	39%
			1	1				2		
								2%		

employees the choice to structure their remuneration packages according to their personal needs. The organisation also offers benefits such as medical aid, death and disability cover and pension.

#### 7.5 TRAINING AND DEVELOPMENT

The NNR spent approximately 1.2% of its total salary cost on training and development of employees, in accordance with the Skills Development Act. All training that was undertaken is based on the Individual Development Plans (IDP) of each employee. A skills development plan was submitted to the Energy SETA for the period under review. Seven students were employed in an internship programme during the year. As a result of the various training and development initiatives, the NNR has developed future capacity for the organisation.

#### 7.6 EMPLOYEE RELATIONS

The NNR experienced a number of challenges relating to the management of employer-employee relations, during the period under review. These challenges were mainly related to internal conflicts or tensions between management and staff, concerns about organisational leadership and transformation as well as corporate governance. These concerns resulted in the submission of a memorandum of concerns by Nehawu which in turn led to the Minister directing an independent external inquiry into the allegations and concerns raised by

Nehawu. The outcome of this inquiry is due in the next financial year.

#### 7.7 OCCUPATIONAL HEALTH AND SAFETY

A steering committee was formed to address Occupational Health and Safety issues and new Health, Safety and Environmental Committee representatives were appointed during the year. Training was provided to all representatives and various committee meetings conducted to plan and implement the system.

The NNR Health, Safety and Environmental Manual and nine related Procedures were developed and is currently being finalised. Training was also provided to the NNR staff on the housekeeping standard and the emergency evacuation procedure.

The Occupational Health and Safety Committee conducted a planned Emergency Evacuation drill in accordance with the Occupational Health and Safety Act.

Lessons learned were documented and discussed with the CEO. Plans for the unannounced Emergency Evacuation drill are underway for the second quarter of the new financial year.

## 7B.

## THE FACE OF THE NATIONAL NUCLEAR REGULATOR

The strength of the nuclear regulator lies in the diversity of people that it employs. Character, dedication and integrity are the key attributes that define our approach to regulation. These people are the pillars of the National Nuclear Regulator.



**Malcolm Europa**  
Principal Specialist:  
Mechanical Engineering

Assessment of the adequacy of measures taken or implemented by licensees or license applicants to ensure nuclear safety in the design of mechanical plant, systems or structures at nuclear installations.

**Inspiration:** Desmond Tutu - Inflexible in his opposition to oppression and injustice (equal in both past and present administrations), yet absolute in his belief in the humanity of people and in the peaceful settlement of differences.



**Peter Bester**  
Manager: Regulatory  
Research and  
Development

Responsible for the development and maintenance of regulatory standards and practices, performance of regulatory research as well as for the independent radiological verification capacity of the NNR

**Philosophy:** Remember that success is the reward of toil.



**Michelle Kleinhans**  
Senior Specialist,  
Quality

Assist with implementation and maintenance of the NNR integrated Management system compliant to ISO 9001, ISO 14001 and OHSAS 18001.

Implementation and maintenance of the NNR Document control process

**Quote:** "I do not feel obliged to believe that the same God who has endowed us with sense, reason, and intellect has intended us to forgo their use."  
- Galileo Galilei



**Phindile Masilo**  
Internal Audit Manager.

Conducting Internal Audits in all departments and assisting with Risk Management at the NNR.

**Quote:** "If I have the belief that I can do it, I will surely acquire the capacity to do it, even if I may not have it at the beginning" - Mahatma Gandhi



**Dr Jean Joubert**  
Coordinator:  
Engineering  
Configuration  
Management

Coordinating safety assessments of nuclear installations for adherence to NNR requirements in the technical areas of Engineering and Configuration Management.

**Quote:** "How wonderful it is that nobody need wait a single moment before starting to improve the world". Anne Frank.



**Alan Muller**  
**Coordinator: Radiation Protection Emergency Planning**

Responsible for managing the review of safety assessments in radiation, waste and transport safety as well as emergency preparedness and response. Participates in the development and review of regulatory requirements, guides and procedures.

**Philosophy:** Learn from yesterday, live for today, hope for tomorrow



**Dr Ian Korir**  
**Senior Specialist: Nuclear Engineering**

Involved in nuclear safety assessments and evaluations that ensures the public, workers, and the environment are adequately protected from radioactive damage at nuclear and non-nuclear facilities and activities, through design control measures applied to reactor physics, thermal-hydraulic and accident analyses.

**Quote:** "The ultimate measure of a man is not where he stands in moments of comfort and convenience, but where he stands at times of challenge and controversy."  
 Martin Luther King Jr.



**Schalk Doms**  
**Senior Specialist: Materials and Plant Integrity**

Perform safety analyses, reviews and assessments of nuclear installations and other nuclear activities regulated by the NNR in the area of facility condition management to assure safe and reliable design, construction, commissioning, operation and decommissioning.

**Philosophy:** Do unto others as you would have them do unto you.



**Duduzile Mlotshwa**  
**PA to the HR Executive**

Diary management for the HR Executive. Arrange and coordinates meetings, visits, functions, travel and presentations for the HR Executive.

**Philosophy:** If you wish to develop a peaceful state of mind, watch your manner of speech. Start each day by affirming peaceful, contented and happy attitudes and your days will tend to be pleasant and successful.



**Adriaan Joubert**  
**Principal Specialist: Waste and Environment**

Responsible for developing standards, requirements and guidance documents for the NNR and the Industry related to waste and the environment. In addition, I also provide technical support to programmes on request.

**Philosophy:** What ever you do, do it to the best of your ability, as quickly as possible with as much energy as possible.



**Gelani Dladla**  
**Systems Engineer**

To analyze, recommend, plan implement and support the NNR computer systems and networking.

**Philosophy:** There is a treasure in me that would change the world , giving up is not an option.



**Terma Kussman**  
**Statistical Analysis Specialist**

To perform safety assessments and analytical of nuclear installations and other nuclear activities regulated by the NNR in the area of risk and statistical analysis to ensure safe and reliable design and operation.

**Philosophy:** There is GOLD in Africa: Some in the ground, but mostly in the hearts of its people.



**Thabita Joubert**  
**Quality Manager**

Development, Implementation, and Evaluation of the NNR integrated Management System.

**Philosophy:** "It is easy to spot the winners, they are the ones not complaining about the rules."



**Bernard Petlane**  
**Senior Specialist: - Electrical Systems**

Safety assessment of electrical design submissions from the regulated Nuclear Facilities.

**Philosophy:** My general philosophy in life is that dreams drive hard work to reality



**Dr Andy Graham**  
**Principal Specialist: Nuclear Fuels**

I review submissions from Necsra and Eskom (Koeberg) that relate to the areas of my expertise, namely Reactor Physics, Nuclear Criticality Safety and Nuclear Fuels.

**Philosophy:** The heavens declare the glory of God; and the firmament shows his handiwork.



**Gino Moonsamy**  
**Manager Stakeholder Communications**

Manage Corporate Communications & Public Relations portfolio. This portfolio is responsible for providing corporate communications & PR services to enable the NNR to fulfil its regulatory mandate and strategic business objectives.

**Philosophy:** Keep both simple - Experience & Enjoy! elements were, by their very nature,



**Kathleen Brink**  
**Secretary: Nuclear Technology & Natural Sources**

Secretarial and administrative support to the Senior Manager: Nuclear Technology and Natural Sources and to the Regulation of Natural Sources Programme.

**Philosophy:** Just as geese fly in formation to encourage each other on, so too do we need one another. Teamwork, mutual respect and support for each other is very important in getting to where you want to be.



**Avinash Singh**  
**Senior Regulatory Officer - NTWP**

Compliance Assurance of authorisation holders (e.g. Necsa) by performing inspections or audits and reporting on these. Secondly, reviewing of submissions from authorisation holders and recommending approval or comments to be sent to the authorisation holders.

**Philosophy:** Balance is the key to achieving true fulfillment



**Rendani Raulisa**  
**Specialist Engineer in Facility Condition Management**

To review international standards, and advise management of the relevance to NNR. Evaluating changes in terms of codes and standards and make decision based on facts to ensure nuclear safety.

**Philosophy:** No matter who you are it's the simple things in life that lead you to believe that you can achieve anything.



**Dr Tim Hill**  
**Manager: Koeberg Programme.**

To manage the programme, conduct regulatory oversight, authorisation and compliance assurance functions on Koeberg Power Station, Licensing of Koeberg reactor operators, monitoring and enforcement of requirements on local authorities.

**Philosophy:** To serve the country and society with particular focus on building South Africa's capabilities in the nuclear safety arena.



**Paul Hinrichsen**  
**Senior Specialist: Radiation Protection and Transport Safety**

In my transport capacity I currently serve on the International Atomic Energy Agency Transport Safety Standards Committee.

**Philosophy:** Bear one another's burdens, and so fulfil the law of Christ.



**Marie Steyn**  
**Payroll Administrator**

Accurate processing and planning of payroll and administration of personnel database. Ensure that all staff information is captured and updated on the VIP System. Processing of remuneration information to meet remuneration, SARS, and governance requirements..

**Philosophy:** To excel in everything I do.



**Nthabiseng Mohlala**  
**Laboratory Technician**

Provision of analytical services to the NNR, responsible for all NNR portable instrumentation and Quality Assurance in the NNR Laboratory.

**Quote:** "For I know the plans I have for you" declares the LORD "Plans to prosper you and not to harm you, plans to give you hope and a future". Jer 29:11 (NIV)



**Louisa Mpete**  
**Senior Specialist: Radiation Protection**

To perform technical safety assessments and analysis of nuclear installations and other nuclear activities regulated by the NNR in the area of radiation protection, waste safety and transport safety and public safety assessments to ensure safe and reliable design and operation.

**Philosophy:** Victories often occur after you see no way to succeed.



**Thabo Tselane**  
**Manager: Regulation of Natural Sources**

Planning, coordination, providing operational and functional oversight of a department that is responsible for the Regulation of Natural Occurring Radioactive Materials (NORM) in the 145 Mining and Mineral Processing facilities countrywide.

**Philosophy:** Whoever makes himself great will be humbled and whoever humbles himself will be made great.



**Thabile Mokgoatjana**  
**Personal Assistant: CEO**

Responsible for the office of the CEO.

**Philosophy:** There is no such thing as failure – there is only success or quitting. I'm no quitter.



**Henry Gerber**  
**Coordinator:**  
**Facility Condition Management**

Regulatory control over the engineering material selection process and the maintenance, inspection, testing, and surveillance programmes in order to ensure and have assurance.

**Philosophy:** Everyone must do his work and everyone must be allowed to do their work.



**Nico Spoelstra**  
**Process Coordinator**

Compliance assurance in the Regulation Of Natural Sources.

**Philosophy:** I want to make a difference in other people's lives.



**Michael Blumenthal**  
**Senior Specialist:**  
**Mechanical Engineering**

This portfolio (briefly) involves nuclear safety assessment and analysis of the primary & secondary coolant systems, steam generators & turbines.

**Philosophy:** We are all responsible for each other - especially in the nuclear field. There is a Spiritual Principle of "measure for measure".

No one gets away with anything and no one takes their wealth with them. There are those that care and those that don't. Those that don't care will cause their children & grandchildren to suffer until the third & fourth generations.



**Annie Duffy**  
**Regulatory Officer :**  
**Radiation Protection**

Evaluation of compliance with conditions of nuclear authorisation issued to NECSA facilities through auditing, investigation, and inspection of such facilities.

**Philosophy:** Only those who have patience to do simple things perfectly will acquire the skill to do difficult things easily



**Solofelang Masike**  
**Regulatory Officer**

Evaluate compliance with conditions of nuclear authorisation through conducting compliance assurance activities

**Philosophy:** Do unto others as you would like them to do unto you.



**Malebo Makgale**  
**Regulatory Officer**

Ensuring that the facilities dealing with Naturally Occurring Radioactive Materials (NORM) are not over exposing the workers, the public and the environment to radioactive materials by reviewing their radiation protection related documents and conducting compliance assurance inspections and audits.

**Philosophy:** Believe in yourself to the depth of your being & nourish the talents your spirit is freeing.





**Bongwiwe Mbebe**  
**Metallurgy Specialist**

Job involves assessment review of submissions from nuclear installations in the area of Facility Condition Management.

**Quote:** "I Have held many things in my hands, and have lost them all but whatever I placed in God's hands, that I still possess" Martin Luther King



**Mothusi Ramerafe**  
**Senior Specialist: Emergency Planning**

Evaluation of Emergency planning arrangements of nuclear facilities; this include coordinating emergency exercises, audits and inspections

**Philosophy:** Be yourself and realising that only the simple things in life matters



**Nontutuzelo Mpongo**  
**Regulatory Officer**

Conducts Compliance Inspections and review safety related submission from Facilities Regulated by the NNR

**Quote:** "Goals are the fuel in the furnace of achievement" Brian Tracy



**Mnonoki Msebenzi**  
**Chief Technical Officer**

Strategic management of NNR technical division

**Philosophy:** Everybody has a human side.



**Disang Sennanye**  
**Regulatory Officer: Radiation Protection**

**Philosophy:** Do to others as you would wish them to unto you.



**Marijke Botes**  
**Debtors Clerk**

Ensuring accurate invoicing of all NNR holders and other debtors. Insuring payments are done accurately and on time. Following up on all queries and resolving them as quick as possible.

**Philosophy:** Treat others as you want them to treat you. Your tone of voice can turn a difficult client completely around.



**Gift Nhlapho**  
**Legal Advisor**

Provides legal services to the organisation which includes legal guidance, opinions and advise over the NNR Act and the full spectrum of laws affecting the business of the NNR.

**Quote:** 'Peace be unto you' – His Grace, The Right Rev. Bishop B.E. Lekganyane



**Orion Phillips**  
**Senior Manager: Nuclear Technology and Natural Sources**

Regulation of Nuclear Technology, Radioactive Waste Management, and NORM facilities.

**Philosophy:** Be of service to your fellowman, appreciate your family, and honor your maker.



**Dr Margaret Mkhosi**  
**Nuclear Engineer: Accident Analysis and PSA 2.**

Perform assessment of accident analysis and Level 2 PSA aspects of nuclear reactors, plant systems and nuclear facility behavior under design and beyond design conditions, to ensure safe and reliable design and operation. Such work includes, process design parameters performance of reactor thermal-hydraulic systems, severe accident progression, chemical attack and corrosion safety.

**Quote:** "The vision that you glorify in your mind, the ideal that you enthrone in your heart-this you will build your life by, this you will become." James Allen



**Boikanyo Ntuane**  
**Senior Specialist and Nuclear Inspector**

Compliance assurance at authorised facilities in South Africa in respect to NNR regulatory requirements and IAEA nuclear regulatory framework.

**Quote:** "An error does not become truth by reason of multiplied propagation, nor does truth become an error because nobody will see it". Mahatma Gandhi



**Rozaan Swanepoel**  
**Strategy assistant**

Coordination of Strategic plan, Balance Scorecard and quarterly report, administrative coordination for Exco, coordination of International relations and management of conferences and events.

**Philosophy:** Work like you don't need the money, love like you've never been hurt and dance like no one is watching.



**Ronnie Rikhotso**  
**Specialist: Radiation Protection**

I perform technical review and assessment work that relates to Radiation Protection from Necsa and Koeberg submissions.

**Philosophy:** I'm allowed to do anything, but not everything encourages growth.



**Salome Wasmuth**  
**Secretary: NTWP**

**Philosophy:** One Man can make a difference.

**Quote:** "Consider three things and you will not come into the grip of sin: Know from where you came, where you are destined to go, and before whom you will give account and reckoning". Akavia ben Mahalalel



**John Pule**  
**Senior Specialist: Radiation Protection**

Develop regulatory requirements, guides and position papers on various topics and also conduct regulatory research in support of the entire regulatory business.

**Philosophy:** It is not how you start but how you finish that matters.



**Thiagan Pather**  
**Manager Nuclear Technology and Waste Projects**

To oversee and manage authorisation and compliance assurance functions in order to achieve protection of the environment, workers, people, and their property against nuclear damage arising from the nuclear installations and facilities regulated by the NTWP Department.

**Quote:** "Learn thoroughly whatever is to be learnt; Then, let the conduct be worthy of his learning"  
Swami Thiruvalluvar



**Rodney Elk**  
**Senior Legal Advisor**



**Folofelang Masithulela**  
**Regulatory Officer: Maintenance Engineering**



**Doreen Kutumela**  
**Secretary Finance**

Imagery not available for the following members of staff:  
 Ubert Coetzee: Coordinator: Compliance Assurance and Reactor Operator Licensing  
 Chris Beyers: Senior Regulatory Officer: Human Factors and Reactor Operator Licensing  
 Wilbert Leotwane: Principal Specialist: Nuclear Safety  
 Kameshni Naidoo: Specialist Engineering and Configuration



**Terma Kussman**  
**Statistical Analysis**  
**Specialist**



**Thuto Vukea**  
**Finance Manager**



**Douglas Alexander**  
**Senior Specialist, Plant**  
**and Materials Integrity**



**Morris Phiri**  
**Messenger/Driver**



**David Sim**  
**Senior Accountant**



**Marisa Oosthuizen**  
**Secretary**



**Mandla Mavuso**  
**Senior Accountant**





**Luka Potgieter**  
Student Intern



**Bertus Pretorius**  
Process Coordinator



**Vanessa Majola**  
Senior Regulatory  
Officer: Radiation  
Protection



**Thembi Makhubu**  
Accounts Payable  
Officer



**Joel Maatjie**  
Procurement  
Administrator



**Samuel Thugwane**  
Senior Regulatory  
Officer



**Puleng Maseko**  
Talent Manager



**Ramasela Moloto**  
Chief Financial  
Officer



**Lesego Mashishi**  
Human Resources  
Executive



**Sannah Tladi**  
Admin Clerk



**Cor Luus**  
Accountant



**Maduba Skosana**  
Regulatory Officer



**Lerato Khechane**  
Regulatory Officer



**Prudence Suliman**  
Information Officer



**Gloria Noganta**  
Nuclear Security  
Manager



**Andre Botha**  
Senior Regulatory  
Officer



**Slavek Rokita**  
Process Coordinator:  
Authorisation



**Philiswa Sakwe**  
Human Resource  
Officer



**Thys Segacwi**  
IT Technician



**Patle Mohajane**  
Senior Regulatory  
Officer



**Wilcot Speelman**  
Regulatory Officer



**Matshediso Maine**  
Regulatory Officer



**Adv. Boyce Mkhize**  
Chief Executive Officer



**Senoelo Pheto**  
Senior Regulatory  
Officer



**Joe Mwase**  
Strategy & Stakeholder  
Executive



**Guy Clapison**  
Senior Manager



**Mary Makgwale**  
Committee Officer



**Julian Boulton**  
IT Manager



**Sello Mosoeunyane**  
Process Coordinator



**Neil Fritz**  
Senior Regulatory  
Officer: Reactor  
Operations



**Rodger Bruiners**  
Senior Regulatory  
Officer: Plant and  
Materials Integrity



**Mehl Douglas**  
Senior Regulatory  
Officer: Mechanical  
Engineering



**Rozanne Oppelt**  
Secretary



**Mashudu  
Netshimbupfe**  
Regulatory Officer



**Louis de Klerk**  
Specialist:  
Radiation Protection



**Pamela Mampa**  
Receptionist



**Mothusi Ramerafe**  
Senior Specialist:  
Emergency Planning

WHATEVER NATURE HAS IN STORE  
FOR MANKIND, UNPLEASANT AS  
IT MAY BE, MEN MUST ACCEPT,  
FOR IGNORANCE IS NEVER BETTER  
THAN KNOWLEDGE.

**Enrico Fermi**  
ITALIAN PHYSICIST



**Lerato Khechane**  
**Regulatory Officer**

Performs environmental verification, emergency planning,  
radiation protection and waste management.

**Philosophy:** Behind the heaviest darkest cloud  
the sun still shines.



**PART 3:**  
**PROGRAMME**  
**PERFORMANCE**

## 8.

## OVERVIEW OF NUCLEAR SAFETY

In accordance with the provisions of the NNR Act the NNR is mandated to exercise regulatory control over nuclear installations, nuclear vessels and other actions capable of causing nuclear damage.

The purpose of the regulatory process is to ensure the protection of persons, property and the environment from nuclear damage. The regulatory process entails authori-

sation, safety case review and assessment, and the undertaking of compliance assurance and enforcement activities as appropriate.

### 8.1 FACILITIES REGULATED BY THE NATIONAL NUCLEAR REGULATOR

The following table details the holders of nuclear authorisations granted by the NNR as at the end of March 2010.

**TABLE 2: NUCLEAR AUTHORISATION HOLDERS**

Nuclear Installation Licence #	Facility	Holder
NIL-01	Koeberg Nuclear Power Station	Eskom
NIL-02	P-1800 SAFARI-1 Research Reactor on the Pelindaba site	Necca
NIL-03	P-2700 UCHEM Facility on the Pelindaba site	Necca
NIL-04	Thabana Complex on the Pelindaba site	Necca
NIL-05	HEU Vault on the Pelindaba site	Necca
NIL-07	Building A-West Drum Store on the Pelindaba site	Necca
NIL-08	ELPROD Fuel Fabrication Facility on the Pelindaba site	Necca
NIL-09	UMET Facility on the Pelindaba site	Necca
NIL-12	Quarantine Store on the Pelindaba site	Necca
NIL-13	V-YB Pelindaba East Bus Shed on the Pelindaba site	Necca
NIL-14	Pelindaba East Ponds Complex on the Pelindaba site	Necca
NIL-15	Oil Purification Plant on the Pelindaba site	Necca
NIL-17	Beva K3 Storage Complex on the Pelindaba site	Necca
NIL-21	J-Building on the Pelindaba site	Necca
NIL-24	Building P-2900 on the Pelindaba site	Necca
NIL-26	BEVA Evaporation Ponds on the Pelindaba site	Necca
NIL-27	Nuclear facilities on the Pelindaba site	Necca
NIL-28	Vaalputs National Radioactive Waste Disposal Facility	Necca



**Bongiwe Mbebe**  
**Metallurgy Specialist**

**Nthabiseng Mohlala**  
**Laboratory Technician**

# CERTIFICATES OF REGISTRATION (COR)

**TABLE 3: CERTIFICATES OF REGISTRATION (COR)**

	COR Number	Name of COR Holder	Category of COR	Type of COR issued
1	COR-156	Necsa Calibration Pads	Category 1	Small User
2	COR-77	Anglo American Research Laboratories (Pty) Limited	Category 1	Small User
3	COR-75	BHP Billiton	Category 1	Small User
4	COR-126	Denel	Category 1	Small User
5	COR-96	Donnlee Engineering (Pty) Ltd	Category 1	Small User
6	COR-12	Extratech Pty Ltd	Category 1	Small User
7	NL-62	First Wesgold Mining (Pty) Limited	Category 1	Mining and Mineral Processing
8	COR-65	Glenover Phosphate Limited Germiston Site	Category 1	Fertilizer Manufacturer
9	COR-118	GoldPlats Recovery Ltd	Category 1	Small User
10	COR-93	Hi-Energy Mining Supplies CC	Category 1	Scrap Processor
11	COR-82	Hydro Power Equipment (Pty) Limited	Category 1	Scrap Processor
12	COR-81	Metrec	Category 1	Small User
13	COR-66	Mintek	Category 1	Small User
14	COR-64	Potchefstroom Plastiek Herwinning BK	Category 1	Scrap Processor
15	COR-87	Rand Refinery Limited	Category 1	Small User
16	COR-92	The Forensic Science Laboratory, SA Police	Category 1	Small User
17	COR-102	Turbomeca Africa	Category 1	Small User
18	COR-49	Umicore SA (Pty) Ltd	Category 1	Small User
19	COR-50	Waste Product Utilisation (Pty) Limited	Category 1	Small User
20	COR-90	Zestcor	Category 1	Small User
21	COR-198	Set Point Industrial Technologies (Pty) Ltd (Isando)	Category 1	Small User
22	COR-207	Set Point Industrial Technologies (Pty) Ltd (Mokopane)	Category 1	Small User
23	COR-189	SGS Lakefield Research Africa	Category 1	Small User
24	COR-194	Exxaro Resources	Category 1	Small User
25	COR-180	SA Port Operations - Container Terminal Cape Town	Category 1	Small User
26	COR-178	Durban Container Terminal - Business Unit of SA Port Operations	Category 1	Small User
27	COR-165	Uramin Mago Lukisa	Category 1	Mining and Mineral Processing
28	COR-199	Uramin Mago Lukisa	Category 1	Mining and Mineral Processing
29	COR-200	Uramin Mago Lukisa	Category 1	Mining and Mineral Processing
30	COR-167	Western Uranium (Pty) Ltd	Category 1	Mining and Mineral Processing
31	COR-203	Cemo Pumps (Pty) Ltdw	Category 1	Small User
32	COR-209	Neethling Plastics CC	Category 1	Scrap Processor
33	COR-216	Paddy's Pad 1183 (Pty) Ltd	Category 1	Mining and Mineral Processing
34	COR-183	Tasman Pacific Minerals (Pty) Limited	Category 1	Mining and Mineral Processing
35	COR-210	Tasman Pacific Minerals (Pty) Limited	Category 1	Mining and Mineral Processing
36	COR-211	Tasman Pacific Minerals (Pty) Limited	Category 1	Mining and Mineral Processing
37	COR-221	Tasman Pacific Minerals (Pty) Limited	Category 1	Mining and Mineral Processing





	COR Number	Name of COR Holder	Category of COR	Type of COR issued
38	COR-222	Tasman Pacific Minerals (Pty) Limited	Category 1	Mining and Mineral Processing
39	COR-223	Tasman Pacific Minerals (Pty) Limited	Category 1	Mining and Mineral Processing
40	COR-132	Grifo Engineering (Pty) Ltd	Category 1	Small User
41	COR-197	Gold Reef City Theme Park	Category 1	Small User
42	COR-110	Geotron Systems (Pty) Limited	Category 1	Small User
43	COR-164	Sulzer Pumps (SA) Limited	Category 1	Small User
44	COR-227	WG Wearne Limited	Category 1	Small User
45	COR-242	Enviro Mzingazi Gypsum (Pty) Limited	Category 1	Fertilizer manufacturer
46	COR-186	AfriSam (Pty) Limited	Category 1	Small User
47	COR-250	JCI Gold Limited	Category 1	Mining and Minerals Processing
48	COR-254	WS Renovations Contractors	Category 1	Service Provider
49	COR-255	Genalysis Laboratory Services (SA) (Pty) Limited	Category 1	Mining and Minerals Processing
50	COR-217	Cango Caves Oudtshoorn Municipality	Category 1	Mining and Minerals Processing
51	COR-256	Chifley Trading CC	Category 1	Service Provider
52	COR-68	Alnieuwco Recycling (Pty) Ltd	Category 2	Scrap Processor
53	COR-44	Anglo Operations Limited (Scaw Metals )	Category 2	Scrap Smelter
54	COR-45	Anglo Operations Limited: (Rand Scrap Iron)	Category 2	Scrap Processor
55	COR-98	B G Scrap Metals (Pty) Ltd	Category 2	Scrap Processor
56	COR-32	CJN Metal Dealers CC	Category 2	Scrap Processor
57	COR-54	Cronimet (RSA) Pty Ltd	Category 2	Small User
58	COR-25	Eggerding SA (Pty) Limited	Category 2	Small User
59	COR-22	Fer-Min-Ore (Pty) Limited (Zirtile Milling)	Category 2	Mining and Mineral Processing
60	COR-97	Geratech Zirconium Beneficiation (Ltd)	Category 2	Mining and Mineral Processing
61	COR-119	Huntrex 196 Pty Ltd (trading as Ceracast)	Category 2	Scrap Processor
62	COR-73	Kusasa Logistics (Pty) Ltd	Category 2	Small User
63	COR-103	Linbeck Metal Trading (Pty) Ltd	Category 2	Scrap Processor
64	COR-95	Microzone Trading 69 cc	Category 2	Scrap Processor
65	COR-88	Mineworkers Recycling Services	Category 2	Scrap Processor
66	COR-13	MTC Demolition	Category 2	Scrap Processor
67	COR-159	North West Reclaiming	Category 2	Scrap processor
68	COR-33	Rampete Metal Processors (Pty) Ltd	Category 2	Scrap Processor
69	COR-84	The Big Bin CC	Category 2	Scrap Processor
70	COR-229	The New Reclamation Group (Pty) Limited	Category 2	Scrap Processor
71	COR-108	UCG Recycling (Proprietary) Limited	Category 2	Scrap Processor
72	COR-89	Uhuru Transformers Refurbishment cc	Category 2	Scrap Processor
73	COR-107	Vesuvius South Africa (Pty) Ltd	Category 2	Scrap Processor
74	COR-117	Vic Ramos CC	Category 2	Scrap Processor



TABLE 3: CERTIFICATES OF REGISTRATION cont.

	COR Number	Name of COR Holder	Category of COR	Type of COR issued
75	COR-166	Weston Scrap Metal	Category 2	Scrap Processor
76	COR-31	Ya-Rona Scrap Metals	Category 2	Scrap Processor
77	COR-204	Holgoun Energy (Pty) Ltd	Category 2	Mining and Mineral Processing
78	COR-76	Blastrite (Pty) Limited	Category 2	Scrap Processor
79	COR-224	Pomona Scrap Metals	Category 2	Scrap Processor
80	COR236	Reclaim Invest 101 (Pty) Limited	Category 2	Scrap Processor
81	COR-235	IM Motlhabane Farming CC (T/A Motlhabane Recycle Scrap)	Category 2	Scrap Processor
82	COR-241	India Steel (Pty) Limited	Category 2	Scrap Processor
83	COR-237	Mookoli Construction	Category 2	Scrap Processor
84	COR-252	Harmony Gold Mining Company Limited	Category 2	Mining and Minerals Processing
85	COR-253	Avgold Limited	Category 2	Mining and Minerals Processing
86	COR-100	South African Airforce (SAAF)	Category 2	Mining and Minerals Processing
87	COR-219	Southgold Exploration (Pty) Limited	Category 2	Mining and Minerals Processing
88	COR-20	Foskor Limited (Phalaborwa)	Category 3	Fertilizer Manufacturer
89	COR-27	Foskor Limited (Richards Bay)	Category 3	Fertilizer Manufacturer
90	COR-39	Kynoch Fertilizer Limited	Category 3	Fertilizer Manufacturer
91	NL-101	Kynoch Modderfontein (Pty) Limited	Category 3	Fertilizer Manufacturer
92	COR-16	Nuclear Fuels Corporation of SA (Pty) Limited	Category 3	Mining and Mineral Processing
93	COR-38	Omnia Phosphates (Pty) Ltd	Category 3	Fertilizer Manufacturer
94	COR-218	Grindrod Terminals (Pty) Limited	Category 3	Small User
95	COR-7	African Rainbow Minerals Gold Limited (Welkom Operations)	Category 4	Mining and Mineral Processing
96	COR-24	Anglo Operations Limited (Namakwa Sands)	Category 4	Mining and Mineral Processing
97	COR-4	Anglogold Ashanti Limited - Ergo Operations	Category 4	Mining and Mineral Processing
98	COR-6	ARMgold/Harmony Freegold Joint Venture Company (Pty) Ltd (Joel operation)	Category 4	Mining and Mineral Processing
99	COR-51	Consolidated Modderfontein (Pty) Limited	Category 4	Mining and Mineral Processing
100	COR-57	Crown Gold Recoveries (Pty) Limited	Category 4	Mining and Mineral Processing
101	NL-108	Durban Roodepoort Deep Limited (Durban Roodepoort Deep)	Category 4	Mining and Mineral Processing
102	COR-63	East Rand Proprietary Mines Limited	Category 4	Mining and Mineral Processing
103	COR-46	Evander Gold Mines Limited	Category 4	Mining and Mineral Processing
104	COR-69	GFI Mining SA (Pty) Ltd (Driefontein Operations)	Category 4	Mining and Mineral Processing
105	COR-86	Glenover Phosphate Limited (Mining Site) Operation	Category 4	Mining and Mineral Processing
106	COR-11	Gravelotte Mines Limited	Category 4	Mining and Mineral Processing
107	COR-47	Grootvlei Properties Mines Ltd	Category 4	Mining and Mineral Processing
108	COR-59	Industrial Zone Limited	Category 4	Mining and Mineral Processing
109	COR-30	Mine Waste Solutions (Pty) Limited	Category 4	Mining and Mineral Processing
110	COR-67	Mr David Salomon	Category 4	Mining and Mineral Processing
111	COR-52	Nigel Gold Mining Company Limited	Category 4	Mining and Mineral Processing



The phosphate industry produces fertiliser, animal feed and phosphoric acid using phosphate rock which contains Naturally Occuring Radioactive Materials (NORM).

	COR Number	Name of COR Holder	Category of COR	Type of COR issued
112	COR-28	Randfontein Estates Limited (Elandsdraal Section)	Category 4	Mining and Mineral Processing
113	COR-26	Richards Bay Iron and Titanium (Pty) Limited	Category 4	Mining and Mineral Processing
114	COR-104	South African Port Operations (Dry Bulk Terminal - Richards Bay a Division of Transnet Limited)	Category 4	Mining and Mineral Processing
115	COR-23	Steenkampskraal Monazite Mine (Pty) Limited	Category 4	Mining and Mineral Processing
116	COR-36	Stilfontein Gold Mining Company Limited	Category 4	Mining and Mineral Processing
117	COR-43	Exxaro Sands (Pty) Limited	Category 4	Mining and Mineral Processing
118	NL-105	Village Main Reef Gold Mining Company Limited	Category 4	Mining and Mineral Processing
119	NL-109	West Witwatersrand Gold Mines Limited	Category 4	Mining and Mineral Processing
120	COR-184	HVH Gold (Pty) Ltd	Category 4	Mining and Mineral Processing
121	COR-80	Mogale Gold (Pty) Ltd	Category 4	Mining and Mineral Processing
122	COR-214	Ogoerian Construction CC T/a Moria Mining	Category 4	Mining and Mineral Processing
123	COR-190	Ezulwini Mining Company Ltd	Category 4	Mining and Mineral Processing
124	COR-232	Central Rand Gold South Africa (Pty) Limited (West)	Category 4	Mining and Mineral Processing
125	COR-233	Central Rand Gold South Africa (Pty) Limited (East)	Category 4	Mining and Mineral Processing
126	COR-225	New Kleinfontein Goldmine (Pty) Limited	Category 4	Mining and Mineral Processing
127	COR-3	Anglogold Ashanti Limited - West Wits Operations	Category 5	Mining and Mineral Processing
128	COR-4	Anglogold Ashanti Limited: Vaal River Operations	Category 5	Mining and Mineral Processing
129	COR-40	ARMgold/Harmony Freegold Joint Venture Company (Pty) Ltd (St Helena Operations)	Category 5	Mining and Mineral Processing
130	COR-5	ARMgold/Harmony Freegold Joint Venture Company (Pty) Ltd (Tshepong, Matjhabeng & Bambani Operations)	Category 5	Mining and Mineral Processing
131	COR-10	Avgold Limited - Target Division	Category 5	Mining and Mineral Processing
132	COR-41	Blyvooruitzicht Gold Mining Company Limited	Category 5	Mining and Mineral Processing
133	COR-70	GFI Mining SA (Pty) Ltd (Kloof Operation)	Category 5	Mining and Mineral Processing
134	COR-71	GFI Mining SA (Pty) Ltd (Beatrix Operation)	Category 5	Mining and Mineral Processing
135	COR-58	Harmony Gold Mining Company Limited - Randfontein Operations	Category 5	Mining and Mineral Processing
136	COR-37	Harmony Gold Mining Company Limited (Free State Operations)	Category 5	Mining and Mineral Processing
137	COR-19	Palabora Mining Company (Pty) Limited	Category 5	Mining and Mineral Processing
138	COR-18	GFI Joint Venture Holdings (Pty) Limited	Category 5	Mining and Mineral Processing
139	COR-160	Uranium One	Category 5	Mining and Mineral Processing
140	COR-206	Uranium One and Micawber 397 (Proprietary) Limited	Category 5	Mining and Mineral Processing
141	COR-226	Rand Uranium (Pty) Limited	Category 5	Mining and Mineral Processing
142	COR-234	Pamodzi Gold Orkney (Pty) Limited	Category 5	Mining and Mineral Processing
143	COR-182	Buffelsfontein Gold Mine Limited	Category 5	Mining and Mineral Processing
144	COR-15	Pamodzi Free State (Pty) Limited	Category 5	Mining and Mineral Processing
145	COR-21	Sasol Chemical Industries Limited	Category 3	Fertilizer Manufacturer

# 9.

## KOEBERG NUCLEAR POWER STATION (KNPS)

### 9.1 BACKGROUND

Eskom operates the KNPS, comprising two 900 megawatt electrical (MWe) pressurised water reactors (PWRs), on the Atlantic coast 40 kilometres north of Cape Town. The two units were brought into commercial operation in July 1984 and November 1985 respectively.

The current Koeberg Nuclear Installation Licence, NIL-01 variation 17, contains specific requirements pertaining to:

#### Plant description and configuration

- Scope of activities that may be undertaken
- Maintenance and in-service inspection
- Effluent management
- Environmental monitoring
- Transport
- Decommissioning
- Inspection Programme
- Safety assessment
- Controls and limitations on operation
- Operational radiation protection
- Waste management
- Emergency planning and preparedness
- Physical security
- Financial Security
- Quality management

In terms of Section 26(2) of the NNR Act; Eskom, as the nuclear licence holder, implements an inspection programme to ensure compliance with the conditions of the Nuclear Installation Licence, NIL-01. The NNR implements an independent system of compliance inspections to provide assurance of compliance with the conditions of the nuclear licence in terms of section 5(d) of the NNR Act.

### 9.2 OCCUPATIONAL EXPOSURE TO RADIATION

In achieving the objectives for the control of occupational exposure, the NNR requires that no individual shall receive an annual dose in excess of the prescribed dose limits and that all exposures are as low as is reasonably achievable (ALARA). The regulatory criteria prescribed by the Regulator for the occupationally exposed workforce are referenced in the nuclear licence and are given in [Table 4](#) below.

In achieving these objectives, it is necessary to evaluate the facets of radiation protection design against the dose limits, and then establish sufficient complementary operational programmes to ensure compliance with those limits. Operational verification programmes relating to radiation protection in design ensure that

**TABLE 4: REGULATORY CRITERIA PRESCRIBED BY THE REGULATOR**

Workforce	Regulatory Criteria
Maximum individual worker dose	Maximum effective dose of 50 mSv in any year and an average effective dose of 20 mSv per annum averaged over five consecutive years
Average individual worker dose	Controlled by application of the ALARA principle. The ALARA target for the annual average individual dose is 4 mSv per annum



the parameters of safety remain current and that operational programmes are not compromised. The nuclear licence makes reference to the principles for establishing verification programmes. All these principles are embodied in both the nuclear licence and the licence holder Corporate Standards on Radiological Protection, which cover the following areas:

- Establishment of the radiation protection organisation;
- Qualification of radiation protection personnel;
- The system of operational radiological protection;
- The radiological surveillance programme;
- The optimisation of radiation protection (ALARA programme);
- The control of portable radiation monitoring instrumentation;
- The appointment of medical practitioners;
- Qualification of radiation workers;
- The establishment and maintenance of a Health Register for radiation workers;
- The establishment and maintenance of a Dose Register for radiation workers;
- The external and internal dosimetry programme;
- The respiratory protection programme;
- The control of fabricated radio-isotopes;
- The radiation shielding verification programme;
- The radiological effluent management programme;
- The radwaste management programme;
- The environmental surveillance programme; and
- The technical audit programme.

**Dr Tim Hill**  
**Manager:**  
**Koeberg**  
**Programme**

Manages the Koeberg programme, conduct regulatory oversight, authorisation and compliance assurance functions on Koeberg Power Station, Licensing of Koeberg reactor operators, monitoring and enforcement of requirements on local authorities.

**Philosophy:** To serve the country and society with particular focus on building South Africa's capabilities in the nuclear safety arena.



As shown in Figure 4, the highest annual individual dose accrued was during 2009 was 13.337 mSv (2008:12.6 mSv). The total annual collective dose to the workforce for the year was 1.48 person Sv (2008: 1.5person Sv). The average annual individual dose of approximately 0.0303 mSv (2008:0.59 mSv), was well within the ALARA target of 4 mSv.

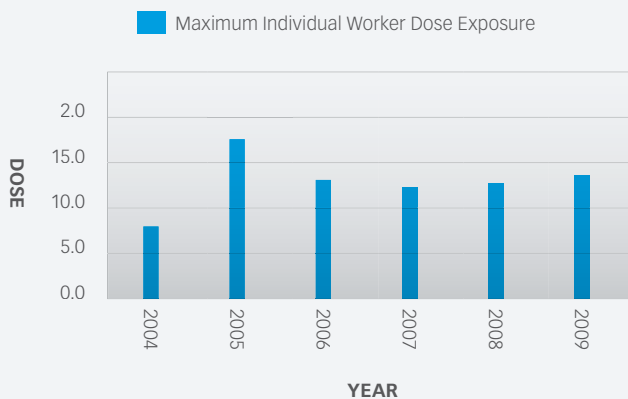
The occupational exposure at KNPS was within regulatory limits.

### 9.3 PUBLIC EXPOSURE TO RADIATION

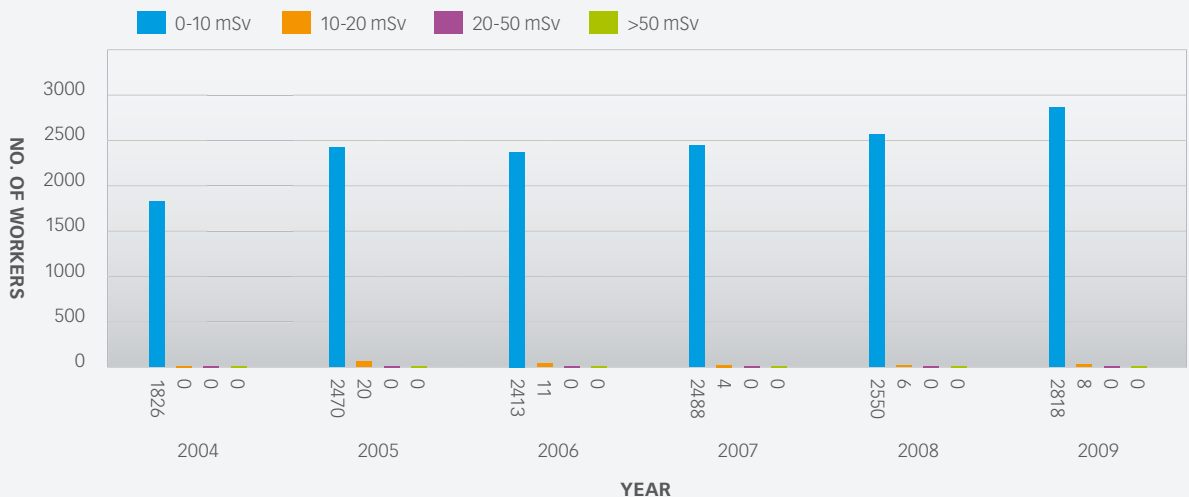
Various gaseous and liquid radioactive effluents are produced during the process of nuclear power generation. These effluents are treated using dedicated clean-up systems, which remove most of the radioactivity prior to discharge to the environment. However, during the operation of any nuclear power station it is inevitable that small amounts of radioactivity will be released into the environment.

Public exposure is controlled within strictly defined limits through the implementation of a radiological effluent management programme, which ensures that the discharges of radioactivity from Koeberg result in no significant risk to the public. A key feature of this programme is the control of radioactivity in effluent discharges to fall within the Annual Authorised Discharge Quantities (AADQ). In addition to continuous monitoring of radioactivity in effluent, radiological surveillance of the environment is also carried out. In this way an independent and strict control on public exposure to radioactive releases is maintained.

**FIGURE 4: Maximum, dose arising from individual exposures accrued from 2004 to 2009**



**FIGURE 5: Dose distribution arising from individual exposures accrued from 2004 to 2009**

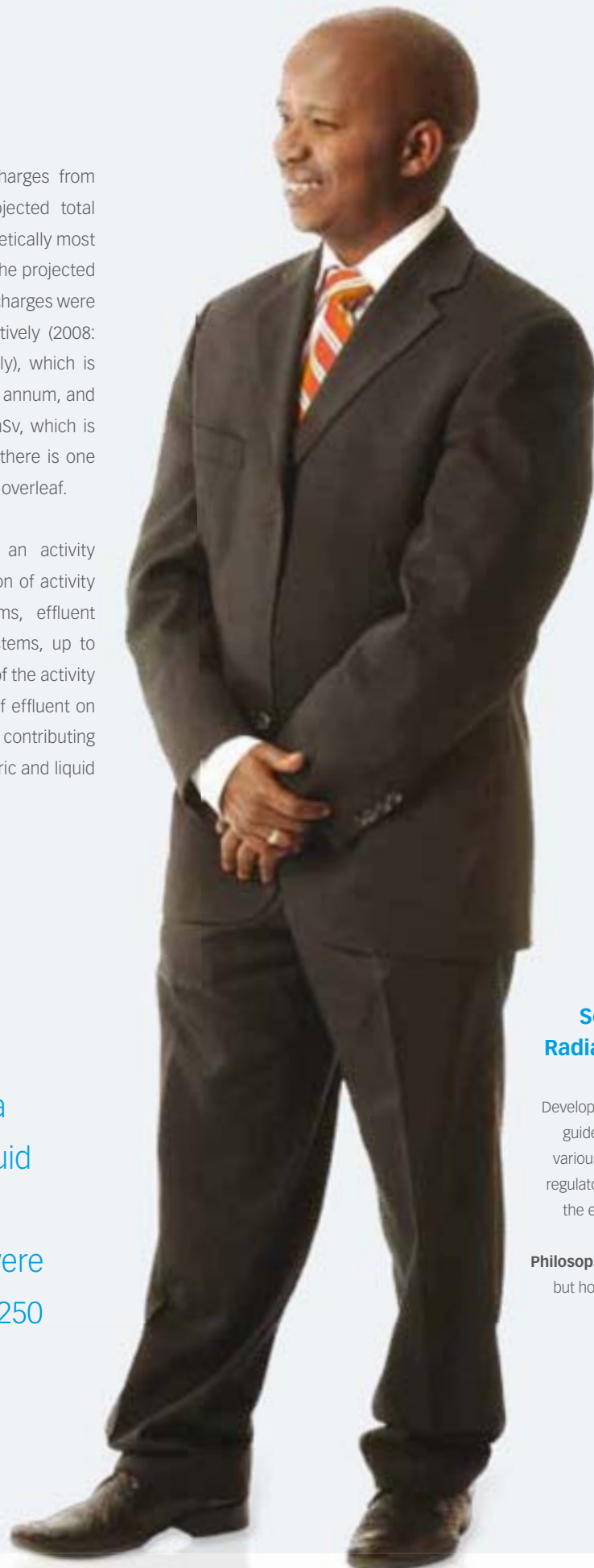




Radioactivity in liquid and gaseous discharges from Koeberg during 2009 contributed a projected total individual dose of 0.005 mSv to the hypothetically most exposed public group (2008: 0.004 mSv). The projected doses as a result of gaseous and liquid discharges were 0.000261 mSv and 0.004737 mSv respectively (2008: 0.00047 mSv and 0.0038 mSv respectively), which is well within the NNR limit of 0.250 mSv per annum, and meets the ALARA dose target of 0.010 mSv, which is applicable for an annual period in which there is one refuelling outage. This is shown in [Figure 6](#) overleaf.

Koeberg's AADQ system is based on an activity migration model that features the migration of activity from the fuel via the clean-up systems, effluent treatment systems and various drain systems, up to the point of discharge. The ultimate result of the activity migration exercise is the annual amount of effluent on a nuclide-specific basis. The radio nuclides contributing the highest doses, as a result of atmospheric and liquid discharges, are shown in [Table 5](#) overleaf:

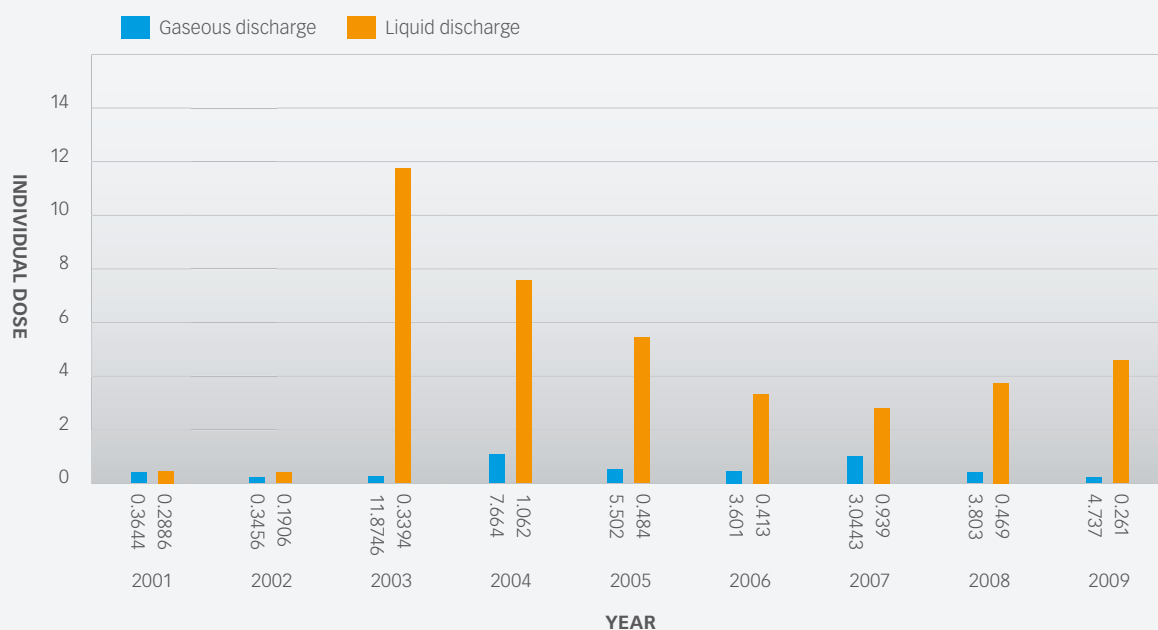
The projected doses, as a result of gaseous and liquid discharges from Koeberg Nuclear Power Station, were within the NNR limit of 0.250 mSv per annum.



**John Pule**  
**Senior Specialist:**  
**Radiation Protection**

Develop regulatory requirements, guides and position papers on various topics and also conduct regulatory research in support of the entire regulatory business.

**Philosophy:** It is not how you start but how you finish that matters.

**FIGURE 6: PROJECTED PUBLIC DOSE FOR KOEBERG FROM 2001 TO 2009****TABLE 5: PERCENTAGE OF AADQ IN EFFLUENT DISCHARGED DURING 2010**

Liquid Transport Pathway		Atmospheric Transport Pathway	
Radionuclide	% of AADQ	Radionuclide	% of AADQ
Ag-110m	23.83	Co-58	34.37
Co-57	33.98	Cr-51	47.41
Co-58	20.17	I-132t	23.63
Co-60	10.30	I-134	36.75
Na-24	12.99	I-135	10.01
Sb-122	10.71	Nb-95	162.58
		Zr-95	93.36
		Fe-59	361.74

The AADQ's for Fe-59 and Nb-95 were exceeded by 262% and 63% respectively. This was reported to the NNR as an occurrence. The NNR is satisfied with the corrective action process implemented by Eskom. The impact on the projected public dose is estimated to be approximately  $1.2 \times 10^{-8}$  mSv, which is insignificant compared to the NNR limit of 0.25 mSv per annum.

#### 9.4 Nuclear Safety

A major part of the NNR work is in the area of nuclear safety related to in-depth safety assessments associated with KNPS. During this period the NNR focused its safety assessment activities primarily on the areas summarised below:

#### Koeberg Modifications

The detailed designs and the safety cases for modifications, (including eight new modifications), aimed at bringing Koeberg into closer alignment with the CP-1 series of plants in France, were reviewed, approved and subsequently implemented during outage 117. However, due to shortcomings in the designs and safety justifications, the modifications relating to "Station Blackout" were approved only for partial implementation. Further submissions were requested from Eskom and the NNR received a formal submission with a revised proposal. The main outstanding issues relate to rules of usage and design principles of unit interconnection.





Implementation of this part of the project was put on hold until these issues were addressed.

Eskom is planning 28 major modifications for implementation on Unit 1 during plant refuelling outage 118 that is, scheduled for August 2010. These include thirteen modifications intended to bring Koeberg in closer alignment with the CP-1 series of plants in France. The documentation for the eight modifications has been submitted and the assessment work on these projects is ongoing. Further submissions are expected from Eskom before the end of this year, in order to meet the deadline for submission. The NNR requires that design packages be submitted nine months prior to implementation.

#### **Second Safety Reassessment Project (SRA-2) of Koeberg**

The SRA-2 project commenced in April 2009, following an agreement between the NNR and Eskom. The outcome of the project will be in the form of a report containing 14 separate chapters; each concluding on its own as to whether safe plant operation would be justified. Eskom has submitted the first five reports on the emergency plan, procedures, human factors, radiological impact, and operational experience.

#### **Upgraded Technical Specification and Safety Related Surveillance Manual (UTS/ SRSM) Project**

Eskom has submitted a request for approval of the revised version of Chapter 1 of the Koeberg Operating Technical Specifications (OTS). The balance of the projects documentation will be submitted in the next financial year.

As there is a shortage of in-house expertise within the NNR to perform the review, discussions were held with the French Regulatory Authority (ASN) during the bilateral meeting in October 2009 on the possibility of the ASN assisting the NNR in this matter. The NNR will follow up on these discussions early in the next financial year.



**Henry Gerber**  
**Coordinator:**  
**Facility Condition**  
**Management**

### Assessment of the Koeberg In-service Inspection (ISI) Programme

Koeberg has recently entered its third "ten yearly" interval in its ISI programme, which was initiated in 2007. This is also the first period in which Eskom is implementing the ASME XI code in conjunction with a risk informed approach to the selection of inspections.

The NNR has requested an IAEA - Safety Assessment Long Term Operation (SALTO) mission to take place in the next financial year to assist the NNR in reviewing the Eskom submission.

### Licensing Reactor Operators

The NNR licenses the nuclear reactor operators of the Koeberg Nuclear Power Station. The NNR aligns its strategy for licensing of reactor operator with that of the United States Nuclear Regulatory Commission (USNRC)

to ensure the integrity of the applied licensing processes and standards. In total 11 new reactor operator licenses were issued by the NNR.

### 9.5 TRANSPORT SAFETY

#### New Fuel Transport Container FCC3

The NNR review of documentation submitted to validate a new certificate for the FCC3 container for the transport of 17x17 fresh fuel assemblies and fresh fuel rods was completed. The new validation certificate has been issued and is valid until the end of 2010.

### 9.6 RADIOACTIVE WASTE SAFETY

Liquid radioactive waste released to the sea during 2009 totalled a volume of 9 099 m<sup>3</sup> (2008: 9 822 m<sup>3</sup>). The quantity of solid radioactive waste produced and drummed is indicated in [Table 6](#). No safety concerns arose due to radioactive waste during the review period.

**TABLE 6: INVENTORY OF SOLID RADIOACTIVE WASTE PRODUCED AND DRUMMED**

Type of solid radioactive waste	Number of drums 2009	Number of drums 2008
Type of solid radioactive waste	Number of drums 2009	Number of drums 2008
C1 drums containing non-compressible waste	30	17
C1 drums containing concentrates	34	40
C1 drums containing resin	45	23
C2 drums containing resin	19	0
C4 drums containing filters	0	5
C2F drums containing filters	0	5
210 litre metal drums containing general trash	749	592
210 litre metal drums containing resin	164	189

No safety concerns arose due to radioactive waste management and transportation during the review period.

### 9.7 EMERGENCY PREPAREDNESS AND RESPONSE

The City of Cape Town indicated that the revision to the draft development framework, due in November 2010, will explicitly include restrictions on developments around the emergency planning zone in accordance with the NNR requirements. The regulatory framework is being reviewed to ensure proper control and regulation of developments around the emergency planning zone.

### 9.8 ENVIRONMENTAL PROTECTION

The Koeberg Environmental Surveillance Programme, involving sampling and analysis of representative environmental media, is performed to verify that effective control has been maintained over effluent discharges. In addition a widespread network of Environmental Thermo-Luminescent Dosimeters (TLD's) around Koeberg, monitors external exposure to active gaseous effluents from Koeberg.

The results of the 2009 environmental surveillance programme do not indicate any significant increase in the levels of radioactivity in environmental samples over pre-operational levels.

There were no safety concerns regarding the public living around KNPS during the reporting period.

### 9.9 PHYSICAL SECURITY

The licensing requirements pertaining to physical security are contained in Condition 12 of the Koeberg Nuclear Licence NIL-01 variation 17. This condition specifically refers to a security standard which was developed by Eskom in consultation with the security establishment in South Africa. The NNR compliance assurance programme includes regular inspections against these requirements.

No concerns were raised regarding physical security at KNPS during the reporting period.



**Maduba Skosana**  
Regulatory Officer

**Dr Andy Graham**  
Principal Specialist  
Nuclear Fuels



#### **9.10 SAFETY OF SEALED RADIOACTIVE SOURCES**

The safety of sealed radioactive sources on the Koeberg Nuclear Power Station Site, which falls under the jurisdiction of the NNR, is included in the compliance assurance programme.

No concerns were raised with regard to the safety of these sources.

#### **9.11 NUCLEAR INCIDENTS/ACCIDENTS REPORTED**

The NNR monitors incidents/occurrences at Koeberg through:

- 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 operating experience feedback is discussed;
- Review of Eskom reports on operating experience feedback and safety indicators, which reflect occurrences and trends thereof; and
- Direct assessment of selected significant occurrences.

A total of 638 occurrences were reported to the NNR during the reporting period. None of these were classified as nuclear incidents or nuclear accidents as defined in the Regulation on Safety Standards and



regulatory practises (Regulation R.388 of 2006).

The NNR was satisfied that the processes implemented at Koeberg relating to incidents/occurrences are acceptable and that plant safety performance was acceptable.

## 9.12 REGULATORY COMPLIANCE

### Compliance Assurance Programme

The NNR compliance assurance programme for Koeberg is designed to ensure that the licensee complies with licence conditions. For this financial year 95% (57/60) of the planned inspections were completed.

The inspections did not reveal any non-compliance to conditions of the licence.

### Safety Indicators

A safety indicator system is used by the NNR to record and grade findings arising from the compliance assurance programme, inspections and assessment activities. The regulatory concerns are ranked according to a colour-coded system in terms of their severity, with:

- red being unacceptable;
- orange being tolerably high; and
- yellow being tolerably medium.

The main findings of the compliance assurance programme were recorded as per the NNR safety indicators classification and are summarised in [Table 7](#).

### 9.13 REGULATORY WARNINGS OR DIRECTIVES TO STOP WORK

There were no regulatory directives issued to KNPS in the year 2009.

**TABLE 7: Compliance Assurance Programme Findings**

Safety indicator classification and number	Finding
Red (Unacceptable) – None	n/a
Orange (Tolerably high) – None	n/a
Yellow (Tolerable medium) - 3	<b>Configuration control</b> Eskom has put considerable effort into a project to improve and correct configuration control issues on the plant as a result of which there has been a significant improvement. The indicator has been reduced from high to medium.
	<b>Record keeping</b> This finding relates to inconsistencies and non-conformances within the different record keeping processes applied on plant. Eskom was requested to strengthen and update the individual processes to comply with governing standards. The implementations of these measures are being monitored through the NNR compliance assurance activities.
	<b>Procedure compliance</b> This finding relates to minor procedure non-compliances, mostly related to procedures of low safety significance. Eskom has taken measures to rectify this situation and the NNR will monitor the effectiveness of the actions taken.

# 10. NUCLEAR TECHNOLOGY AND WASTE PROJECTS (NTWP)



## 10.1 SOUTH AFRICAN NUCLEAR ENERGY CORPORATION (NECSA) – PELINDABA SITE

### 10.1.1 Background

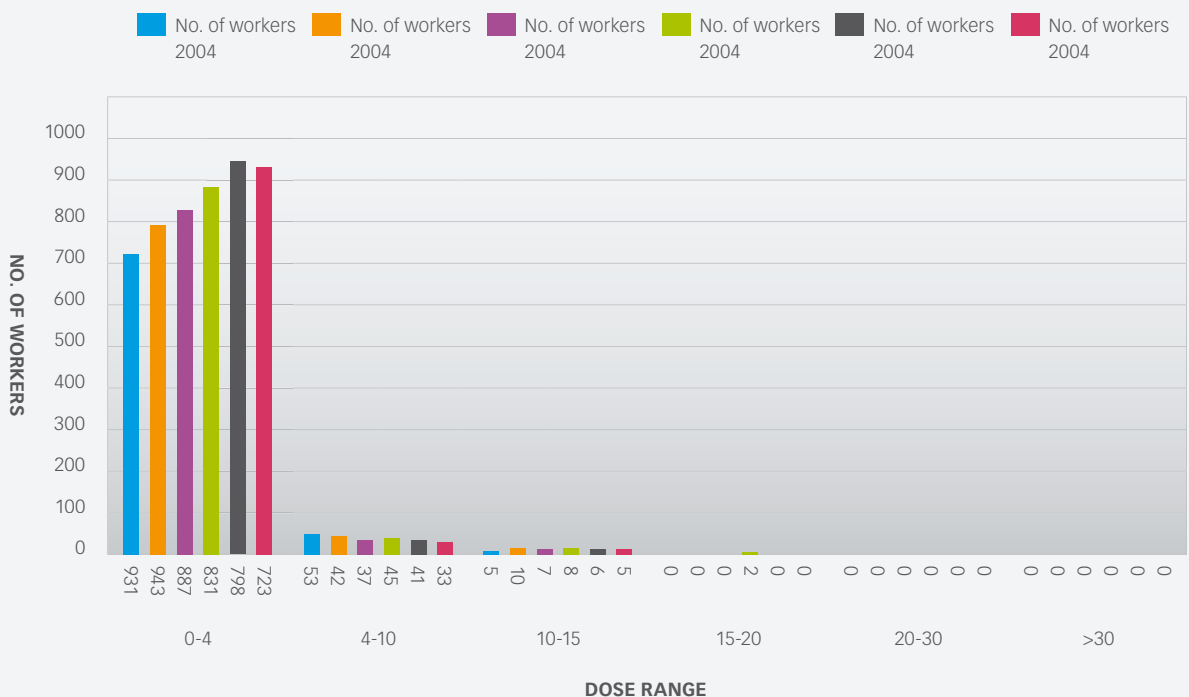
Situated in the magisterial district of Madibeng in the North-West Province, approximately 25 kilometres west of Pretoria and 55 kilometres north-west of Johannesburg, the South African Nuclear Energy Corporation (Necsa) was established as a public company in terms of the Nuclear Energy Act, (Act No. 46 of 1999). This wholly state-owned organisation has its headquarters on the Pelindaba site, comprising 658 hectares of land and 54

hectares of buildings and other facilities.

Necsa undertakes and promotes research and development in the field of nuclear energy and related technologies; processes and stores nuclear material and other restricted material as well as co-operates with other organisations in matters falling within these areas.

Necsa supplies a wide range of high-technology nuclear products and services to South African and foreign market sectors, with the SAFARI-1 research reactor as the cornerstone of the commercial isotope production programme.

FIGURE 7: OCCUPATIONAL EXPOSURE AT NECSA – PELINDABA





**Thiagan Pather**  
**Manager Nuclear**  
**Technology and Waste**  
**Projects**

The conditions of the licence, issued by the NNR, require Necca to ensure that:

- Arrangements acceptable to the NNR are established and implemented for the purposes of ensuring radiological protection of employees, members of the public and the environment, both on the site and off the site, as a consequence of authorised actions;
- Normal operational exposure of individuals is restricted to ensure that neither the effective dose nor the equivalent dose to relevant organs or tissues exceeds any relevant dose limit specified by the NNR; and
- The radiological protection must, under all operating states of the authorised actions or facilities ensure that:
  - Effective radiation doses, including committed effective doses to persons; are kept as low as reasonably achievable.
  - The number of people who are exposed is kept minimised; and
  - The likelihood of incurring exposures to radiation is kept as low as reasonably achievable.

### **10.1.2 Occupational Exposure to Radiation**

For the calendar year (January – December 2009), the maximum cumulative dose accrued for an individual was 11.1 mSv (11.8 mSv in 2008), demonstrating good compliance with the regulatory limits of an average of 20 mSv per year, averaged over five consecutive years, and a maximum of 50 mSv in any single year. The average effective radiation dose was 0.6 mSv per occupationally exposed person and the total collective dose for the 989 radiation workers was 0.628 person-sievert over the calendar year.

Figure 7 details the occupational exposure trends for the past six years.



**10.1.3 Public Exposure to Radiation**

In accordance with the conditions of licence and the Regulations on Safety Standards and Regulatory Practices published as Regulation No. R388 dated 28 April 2006, the public doses resulting from effluent discharges from the Necsca Pelindaba site must comply with the dose constraint of 0.25 mSv per annum and the system of AADQs applicable to the site.

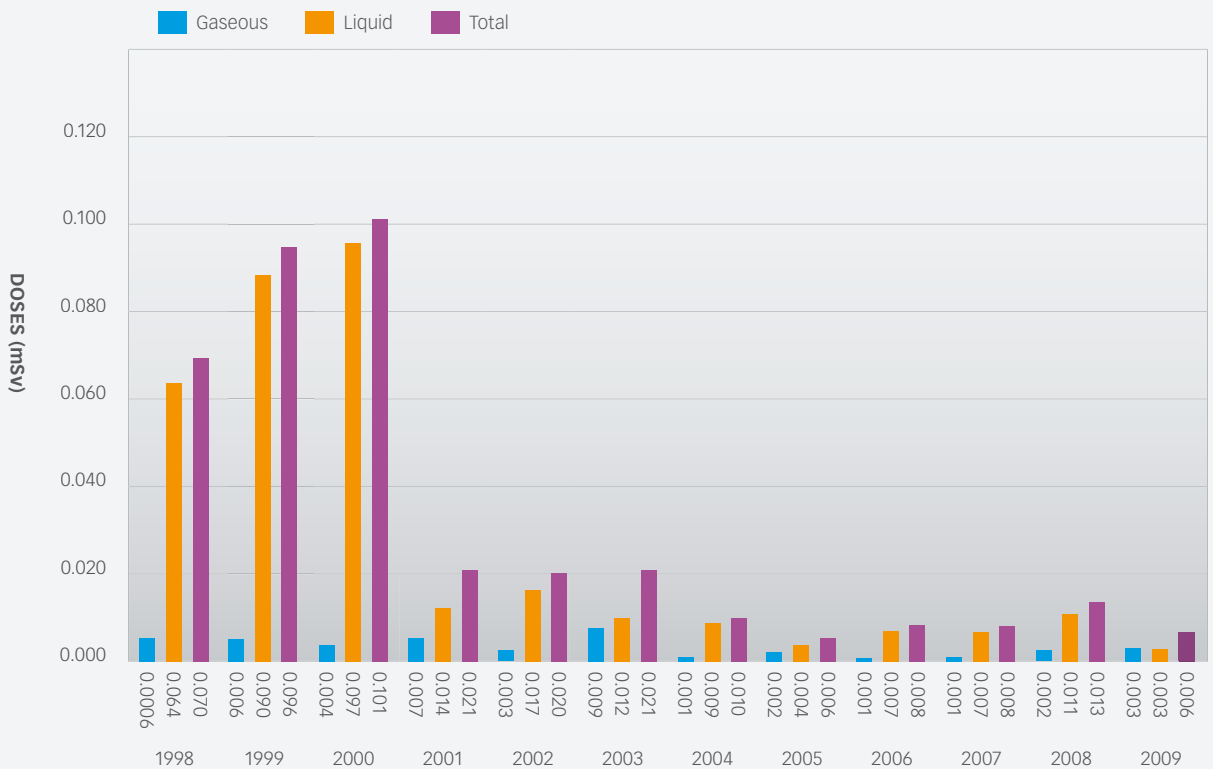
The projected annual dose to members of the public was calculated to be 0.006 mSv, with the liquid effluent

contributing 0.00296 mSv and the gaseous effluent contributing 0.00342 mSv.

Necsca demonstrated good compliance with the AADQs and the projected public doses resulting from the effluent releases (both liquid and gaseous) were well within the dose constraint for the 2009 calendar year.

Figure 8 shows the trend of estimated public doses for the period 1998 to 2009.

**FIGURE 8: PROJECTED PUBLIC DOSE DUE TO LIQUID EFFLUENT FROM NECSA FROM 1998 – 2009**



**10.1.4 NUCLEAR SAFETY**

**(i) Issuing of Separate Nuclear Authorisation for Facilities on the Pelindaba Site**

During the reporting period the NNR progressed the

issuing of separate authorisations for Necsca, which are currently authorised under a single nuclear licence NL-27. The following new licences were issued to Necsca in the reporting period:



**Bertus Pretorius**  
**Process Coordinator**

- NIL-02 variation 1 SAFARI-1 Research Reactor (superseded variation 0 issued in 2008)
- NIL-03 variation 0 P-2700 Complex
- NIL-04 variation 0 Thabana Complex
- NIL-08 variation 0 ELPROD in Building P-2500
- NIL-09 variation 0 UMET Facility in Building P-2600
- NIL-12 variation 0 Quarantine Storage Facility
- NIL-13 variation 0 V-YB Pelindaba East Bus Shed Complex
- NIL-14 variation 0 Pelindaba East Evaporation Ponds Complex
- NIL-15 variation 0 Oil Purification Facility
- NIL-17 variation 0 BEVA K3 Storage Complex
- NIL-21 variation 0 J-Building
- NIL-24 variation 0 Building P-2900
- NIL-26 variation 0 BEVA Evaporation Ponds

The following NILs are currently with NNR management for approval:

- NIL-06 A-8 Decontamination Facility
- NIL-10 Conversion Plant Complex
- NIL-16 Area 21 Storage Facility
- NIL-18 Area 16 Complex
- NIL-19 Area 40 Complex
- NIL-20 Area 27 De-Heeling Facility
- NIL-22 D-Building
- NIL-23 C-Building
- NIL-25 XB-Building
- NIL-27 Building P-2800
- NIL-31 Dorbyl Camp

As at 31 March 2010, 15 (fifteen) separate authorisations had been issued to Necsa. On completion of the process a total of 42 separate authorisations will be issued to Necsa for the nuclear facilities on the Pelindaba site.





**Louisa Mpete**  
**Senior Specialist:**  
**Radiation Protection**

### **(ii) Process Based Licensing**

The application of Process Based Licensing (PBL) at Necsa commenced in the 2002/03 financial year. In terms of PBL the authorisation holder has the responsibility for technical details relating to nuclear safety and more emphasis is placed on the licence holder to ensure that appropriate processes are in place to comply with the regulatory requirements.

#### **These processes include:**

1. Identification of applicable fundamental nuclear and radiological safety standards.
2. Identification of the basis for authorisation, change control in respect of modification, processes to update and maintain the safety case and relevant operational programs.
3. Identification of nuclear and radiological safety requirements necessary to underpin the safety case and processes needed to maintain these in line with the safety case.
4. Monitoring and enforcement of compliance with the requirements identified in 3 above.

Once completed, the Necsa PBL system will consist of 224 Necsa developed documents, dealing with the full spectrum of process areas, including policy, quality management, safety assessment and other regulatory processes.

At the end of the reporting period 222 of these documents had been submitted to the NNR and 53 had been approved.

### **(iii) LEU Conversion for SAFARI-1 Fuel**

SAFARI-1 is a 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 phased conversion of the SAFARI-1 Research Reactor from using fuel elements with Highly Enriched Uranium (HEU) to Low Enriched Uranium (LEU) was completed in June 2009. During the remainder of the review period SAFARI-1 continued operations using only low enriched uranium (LEU) fuel elements as well as continuing with the establishment of a reserve core consisting solely of LEU fuel assemblies. It is expected that a full LEU reserve core will be available by May 2010. Thereafter HEU fuel elements will no longer be allowed in SAFARI-1.

#### **(iv) Temporary Storage of NTP Concrete Drums**

The NNR granted approval for the proposed upgrading of the Area 21 Radioactive Waste Storage Facility. The upgrades included replacement of the gravel floor with a concrete floor and the improvement of security arrangements for the facility. As a consequence of these upgrades all waste in the facility had to be removed from the facility to other authorised stores on the Pelindaba site. Due to space constraints at the PELSTORE the NNR granted conditional approval for the storage of 171 four-ton concrete containers in Area 21, during the upgrade activities. The upgrade activities are expected to be completed in the first quarter of the next financial year.

#### **(v) Phase 2 Decommissioning of Building P-2700A**

Necsa submitted a request for the phase 2 decommissioning of Building P-2700A. Following review of the submitted licensing strategy and prospective hazard assessment for the phase 2 decommissioning of the facility, the NNR granted approval for the phase 2 decommissioning of Building P-2700A in February 2010. The phase 2 decommissioning is scheduled to be completed at the end of 2011.

#### **(vi) Withdrawal of Licence Application for Proposed PBMR Fuel Manufacturing Plant**

On the 28th October 2009, Necsa wrote to the NNR requesting a withdrawal of their application for a Nuclear Installation Licence for the Proposed PBMR Fuel

Manufacturing Plant. The main reason for the withdrawal was a re-alignment of the PBMR programme with the financial resources available for the programme.

The NNR accepted the withdrawal of the licence application and requested Necsa to provide a proposal on its future intentions.

#### **(vii) Research and Development on Radioactive Material**

Necsa submitted an Authorisation Change Request (ACR) to establish a uranium enrichment development laboratory on the Necsa site. The purpose of the development laboratory is to develop and demonstrate the aerodynamic separation process (ASP) for the purpose of uranium enrichment.

The NNR is currently reviewing the basis of design for the proposed facility.

Necsa submitted a request for approval to perform research and development focused on the front end of the nuclear cycle. The proposed laboratories will be operated as Type 1 or Type 2 Laboratories.

The NNR concluded its review on the submitted safety documentation and provided comments to Necsa in January 2010.

Necsa submitted a licensing strategy for the re-use of a section of Building P-1900 to expand some of the Research and Development work presently being performed in building P-1600.

The NNR has reviewed this strategy and provided comments to Necsa which must be addressed before approval of this strategy can be considered for implementation.



### 10.1.5 TRANSPORT SAFETY

#### (i) Approval and Validation of Transport

##### PACKAGE DESIGN

The NNR acts as the competent authority with respect to the International Atomic Energy Agency's Regulations for the Safe Transport of Radioactive Material. In line with this mandate the NNR has reviewed and re-certified eight package design approval certificates during the financial year.

There were no safety concerns relating to the transport of radioactive material during the reporting period.

- Ensure the identification, quantification, characterisation and classification of any radioactive waste generated;
- Provide for the necessary steps leading to safe clearance, authorised discharge, disposal, re-use or recycling; and
- Provide for the safe storage of radioactive waste between any waste management processes.

There were no safety concerns relating to radioactive waste management during the reporting period.

### 10.1.6 Radioactive Waste Safety

The conditions of licence require Necsca to:

- Establish and implement arrangements for the minimisation and safe management of radioactive waste on the site; and
- Establish, implement and maintain a radioactive waste management programme for each facility on the site, in order to:

#### (i) Waste Received and Stored at the PELSTORE

The PELSTORE is the centralised storage facility for radioactive waste on the Pelindaba site and is housed in a decommissioned building that is re-used for this purpose. During the calendar year, PELSTORE received a total of 1449 radioactive waste containers as detailed in [Table 8](#) below:

**TABLE 8: WASTE RECEIVED AND STORED AT PELSTORE**

Waste Type	Waste Container	Number of Containers
Medical Waste	100ℓ	0
Medical Waste	160ℓ	116
Solidified Waste	100ℓ	359
Safeguards Enriched	200ℓ	0
Compressible Waste	160ℓ	856
Non-Compressible Waste	160ℓ	3
Non-Compressible Waste	100ℓ	0
Non-Compressible Waste	210ℓ	25
Concrete Drums	4ton	90
<b>Total</b>		<b>1449</b>

The NNR verified the waste inventory and found it to be in compliance with the safety standards.

### 10.1.7 Environmental Protection

Necsa is required to institute an environmental monitoring programme to ensure that discharges do not result in environmental build-up of radioactivity.

Samples are collected from various media in the environment around the Pelindaba site. These are analysed and results are submitted to the NNR on a quarterly and annual basis. The sample media include:

- Air filter monitoring on the Pelindaba site;
- Milk from cows in surrounding farms;
- Plant material in the surrounding area; as well as
- Water and fish samples from the Crocodile River and Hartebeespoort Dam.

The NNR employs a system of reporting levels, investigation levels and intervention levels to ensure an appropriate level of control and detection of radioactivity in the environment. The system is designed to rapidly detect any increases in environmental radioactivity and to ensure that appropriate action is taken to correct the situation.

There were no concerns regarding safety of the environment around Necsa in the 2009 reporting period.

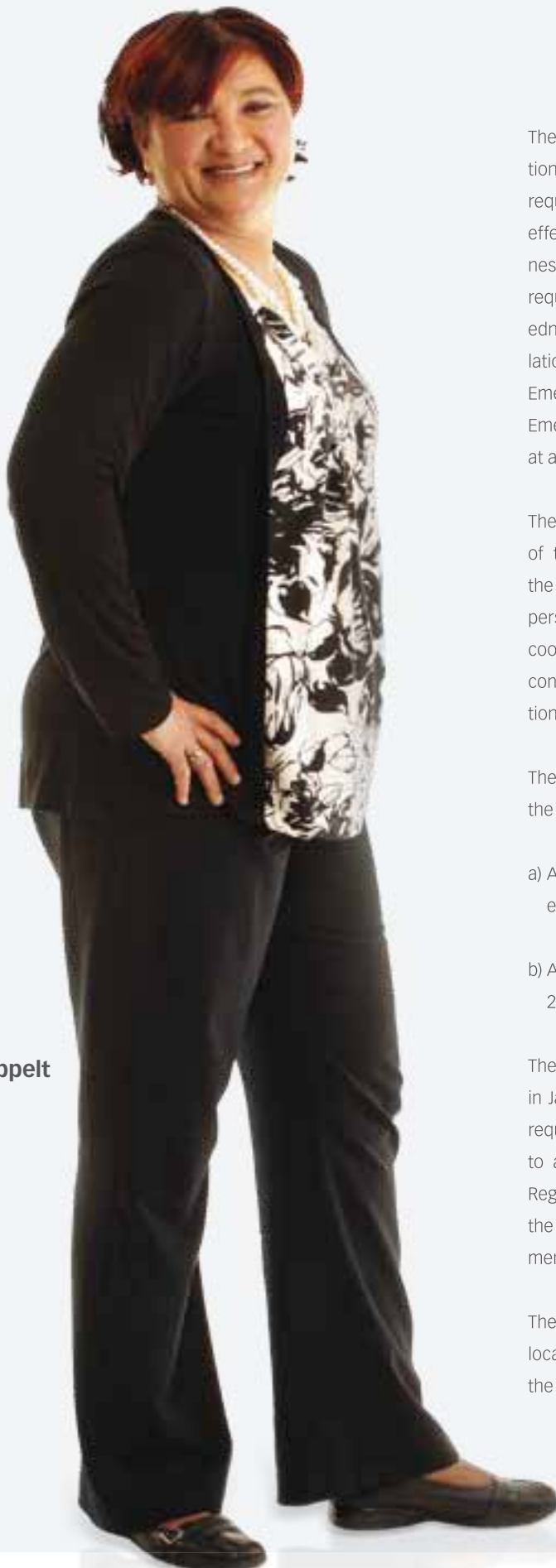
### 10.1.8 Nuclear Emergency Preparedness and Response

#### (i) Regulatory Emergency Exercise

In accordance with the provisions of section 5(f) and section 38(2) of the NNR Act, the NNR must ensure that, where the possibility of a nuclear accident affecting the public may occur, the holder of a nuclear authorisation has established an effective nuclear emergency plan for the protection of persons.



**Andre Botha**  
**Senior Regulatory Officer**



**Rozanne Oppelt**  
Secretary

The conditions of authorisation for nuclear installations on the Necsca Pelindaba site prescribe conditions requiring the holder to establish and maintain an effective nuclear emergency planning and preparedness arrangements. Furthermore the NNR has issued a requirements document, RD-0014, Emergency Preparedness and Response Requirements for Nuclear Installations. The NNR periodically conducts Regulatory Emergency Exercises to test the effectiveness Emergency planning and preparedness arrangements at authorised installations.

The Regulatory Emergency Exercises test the adequacy of targeted facets of the emergency plan, including the facilities equipment, and knowledge of response personnel. Responses to the simulated accident include coordination of actions such as identification of accident conditions, notification, activation of response organisations, and implementation of protective actions.

The 2009 Regulatory Emergency Exercise conducted at the Necsca Pelindaba site was undertaken in two phases;

- a) An unannounced exercise that was conducted on the evening of 19 October 2009 and
- b) An announced exercise conducted on 22 October 2009.

The NNR presented its findings to Necsca management in January 2010. Necsca and the Local Authorities were required to jointly establish a corrective action plan to address the NNR findings and conclusions of the Regulatory Exercise. Overall the NNR was satisfied with the emergency planning and preparedness arrangements at Necsca.

The NNR will hold regular meetings with Necsca and the local authorities to follow-up on the implementation of the corrective actions proposed.

### 10.1.9 Physical Security

The NNR continues to monitor the physical security of all facilities of Necsa.

During the review period the results of the NNR physical security inspections conducted at Necsa were found to be acceptable.

### 10.1.10 Safety of Sealed Radioactive Sources

The control of radioactive sources is managed in accordance with the stipulations of the Necsa PBL document HSE-INS-8100, being "Control of Radioactive Sources". In terms of the stipulation in document HSE-INS-8100, Necsa is required to maintain a source register of all sources on the site.

The source register is submitted to the NNR annually at the end of the calendar year and Necsa provides a status report twice a year (March and September). No irregularities were detected with regard to radioactive sources at Necsa.

### 10.1.11 Nuclear Events, Incidents and Accidents Reported

The Regulations on Safety Standards and Regulatory Practices (SSRP) define a nuclear accident as any occurrence or succession of occurrences having the same origin and resulting in an unintended/unauthorised exposure to radiation or release of radioactive material, which is capable of giving rise to an effective dose in excess of 1 mSv to the public off-site in a year, or in excess of 50 mSv to a worker on site received essentially at the same time of the event.

The SSRP further defines a nuclear incident as any unintended event which is capable of giving rise to an effective dose equal to or in excess of 0.1 mSv to the public off site, received essentially at the same time of the event, or the unintended spread of radioactive contamination or exposure to radiation, which could reasonably give rise to an effective dose in excess of 20 mSv to a

worker on site, received essentially at the same time of the event, or significant failure of safety provisions.

Although several minor events/occurrences were reported by Necsa there was no event representing a nuclear accident or nuclear incident as defined in the SSRP.

### 10.1.12 Regulatory Compliance

#### (i) Inspections

A total of 191 inspections, comprising 184 planned and seven unplanned inspections were undertaken at the Necsa Pelindaba site in the reporting period. The inspection areas are aligned with the conditions of authorisation. From the inspection reports, it can be concluded that Necsa has complied satisfactorily with the conditions of authorisation and regulatory requirements.

#### (ii) Audits

Two audits were undertaken during the year. Necsa was directed to submit plans for corrective actions related to the audit findings. NNR will monitor the implementation of corrective action plans during the next review period.

### 10.1.13 REGULATORY WARNINGS OR DIRECTIVES TO STOP WORK

There were no regulatory directives issued to Necsa in the year 2009.



**10.2 VAALPUTS NATIONAL RADIOACTIVE WASTE DISPOSAL FACILITY**

**10.2.1 Background**

Vaalputs is the National Radioactive Waste Disposal Facility and is situated in the Northern Cape Province. Vaalputs is approximately 90 km southeast of Springbok, which is the closest town to the repository and approximately 200 km from the Namibian border. Vaalputs falls within the borders of the Kamiesberg Municipality. The greater Vaalputs site extends from the Bushmanland Plateau into the rocky hills of Namaqualand.

The Vaalputs site covers an area of approximately 10 000 ha. The disposal site itself is 99.54 ha (900 m x 1 106 m) including a 200 m exclusion zone along the perimeter.

Vaalputs came into operation in 1986 and is used mainly for the disposal of low and intermediate level waste from Koeberg in near surface trenches.

**10.2.2 Occupational Exposure to Radiation**

For the calendar year (January – December 2009), the maximum cumulative dose accrued for an individual was 1.7 mSv (also 1.7mSv in 2008).

The average effective radiation dose per occupationally exposed worker for the calendar year 2009 was 0.8 mSv (0.5 mSv in 2008) and the total collective dose for the 17 radiation workers was 0.0139 person-sievert over the calendar year. This is shown in Figure 9 below.

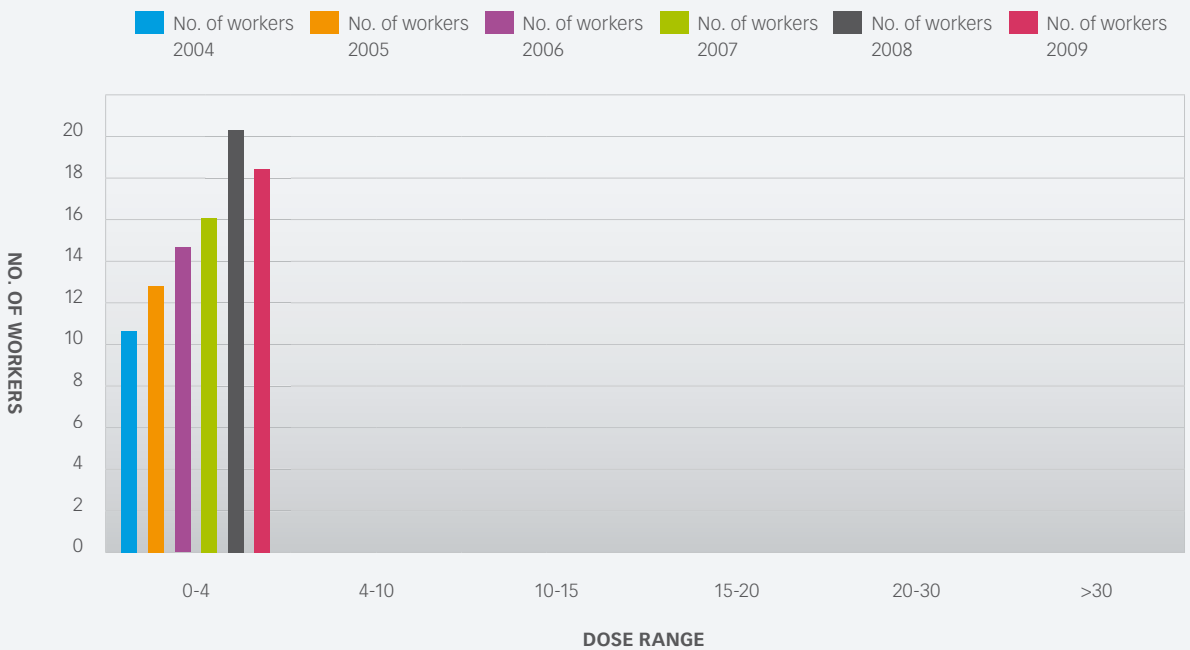
**10.2.3 Public Exposure to Radiation**

The environmental surveillance programme for Vaalputs has shown no measurable radiological impact on the public living in the vicinity of Vaalputs.

**10.2.4 Nuclear Safety**

The environmental surveillance programme for Vaalputs has shown no measurable radiological impact on the public living in the vicinity of Vaalputs.

**FIGURE 9: OCCUPATIONAL EXPOSURE AT VAALPUTS**





### (i) Vaalputs Post Closure Radiological Safety Assessment

During the reporting period the NNR provided comments on the Vaalputs Post Closure Radiological Safety Assessment. Necsa revised their submission addressing the NNR comments. This re-submission is currently under review by the NNR.

### (ii) Vaalputs Operational Safety Assessment

During the reporting period the Vaalputs Operational Safety Assessment was reviewed by the NNR and comments thereon were provided to Necsa. Necsa has re-submitted the revised Vaalputs Operational Safety Assessment addressing the NNR comments. This re-submission is currently under review by the NNR.

### 10.2.5 Transport Safety

The Vaalputs waste acceptance criteria require that transportation is performed in compliance with the relevant provisions of the IAEA governing the safe transport of radioactive material. Waste transportation is regulated by the NNR.

Only suitably qualified and appointed personnel from the waste disposal facility are allowed to operate motorised equipment transporting waste containers and to perform tasks related to the waste disposal activities on the Vaalputs site.



### Ronnie Rikhotso Specialist: Radiation Protection

Performs technical review s and assessment work that relates to Radiation Protection from Necsa and Koeberg.

**Philosophy:** I'm allowed to do anything, but not everything encourages growth.

Transport of radioactive sources to and from the Vaalputs site is reported to the NNR as and when such sources are transported.

There were no safety concerns regarding transport actions at Vaalputs during the reporting period.

#### 10.2.6 Radioactive Waste Safety

During the reporting period 39 shipments, consisting of 1,113 radioactive waste packages were received at Vaalputs from Koeberg for final disposal (2008: 59 shipments, consisting of 1,560 radioactive waste packages).

The Vaalputs nuclide inventory, including the number of waste packages in each trench, as at 31 December 2009, is summarised in [Table 11](#).

#### 10.2.7 Environmental Protection

Routine environmental monitoring has been conducted on and around the Vaalputs since 1984. This programme is conducted to confirm that there have not been any releases from the Vaalputs site into the environment. The monitoring programme is mainly focused on borehole water, soil and vegetation in the area.

Most of the nuclides were below the lower level of detection of the analytical equipment. Detectable concentrations, mainly uranium, alpha and beta activities were from natural radioactivity and were not as the result of the disposal facility.

#### 10.2.8 Nuclear Emergency Planning and Preparedness

The facility has an emergency team which is trained and duly appointed to perform their different functions during an emergency situation. Four Emergency exercises were held during the reporting period, including mustering as well as evacuation exercises. No deficiencies or non-compliances were identified.

#### 10.2.9 Physical Security

As part of a security review and upgrade programme, the physical security arrangements at Vaalputs were reviewed and some improvements are in the process of being implemented.

No safety concerns arose at Vaalputs during the reporting period.

**TABLE 11: VAALPUTS NUCLIDE INVENTORY**

Trench	Number of Waste Packages	Total activity received and decayed up to 31-Dec-09	
		Total activity received to date (GBq)	Total activity corrected for decay (GBq)
A01	11,740	1.92E+05	7.55E+04
A02	840	4.07E+02	1.11E+02
A03	1,639	8.53E+02	5.37E+02
A04	480	2.62E+02	2.60E+02
B01	3,177	1.09E+05	2.78E+04
B02	400	1.87E+04	1.60E+04
B03	169	1.28E+04	1.26E+04
B04	23	7.14E+03	7.08E+03
<b>Total</b>	<b>18,468</b>	<b>3.41E+05</b>	<b>1.40E+05</b>



#### 10.2.10 Safety of Sealed Radioactive Sources

The sealed radioactive sources that are utilised on the Vaalputs site are test sources which are used to test and calibrate radiological protection instruments utilised in the day-to-day activities on the site. These sources are stored in accordance with approved procedures.

#### 10.2.11 Nuclear Incidents/Accidents Reported

No nuclear incidents were reported at Vaalputs during the reporting period.

#### 10.2.12 Regulatory Compliance Assurance

The NNR conducts periodic inspections and audits at Vaalputs to verify the degree of compliance to the conditions of authorisation.

##### (i) Inspections

NNR inspections undertaken at Vaalputs during the reporting period indicated satisfactory compliance with the Vaalputs Licence conditions. The facility was inspected three times in the review period and

the inspections were undertaken in fourteen areas aligned to the conditions of authorisation. A total of 42 inspections were planned and carried out during the reporting period. This is shown in [Table 12](#).

#### 10.2.13 Regulatory Warnings or Directives to Stop Work

No warnings or directives were issued during the reporting period.

There were no safety concerns or nuclear incidents reported at Vaalputs during the reporting period.

**TABLE 12: NUMBER AND AREAS OF INSPECTION**

Inspection Disciplines	Number of Inspections
Engineering, maintenance and in-service inspection	4
Inspection and testing of Waste handling Equipment	5
Operational Technical Specifications	4
Radiation Protection – Workers	4
Radiation Protection – Public	4
Waste management	5
Quality assurance	2
Security	2
Emergency Planning	3
Training of personnel	2
Transport	2
Environmental Management	2
Physical Security	2
Process Based Licensing Documents	1
<b>Total</b>	<b>42</b>

# 11.

## REGULATION OF NATURAL RESOURCES

### 11.1 BACKGROUND

Naturally occurring radionuclides are present in all minerals and raw materials of natural origin. The most important naturally occurring radionuclides for the purposes of radiation protection are in the radio nuclides in the  $U^{238}$  and  $Th^{232}$  decay series and  $K^{40}$ . These materials are commonly referred to as Naturally Occurring Radioactive Materials (NORM). In some materials the levels of NORM are significantly high, to

the extent that regulatory control may be required for radiation protection purposes. In terms of section 22 (1) of the NNR Act such facilities are authorised by means of a Certificate of Registration (COR).

The NNR received several applications for nuclear authorisation during the reporting period. A total of 23 new COR were issued, bringing the total number of authorised NORM facilities to 145.

**TABLE 13: COR**

	No	Name of Holder	Types COR Issued	Date Issued
1	COR-238	Exaro TSA Sands (Pty) Limited	Mining and Minerals Processing	2009/01/27
2	COR-181	Transnet Limited	Mining and Minerals Processing	2009/02/02
3	COR-228	Ergo Mining (Pty) Limited	Mining and Minerals Processing	2009/02/09
4	COR-239	Aflease Gold Limited	Mining and Minerals Processing	2009/02/17
5	COR-230	ALS Chemex SA (Pty) Limited	Mining and Minerals Processing	2009/02/17
6	COR-240	Tantus Trading (180) (Pty) Ltd	Mining and Minerals Processing	2009/06/18
7	COR-79	Durban Roodepoort Deep Mine	Mining and Minerals Processing	2009/08/13
8	COR-248	Foskor Zirconia (Pty) Limited	Mining and Minerals Processing	2009/08/25
9	COR-74	Durban Roodepoort Deep Mine	Mining and Minerals Processing	2009/08/25
10	COR-247	SGS South Africa (Pty) Limited	Small User	2009/08/25
11	COR-246	NTP Logistics (Pty) Limited	Service Provider	2009/08/26
12	COR-245	Namakwa Uranium (Pty) Limited	Mining and Minerals Processing	2009/08/26
13	COR-249	Pro Mass Transport (Pty) Limited	Small User	2009/09/10
14	COR-250	JCI Gold Limited	Mining and Minerals Processing	2009/11/17
15	COR-255	Genalysis Laboratory Services	Mining and Minerals Processing	2009/11/17
16	COR-254	WS Renovations Contactors	Service Provider	2009/12/04
17	COR-256	Chifley Trading CC	Service Provider	2009/12/04
18	COR-252	Harmony Gold Mining Company Limited	Mining and Minerals Processing	2009/12/07
19	COR-253	Avgold Limited	Mining and Minerals Processing	2009/12/07
20	COR-18	GFI Joint Venture Holdings (Pty) Limited	Mining and Mineral processing	2010/01/29
21	COR-100	South African Airforce (SAAF)	Scrap Processor	2010/02/22
22	COR-217	Cango Caves Oudtshoorn Municipality	Small User	2010/02/22
23	COR-54	Cronimet RSA (Pty) Limited	Scrap Processor	2010/02/22

**The NNR issues six types of COR namely:**

- Mining and mineral processing facilities;
- Scrap smelters;
- Fertiliser manufacturers;
- Scrap processors;
- Small users; and
- Service providers.

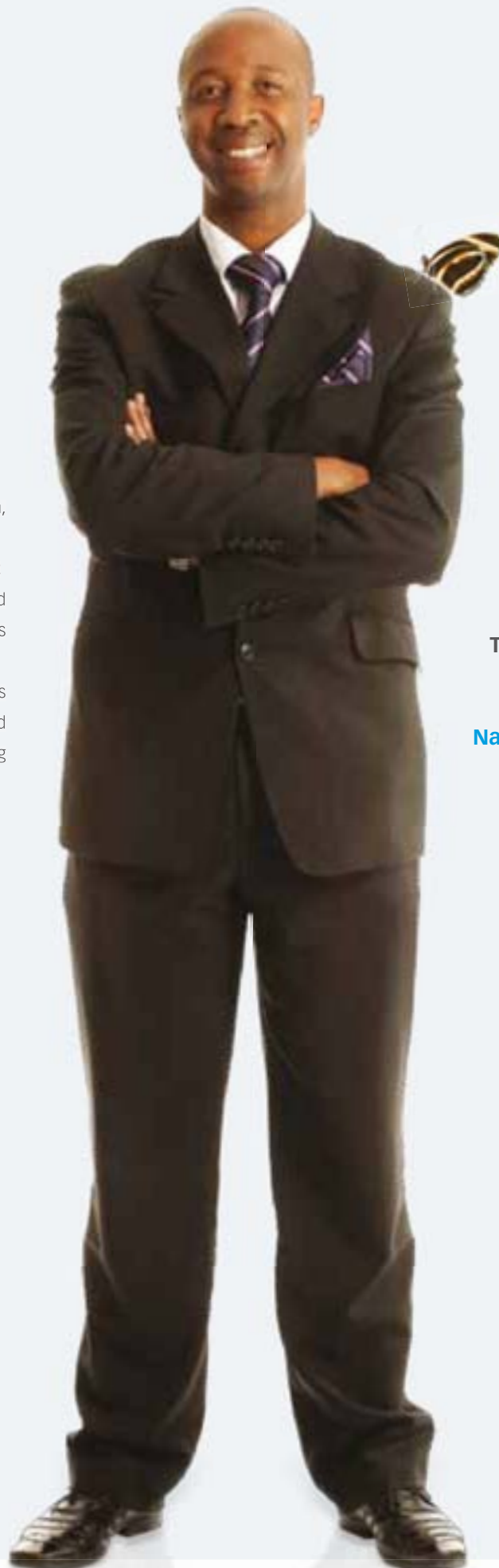
**Typical activities at facilities handling NORM include actions such as:**

- Mining and processing of gold, copper, uranium, heavy minerals and phosphate rock;
- Clearance of sites contaminated with NORM residue;
- Recycling of scrap material (i.e. ferrous and non-ferrous metals, plastic, stainless steel, etc) that is contaminated with NORM residues;
- Conducting tests in laboratories on small quantities of NORM samples for verification of proposed and existing actions, including samples from prospecting activities.

**A typical COR would include the following authorisation conditions:**

- Operational Radiation Protection;
- Radioactive Waste;
- Transportation;
- Physical Security;
- Hazard Assessment;
- Operational Limitations;
- Requirements for Occurrences; and
- Quality Management.

A source specific AADQ which considers the dose constrain or the application of Best Available Technique may be introduced by the NNR.



**Thabo Tselane**  
**Manager:**  
**Regulation of**  
**Natural Sources**

The NNR ensures that the holder adheres to the conditions of authorisation by implementing a compliance assurance system. This system comprises independent inspections, audits, investigations, monitoring, review of reports and enforcement actions.

**11.2 OCCUPATIONAL EXPOSURE TO RADIATION**

The primary radiation exposure pathway to workers in the underground mining environment is via the inhalation of particulate radon progeny.

The regulatory limits that are applicable for all workers classified as occupational exposed personnel (OEP) are:

1. An (average) effective dose of 20 mSv per year averaged over five consecutive years
2. A (maximum) effective dose of 50 mSv in any single year

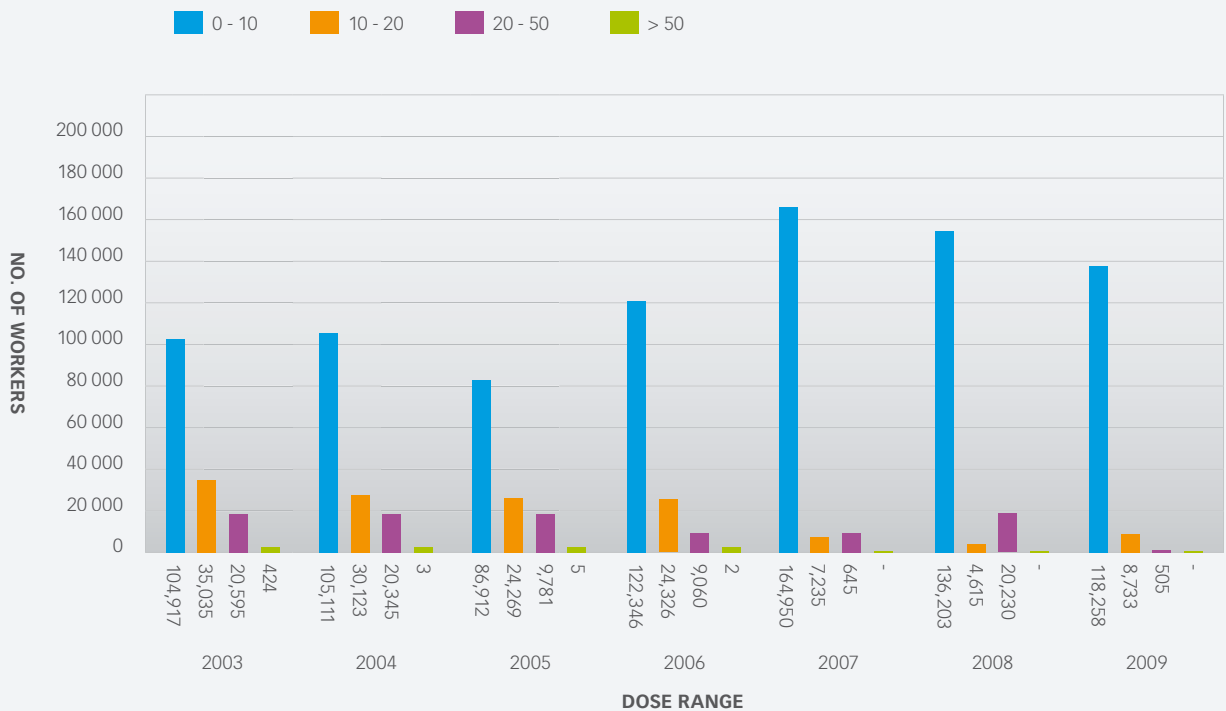
Based on these regulations, the NNR requires the holders to demonstrate that the average effective dose of 20mSv per year averaged over five consecutive years is not exceeded. This requires the holder to have proper dose records of all the OEPs for a rolling five years as determined by the SSRP R388.

The dose reports are submitted monthly to the NNR and based on the (accumulated) dose to date, a projection is made for the remainder of the year and consequently the average effective dose over five consecutive (rolling) years. This exercise takes place and is reviewed at the beginning of each calendar year.

During the reporting period, no worker exceeded the annual regulatory dose limit as shown in Figure 11.

In order to prevent any person from being exposed to doses above the regulatory limit, a dose projection is

**FIGURE 11: OCCUPATIONAL EXPOSURE 2003-2009**



calculated, based on the current rate of dose accumulation. If the outcome of this calculation indicates a likelihood of exceeding the set regulatory annual limit, such a facility is classified as a Special Case Shaft or Mine (SCS/SCM).

Regulatory oversight functions of special case mines is intensified and monitored very closely by regulatory officers. Individual monitoring is undertaken at these mines, since the potential of exceeding the dose is high. The occupational dose exposure is monitored on a month-to-month basis.

During the year under review the NNR focused much of its regulatory effort on all special case mines by increasing the frequency of compliance assurance inspections.

The authorisation holders of special case mines are required to put in place adequately designed and properly controlled ventilation systems, so as to reduce occupational exposure to as low a level as is reasonably achievable. Good engineering controls have, over the years, been the only practicable way of reducing the doses in the working environment. In areas where no other practical means of controlling the radiation exposures are available, administrative measures, such as job and worker relocation systems, are implemented.

The NNR focused much of its regulatory effort on all special case mines by increasing the frequency of compliance assurance inspections.



**Alan Muller**  
**Coordinator:**  
**Radiation**  
**Protection**  
**Emergency**  
**Planning**

### 11.3 SPECIAL CASE MINES OR SHAFTS (SCMS/SCS)

During the year 2009, the NNR identified the following 17 Special Case Mines and Shafts listed in [Table 14](#).

During the year 2009 the maximum accumulated dose for special case mines was 38.5 mSv.

See [Figure 12 on page 88](#).

### 11.4 PUBLIC EXPOSURE TO RADIATION

Public exposure, due to radioactive emissions and discharges from all sources related to any NORM facility, is controlled via a system of dose limitation, as prescribed in the SSRP R388. Authorisation holders are required to conduct safety assessments, in order to identify and quantify the radiological risk to members of the public and representative persons, and they must submit these Public Safety Assessments (PSAs) to the NNR for approval. Based on these PSAs, as well as on the associated Public Radiation Protection Programmes

(PRPPs), holders must then establish and implement surveillance, monitoring and reporting procedures. This will result in the prevention of an unacceptable radiation or contamination hazards to the public from actions at mines and discharges into the environment

The scheduled PSAs were submitted and reviewed by the NNR for adequacy and implementation during the period under review. Holders demonstrated that the doses from authorised facilities did not exceed the regulatory limit of 1 mSv per annum or, most importantly, the dose constraint of 0.25mSv per annum. From these PSAs, it is apparent that there has been an improvement in the implementation of the Radiation Protection Programme by authorisation holders.

The NNR expects, however, that there will be an increased need to apply more stringent requirements to manage radioactive discharges/effluents at holder sites. This will be achieved via the introduction of a

**TABLE 14: LIST OF ALL SCS/SCMS IDENTIFIED BY THE NNR TO DATE**

	COR #	Name of holders
1	COR-8	African Rainbow Minerals Gold Limited (Orkney Operations)
2	COR-7	African Rainbow Minerals Gold Limited (Welkom Operations)
3	COR-3	Anglogold Ashanti Limited - West Wits Operations
4	COR-2	Anglogold Ashanti Limited: Vaal River Operations
5	COR-6	ARMgold/Harmony Freegold Joint Venture Company (Pty) Ltd (Joel Operations)
6	COR-5	ARMgold/Harmony Freegold Joint Venture Company (Pty) Ltd (Tshepong, Matjhabeng & Bambani Operations)
7	COR-10	Avgold Limited - Target Division
8	COR-41	Blyvooruitzicht Gold Mining Company Ltd
9	COR-190	First Uranium - Ezulwini (Pty) Ltd
10	COR-11	Gravelotte Mines Limited
11	COR-58	Harmony Gold Mining Company Limited - Randfontein Operations
12	COR-37	Harmony Gold Mining Company Limited (Free State Operations)
13	COR-52	Nigel Gold Mining Company Limited
14	COR-18	Placer Dome Western Areas JV
15	COR-252	President Steyn Gold Mines 1 and 2 Shaft and Goldplant (Free State) Pty Ltd
16	COR-253	President Steyn Gold Mines 3 Shaft (Free State) Pty Limited
17	COR-226	Rand Uranium



source-specific Annual Authorised Discharge Quantity (AADQ), which takes into account the dose constraint not exceeding 0.25mSv per annum, or the application of Best Available Techniques (BAT) and Best Environmental Practice (BEP). The NNR, however, ensures at all times that the dose to which the public is exposed, is in no instance exceeded.

### 11.5 TRANSPORT SAFETY

The NNR together with the Department of Health participates in a Joint Committee for the detection, safe removal and disposal of radioactive, explosive and other hazardous materials in the metallic raw material recycling industry (HAZCOM).

This industry stakeholder group facilitates the exchange of information between regulators and regulated entities to ensure the safe transportation and handling of radioactive sources.

During the year 2009 the transportation of NORM took place according to the NNR regulatory requirements.

### 11.6 RADIOACTIVE WASTE SAFETY

Authorisation holders were required to manage their radioactive waste and associated waste products. Accordingly section 1.5 of the COR requires that a waste management procedure be submitted to demonstrate compliance with NNR requirements.

[See Table 15 on page 88.](#)

#### **The main aspects of a typical radioactive waste management procedure include:**

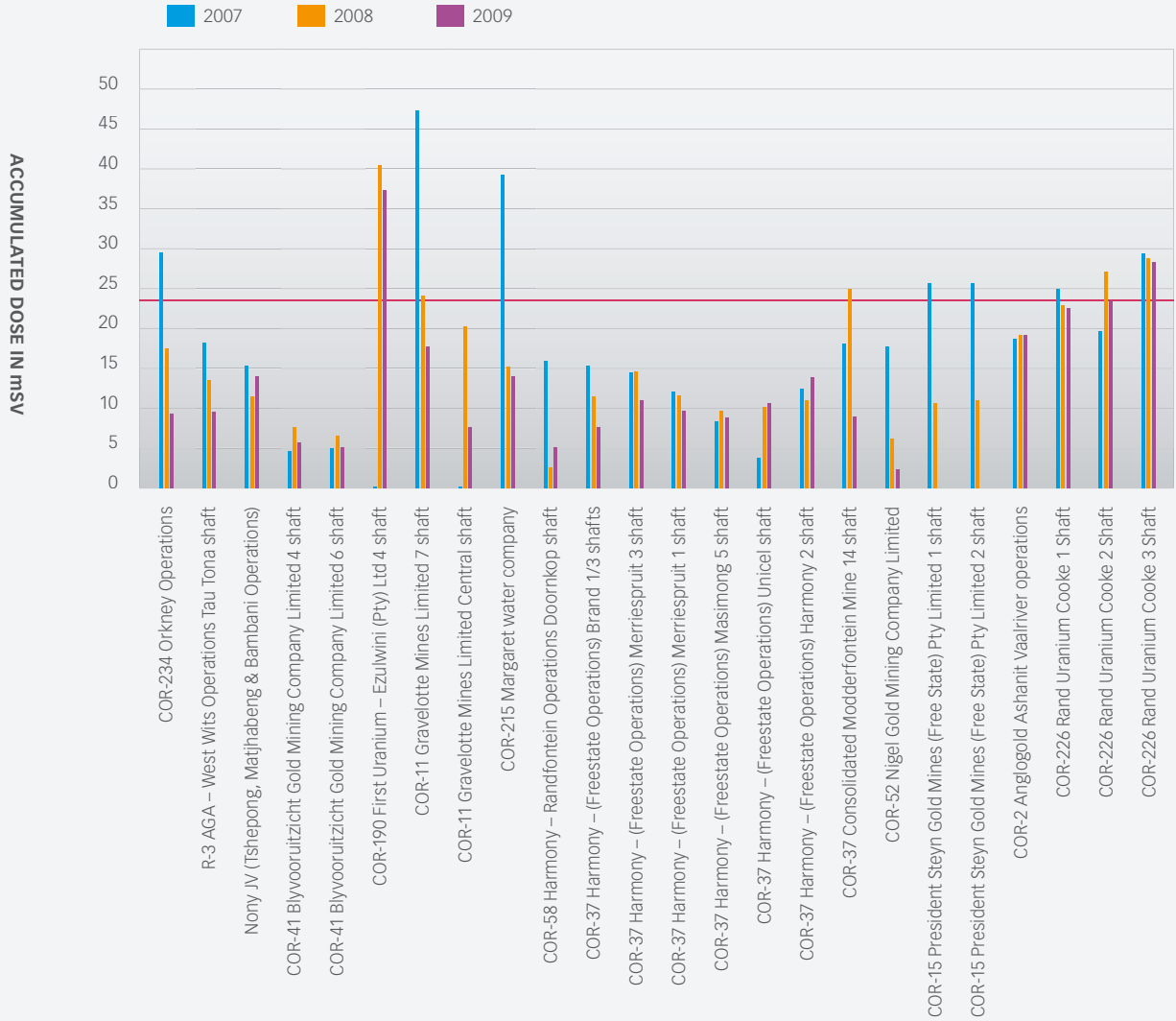
- Identification of radioactive waste and its sources;
- Segregation of radioactive waste into process and non-process waste;
- Categorisation of process waste into homogeneous and non-homogeneous waste;
- Radioactive waste management options;
- Record keeping and reporting; and
- Quality Assurance.



**Mashudu  
Netshimbupfe  
Regulatory Officer**



FIGURE 12: MAXIMUM ACCUMULATED DOSE FROM 2007/8-2009/10.



The authorisation holders submitted routine annual waste management reports that are summarised below.

TABLE 15: TYPE AND QUANTITIES OF RADIOACTIVE WASTE MATERIAL

Types of Waste	Quantity 2009-2010
Restricted Scrap	1.83E+06
Unrestricted Scrap	5.72E+06
Semi Solid Waste	7.24E+07
Gaseous Waste	2.04E+14
Liquid Waste	4.99E+08
Solid Waste	7.24E+07
Other Waste	1.37E+07

**Matshediso Maine**  
**Regulatory Officer**

### 11.7 ENVIRONMENTAL PROTECTION

The NNR requires holders to establish, implement and maintain an environmental monitoring and surveillance programme, as outlined in the RSRP, to ensure and verify that the radioactive effluent discharged by the holders, complies with the conditions of nuclear authorisation. Monitoring, based on the outcome of the public safety and dose assessment reports, ensures that controls on the release of radioactive effluents are verified.

The NNR is currently considering the introduction of regional, rather than holder-specific, public safety assessments which would provide adequate information on the appropriate source specific AADQ for each action within that region.

### 11.8 PHYSICAL SECURITY

As part of the conditions of a nuclear authorisation, the holder is required to establish, implement and maintain a physical security system that is approved by the NNR. Such a system prevents, as far as reasonably possible, unauthorised access to areas containing radioactive material and prevents unauthorised removal, diversion or theft of such material.

In general COR holders demonstrated compliance with the physical security requirements.

### 11.9 SAFETY OF SEALED RADIOACTIVE SOURCES

All sealed radioactive sources maintained by holders of CORs are managed under the jurisdiction of the Directorate of Radiation Control within the Department of Health.

The doses from authorised facilities did not exceed the regulatory limit of 1 mSv per annum or, most importantly, the dose constraint of 0.25mSv per annum.





**Gift Nhlapho**  
**Legal Advisor**

Provides legal services to the organisation which includes legal guidance, opinions and advice over the NNR Act and the full spectrum of laws affecting the business of the NNR.

**Quote:** 'Peace be unto you' – His Grace, The Right Rev. Bishop B.E. Lekganyane

No nuclear incidents or accidents, as defined in the NNR Act, were reported during the period.

**11.10 NUCLEAR INCIDENTS/ACCIDENTS REPORTED**

COR holders are required to notify the NNR of any occurrence that has taken place at the authorised facility, in accordance with an established procedure. Holders reported a total 13 occurrences to the NNR during the reporting period.

No nuclear incidents or accidents, as defined in the NNR Act, were reported during the period.

**11.11 REGULATORY COMPLIANCE**

**(i) Compliance Assurance Programme**

In order to verify the degree of compliance with conditions of authorisation, the NNR undertakes independent inspections and audits at authorised facilities.

During the reporting period, the NNR increased the frequency of compliance assurance inspections at all authorised COR holders in line with its new graded approach. This entailed frequent visits to facilities with a high potential for exposing workers to radiation or where demolition activities were carried out.



**Kathleen Brink**  
**Secretary: Nuclear  
Technology & Natural  
Sources**



A total of 390 inspections were planned for the year, of which 190 were achieved (2008/09: 379). A number of planned inspections could not be conducted due to capacity constraints.

As a result of the increased frequency and consequently the visibility of the NNR at these facilities, the average compliance index for inspections increased to 82%, (2008/09: 72%). Holders were required to investigate the reasons for, and implement corrective actions related to, all non-compliances identified.

Over and above the inspections, the NNR conducted compliance assurance audits in terms of the quality management systems that are required to be established and maintained at all these facilities. A total of 15 audits were planned for the period, of which 12 were completed.

The audits revealed a gradual improvement in the implementation of quality management systems.

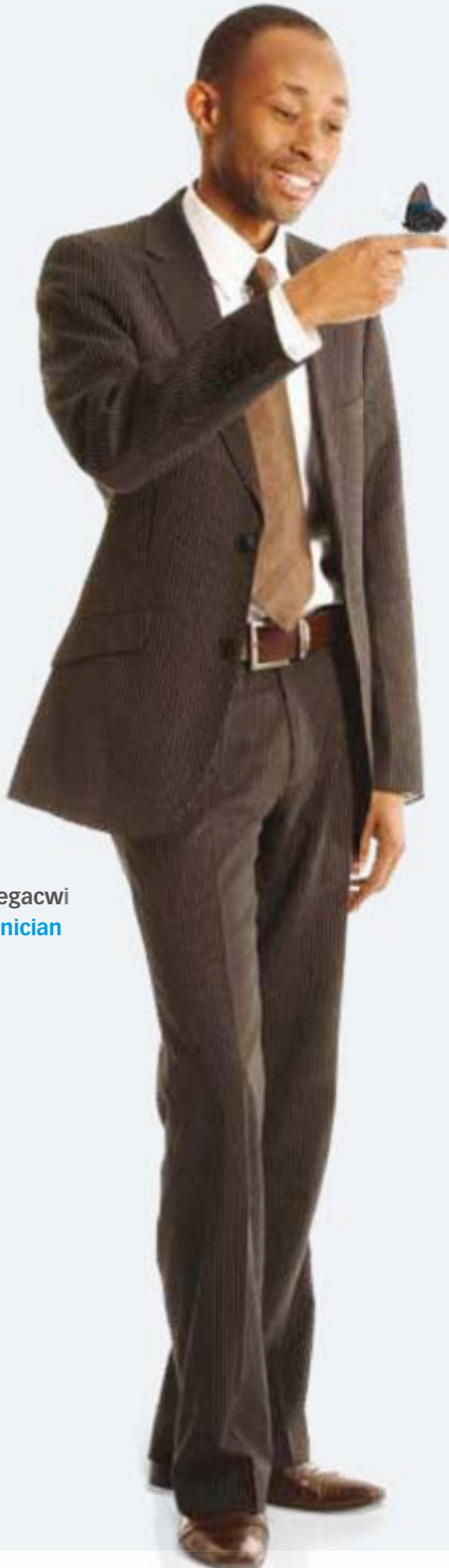
#### **11.12 REGULATORY WARNINGS AND DIRECTIVES TO STOP WORK**

**The NNR issued directives to:**

- Rand Uranium
- GFI Mining Pty Ltd
- Harmony Gold

A further 14 directives were issued to operators to lodge applications for COR.

All these prospective applicants appointed a service provider to conduct a detailed Radiological Safety Assessment and will submit the report to the NNR by the 31 July 2010.



**Thys Segacwi**  
**IT Technician**

## 12.

# PEBBLE BED MODULAR REACTOR

### **PBMR DESIGN ENGAGEMENT PROCESS**

On 11 March 2009 the PBMR Company formally requested to engage the NNR on the establishment of a regulatory oversight process for the design of an indirect cycle PBMR plant which would be standardized to serve either as an electricity generation plant or process heat plant.

The NNR has developed a framework for a design authorisation process. An application from PBMR to engage the NNR on the design of the new facility is subject to the finalisation of the framework as well as certainty on the finances to support the process.

The PBMR Company, is anticipating that it's overall workload will be scaled down for the remainder of the financial year. The workload for the generic PBMR design is however expected to increase only once an application for the design authorisation has been made.

### **PBMR DEMONSTRATION POWER PLANT (DPP) PROJECT**

The NNR, Eskom and PBMR Company agreed that the activities associated with the current DPP design should be brought to a conclusion, pending finalisation of the funding requirements for the PMBR.

# 13.

## REGULATORY RESEARCH AND DEVELOPMENT

The following regulatory research projects, investigations and initiatives, were undertaken during the period under review.

### **Financial Liability Project**

The finalisation of data collection for the purposes of determining the financial liability provisioning required for Koeberg Nuclear Power Station is in progress. It is anticipated that TuV Rheinland will be engaged during the 1st quarter of the 2010/11 financial year to determine the financial liability for Koeberg Nuclear Power Station.

### **Radiological Protection of the Environment**

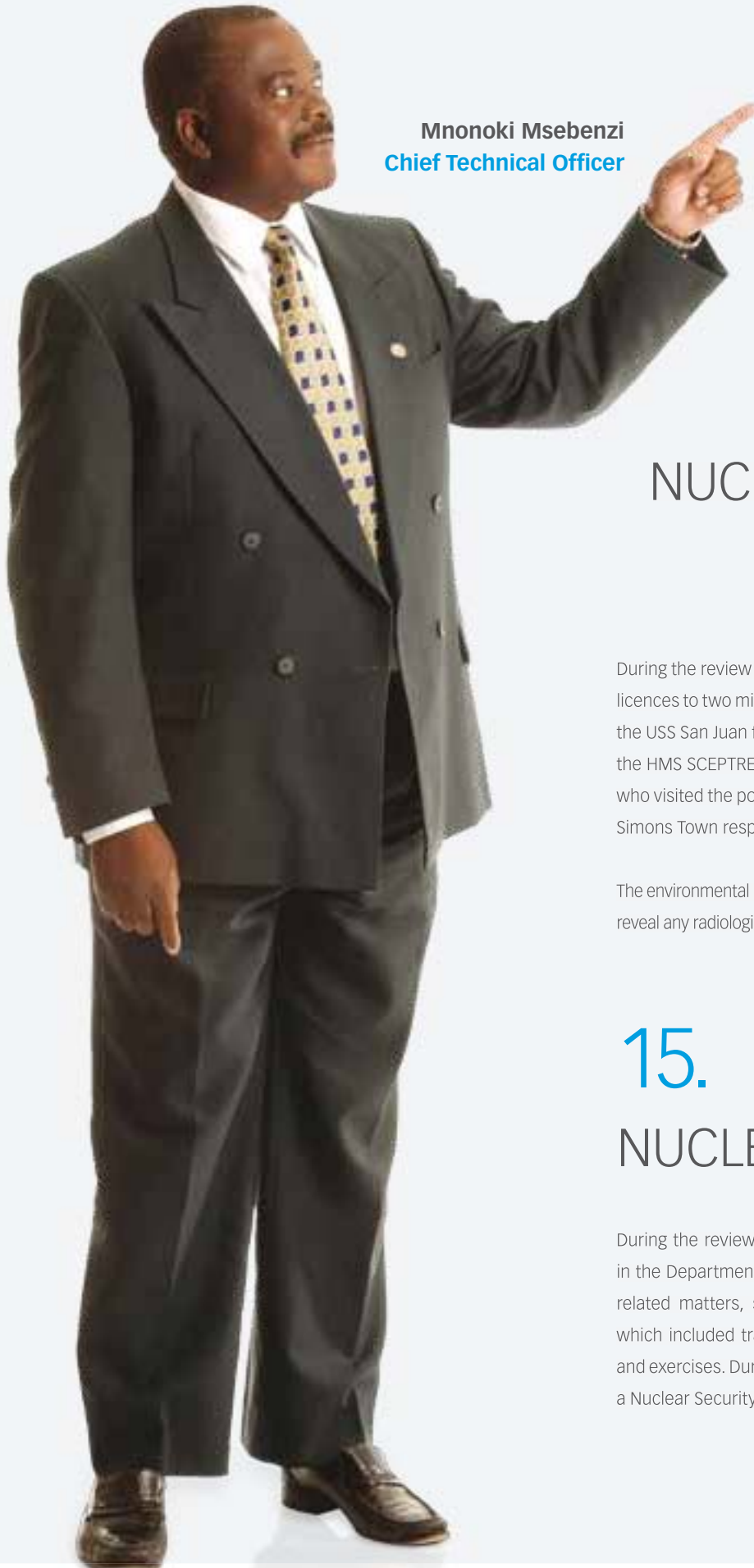
The draft guidance document on the determination of annual authorised discharged quantities (AADQs) and the position paper on radiological protection of the environment were sent out for review and comment.

### **Regulation of Oil and Gas Industry**

The project to investigate whether to authorise the oil and gas industry is in progress. During the reporting period, the NNR engaged the Petroleum Agency of South Africa in addition to interacting with the broader oil and gas industry stakeholders is ongoing.

**Peter Bester**  
**Manager: Regulatory Research  
and Development**





**Mnonoki Msebenzi**  
Chief Technical Officer

## 14.

### NUCLEAR VESSEL LICENCES

During the review period, the NNR issued nuclear vessel licences to two military nuclear powered vessels namely the USS San Juan from the United States of America and the HMS SCEPTRE from the United Kingdom Royal Navy who visited the port of Cape Town and the Naval Base of Simons Town respectively.

The environmental monitoring conducted by the NNR did not reveal any radiological impact due to the visit of the vessels.

## 15.

### NUCLEAR SECURITY

During the review period the NNR actively participated in the Department of Energy forum on nuclear security related matters, set-up for the FIFA world cup 2010, which included training of personnel, sites inspections and exercises. During this period the NNR also appointed a Nuclear Security Manager.



# 16.

## APPEALS TO THE CHIEF EXECUTIVE OFFICER

The CEO of the NNR received an appeal from J Free Recycling dated 28 October 2009 related to an NNR inspector decision to submit their operations to the

NNR regulatory process. This appeal was overtaken by events as subsequent inspections confirmed that the operation by J Free Recycling was approved by the NNR.

# 17.

## STAKEHOLDER RELATIONS



### 17.1 LOCAL STAKEHOLDER ENGAGEMENT

One of the key deliverables of a nuclear regulatory body is to build public confidence by, among other things, providing information about the safety of nuclear facilities and other matters relating to radiation safety.

Koeberg and Necca held quarterly Public Safety Information Forum meetings as stipulated by Section 26 (4) of the NNR Act.

The main purpose of a Public Safety Information Forum is to provide information to the persons residing in the relevant municipal areas, for which an emergency preparedness and response plan has been established by the relevant nuclear installation. The holder of a nuclear installation licence must provide information and respond to concerns related to nuclear and radiation safety by stakeholders within its area of operations.

A total of four meetings were held at Koeberg and Necca during the 2009/10 period and a total of three meetings at Vaalputs.

### 17.2 INTERNATIONAL RELATIONS

It is also important for the regulatory body to actively cooperate with the IAEA and regulatory bodies from other countries to exchange knowledge and information on matters of nuclear safety.

#### 17.2.1 IAEA Safety Standards Committees

The NNR participated actively in the IAEA safety standards committees, working groups and technical committee meetings, so as to develop and approve draft safety standards.

NNR members of staff attended the following meetings at the IAEA Headquarters in Vienna during the period under review:

- Nuclear Safety Standard Committee (NUSSC)
- Radiation Safety Standard Committee (RASSC)
- Waste Safety Standard Committee (WASSC)
- Transport Safety Standard Committee (TRANSSC)
- Commission on Safety Standard (CSS)
- The International Nuclear Event Scale (INES)

IAEA standards serve as reference and benchmarks for the South African nuclear and radiation safety regulatory framework.

#### 17.2.2 IAEA General Conference

The NNR joined the South African delegation led by the Minister of Energy and participated in the 53rd IAEA General Conference held in Vienna, Austria, during September 2009.

#### 17.2.3 IAEA 2<sup>nd</sup> Conference on Effective Regulatory Systems

The NNR successfully hosted the Second International Conference on Effective Regulatory Systems, in Cape Town from 14-18 December 2009. The purpose of this conference was to exchange views on how to improve the effectiveness of the global nuclear safety and security regime.

Some of the key issues discussed during the conference were :

1. Improving the coordination of global nuclear safety and security
2. Improving regulatory cooperation and coordination for the safe introduction and expansion of nuclear power programmes
3. Long term management of radioactive sources from cradle to grave
4. Capacity building and human resource development

5. Understanding regulatory effectiveness and independence

The Conference was attended by 345 delegates of whom more than 75% were international attendees.

#### 17.2.4 IAEA Technical Cooperation Projects

##### PROJECT SAF 9004: Waste Management And Decommissioning

During the year the NNR hosted workshops under the Technical Cooperation project SAF 9004. Arrangements have been concluded to train NNR on waste management and decommissioning in Germany during the next financial year.

##### PROJECT RAF 09/038: Self Assessment

The NNR and the Directorate for Radiation Control are participating in a Country self assessment process under IAEA project RAF 09/038. The goal of the project is to conduct a self-assessment of the national regulatory infrastructure of the country in preparation for a possible Integrated Regulatory Review Service (IRRS) mission from the IAEA. This will help identify the gaps in the NNR Regulatory framework utilizing international benchmarks and provide an opportunity for bridging those gaps

#### 17.3 MULTINATIONAL DESIGN EVALUATION PROGRAMME (MDEP)

The NNR participates in the MDEP which is a multinational initiative to develop innovative approaches to leverage the resources and knowledge of the national regulatory authorities that will be conducting a review of new reactor power plant designs.

Nuclear regulators aim to enhance global safety through increased cooperation and foster convergence of regulatory practices in the review of new designs for Nuclear Power Reactors. Countries that participate in



MDEP are Canada, China, Finland, France, Japan, the Republic of Korea, the Russian Federation, South Africa, the United Kingdom and the United States.

The MDEP is being organised under the auspices of the Nuclear Energy Agency, which performs the technical secretariat function for the programme.

The programme is directed by a Policy Group, comprising the heads of regulatory authorities of the participating countries. A Steering Technical Committee (STC), comprising senior level representatives from the ten participating regulatory authorities, was established to implement these activities.

#### **17.4 BILATERAL RELATIONS WITH OTHER REGULATORS**

##### **FORUM OF REGULATORS GROUP OF FRAMATOME POWER REACTORS (FRAREG)**

The NNR hosted 5<sup>th</sup> FRAREG (regulators group of Framatome power reactors) meeting in Cape Town from 25-26 October 2009. This forum comprises the Nuclear Regulatory Authorities of Belgium, China, France, South Korea and South Africa. The objective of the meeting was to exchange technical information on nuclear and radiation safety associated with the regulatory oversight of similar Framatome designed nuclear power reactors.

##### **FRENCH NUCLEAR SAFETY AUTHORITY - ASN**

The NNR hosted a Bi-lateral meeting with the ASN in Cape Town from 27-28 October 2009. The main areas of discussions were around legislative and regulatory frameworks and new developments around power reactors.

##### **US NUCLEAR REGULATORY COMMISSION**

The US Nuclear Regulatory Commission (NRC) and the NNR entered into an arrangement to cooperate in terms of severe accident research and High Temperature Gas

Reactor performance research and development under the CSARP agreement. The CSARP agreement was concluded in August 2009, during a bi-lateral meeting, after months of discussions. This was followed-up by another bilateral meeting during December 2009 in Cape Town.

##### **UNITED KINGDOM - THE HEALTH AND SAFETY EXECUTIVE OF GREAT BRITAIN, (HSE)**

The NNR signed a new agreement for five years with the HSE during December 2009. The agreement will include exchange of safety-related information concerning the siting, construction, commissioning, operation, radioactive waste management and decommissioning of civil nuclear installations in relation to which they have responsibilities.

#### **17.5 COOPERATION ON THE AFRICAN CONTINENT**

##### **17.5.1 Forum of African Regulators**

During the period under review, the NNR played a key role in the establishment of the Forum of Nuclear Regulatory Bodies in Africa (FNRBA). The FNRBA was established to facilitate the exchange of regulatory experience and practices amongst the nuclear regulatory bodies of Africa.

The NNR participates in the FNRBA Executive Committee. The NNR took part in numerous activities during the period under review. A meeting was hosted in South Africa on 16 December 2009 as part of the International Conference on Effective Nuclear Regulatory Systems.

#### **17.6 OTHER INTERNATIONAL MEETINGS**

- The NNR received a delegation from the Ministry of Science and Technology from the Republic of Zambia in February 2010 to exchange technical information on regulatory issues.
- Bi-lateral discussions were also held with South Korea, Australia and Canada.

# 18.

## PERFORMANCE MEASURED AGAINST OBJECTIVES FOR THE PERIOD 2009 TO 2010



### 18.1 PERFORMANCE

The NNR uses a Balanced Scorecard methodology to develop and monitor the implementation of its strategy.

Strategic goals have been set in the following four areas:

- delivering our mandate,
- internal business processes,
- stakeholder engagement
- building for the future.

The NNR Strategic Plan and its detailed achievements during the period under review, are outlined in the table below.

The NNR achieved approximately 70% of its planned strategic initiatives during 2009/10. The areas of under-

performance were primarily due to capacity constraints in both technical division and corporate support services.

The Balanced Scorecard of the NNR reflects Strategic Goals, Initiatives, Measures of success and Targets. A commentary is provided about the progress of each strategic initiative.

**In summary, the performance against strategic objective scorecard is as follows:**

Achieved = 32

Largely achieved = 12

Not achieved = 19

Not applicable = 6

**TABLE 16: LEGEND EXPLAINING SCORECARD HEADINGS**

Strategic Goals	Broad, long-term aims that define accomplishment of the strategic objective. (as defined in the strategic plan 2009/2012)
Initiatives	Specific activities to be undertaken in order to achieve the goal.(as defined in the strategic plan 2009/2012)
Measures	Indicators of measuring the success of achieving the goal. (as defined in the strategic plan 2009/2012)
Targets	Targets that measure the accomplishment of a goal. (as defined in the strategic plan 2009/2012)

**TABLE 17: LEGEND EXPLAINING THE STATUS COLUMN IN THE SCORECARDS**

Achieved	Planned tasks have been completed and approved.
Largely achieved	Planned tasks achieved above 50%
Not achieved	The planned tasks were not fully achieved. The percentage achievement will be reflected in the "Comments" column.
Not applicable	Tasks were not due in the reporting period under review.



**Rozaan Swanepoel**  
**Strategy Assistant**

Coordination of Strategic plan, Balance Scorecard and quarterly report, administrative coordination for Exco, coordination of International relations and management of conferences and events.

**Philosophy:** Work like you don't need the money, love like you've never been hurt and dance like no one is watching.



A NEW SCIENTIFIC  
TRUTH DOES  
NOT TRIUMPH BY  
CONVINCING ITS  
OPPONENTS AND  
MAKING THEM  
SEE THE LIGHT,  
BUT RATHER  
ITS OPPONENTS  
EVENTUALLY DIE, AND  
A NEW GENERATION  
GROWS UP THAT IS  
FAMILIAR WITH IT.

**Max Planck**  
PHYSICIST

BALANCED SCORECARD						
Strategic Objective	Measure	Strategic Initiative	Actual For year	Annual Target for 2009/2010	Comment	
N: Ensure adequate protection of workers, public health and the environment through the use of best practice of appropriate regulatory policies, practices and effective compliance monitoring that ensures effective regulations.	N.1 Number of milestones identified in the NNRLN08-11 framework and implementation plan achieved. (Optimise the legislative and regulatory framework taking into account the changing nuclear environment)	S(32) Develop a harmonized system of verification and enforcement programme	N/A	1	Due in next financial year	
		S(2) Conduct benchmarking against other regulators in order to assess effectiveness of NNR practices.	N/A	1	Due in next financial year	
		S(1) Implement the plan to achieve milestones	74	76	74 of the 76 deliverables were achieved in the reporting period. The two deliverables not achieved relate to Nuclear Security and were reprioritised to the next financial year.	
	N.2 Number of nuclear related accidents at sites.	Number of nuclear related accidents at sites.		0	0	Compliant – No nuclear related accidents
			Number of non-compliance to conditions of authorisations by KOEBERG	0	0	Compliant No incidence of non-compliance
			Number of non-compliance to conditions of authorisations by NTWP.	0	0	Compliant
	N.3 Number of non-compliance to conditions of authorisations by NORM	Number of non-compliance to conditions of authorisations by NORM	S(5) Continue to apply regulatory control through the development and implementation of compliance assurance programs and safety assessments and enforcement	7	0	All 7 incidents relate to non-compliance to the condition of authorisation. 7 directives were issued to enforce compliance. A further 11 directives were issued related to the non-compliance of the approved operational procedure. The NNR was satisfied with the measures put in place by the holders to comply to the directives.
	N.4 Radiation dosage limits to workers. (KOEBERG)	Radiation dosage limits to workers. (KOEBERG)	S(5) Continue to apply regulatory control through the development and implementation of compliance assurance programs and safety assessments and enforcement	13.3	An average effective dose of 20mSv per year averaged over five consecutive years and a maximum effective dose of 50 mSv in any single year	For the calendar year (January – December 2009), the average effective radiation dose was 0.52 mSv per occupationally exposed person. The maximum cumulative dose accrued for an individual over the calendar year was 13.3 mSv and the total collective dose for the 2826 radiation workers was 1.48 person-sievert over the calendar year.

MANDATE DELIVERY



BALANCED SCORECARD						
Strategic Objective	Measure	Strategic Initiative	Actual For year	Annual Target for 2009/2010	Comment	
N.4	Radiation dosage limits to workers. (NTWP)		11.1 mSv		For the calendar year (January – December 2009), the average effective radiation dose was 0.6 mSv per occupationally exposed person. The maximum cumulative dose accrued for an individual over the calendar year was 11.1 mSv and the total collective dose for the 1006 radiation workers was 0.628 person-sievert over the calendar year.	
	Radiation dosage limits to workers. (NORM)		40.1			
N.5	Radiation dosage limits to the public.	S(5) Continue to apply regulatory control through the development and implementation of compliance assurance programs and safety assessments and enforcement	<1mSv pa at all regulated facilities	Within prescribed limits (1 mSv/pa)	RENS: From the technical review of the Public Hazards Assessment received from authorisation holders, none of the holders exceeded the prescribed regulatory limit of 1mSv/pa for public exposure.	
N.6	Risk limits to workers, public and the environment.	S(5) Continue to apply regulatory control through the development and implementation of compliance assurance programs and safety assessments and enforcement	< prescribed limits	(units = fatality/person/a)	Demonstrated in the Safety Assessment Reviews for authorised facilities.	
				10-8 public average		
N.7	Number of compliance inspections conducted at nuclear facilities. (KOEBERG)	S(5) Continue to apply regulatory control through the development and implementation of compliance assurance programs and safety assessments and enforcement	57	5x10-6 public max		57 out of 60 for the year completed. 3 that were not done relate to nuclear security.
	Number of compliance inspections conducted at nuclear facilities. (NECSA)		194	10-5 workers average 5x10-5 workers max		187 of the planned inspections were achieved in the year under review. In addition the NTWP Department undertook a further 7 unplanned inspections (related to authorisation approvals and reported events).

MANDATE DELIVERY

BALANCED SCORECARD					
Strategic Objective	Measure	Strategic Initiative	Actual For year	Annual Target for 2009/2010	Comment
N.7	Number of compliance inspections conducted at nuclear facilities.(NORM)		150	390	A number of the planned inspections could not be conducted due to the lack of adequate resources (Regulatory Officers) as the filling of vacancies of staff that left the organisation was subject to delays.
	Number of regulated emergency exercises conducted.(KOEBERG)	S( 9) Upgrading NNR emergency response control centre	N/A	0	2 year regulatory emergency exercises schedule completed. No exercise planned for 2009-2010.
N.8	Number of regulated emergency exercises conducted.(NECSA)		1	1	Regulatory emergency exercise was conducted in two phases – Unannounced exercise on evening of 19 October 2009 Announced exercise on 22 October 2009
N.9	Number of safety reviews delayed against the agreed schedule with holders. (KOEBERG)		20% deviation	20% deviation	Status of safety reviews are discussed during the quarterly Koeberg Licensing Liaison Committee (KLLC) meetings and priorities are agreed and tracked. For the 2009/10 financial year the NNR responded to 80% of submissions within the agreed timelines.
	Number of safety reviews delayed against the agreed schedule with holders. PBMR	S(5) Continue to apply regulatory control through the development and implementation of compliance assurance programs and safety assessments and enforcement	16%	20% deviation	55 submissions were processed during the financial year
N.9	Number of safety reviews delayed against the agreed schedule with holders.(NECSA)		20%	20% deviation	Status of safety reviews are discussed during the monthly Licence Management Committee (LMC) meetings and priorities are agreed and tracked. For the 2009/10 financial year the NNR responded to 80% of submissions within the agreed timelines.

MANDATE DELIVERY





**BALANCED SCORECARD**

Strategic Objective	Measure	Strategic Initiative	Actual For year	Annual Target for 2009/2010	Comment
N.9	Number of safety reviews delayed against the agreed schedule with holders.(NORM)		21.9%	20% deviation	Of the 849 technical submissions received, 663 technical safety reviews were completed on time and 186 submissions were not reviewed. An improved response time of approximately 89 working days against the target of 90 days was achieved for the 663 technical safety reviews undertaken. Completion of outstanding reviews was agreed with the authorisation holder.
N.10	Laboratory Sample analysis		18%	20% deviation	<p><b>NTWP -</b>            Total Samples collected: 68 of 70            Samples being analyzed: 68            Deviation 3%            Analysis reports not received for 39 samples</p> <p><b>Koeberg Nuclear Power Station</b>            Total Samples collected: 40 of 70            Samples being analyzed: 40            Deviation: 43%            Analysis reports not received for 24 samples</p> <p><b>Mining and Mineral Processing</b>            Total Samples collected: 151 of 176            Samples being analyzed: 151            Deviation: 14%            Analysis reports not received for 75 samples</p> <p>Cumulative 259 of 316 samples collected            Deviation is therefore 18%</p>
N.11	Self assessment phase 4 report finalised	S(8) Subject NNR to peer review against best practice for self improvements.	N/A	Dec 2010	Due for 3rd quarter of next financial year

**MANDATE DELIVERY**

BALANCED SCORECARD							
Strategic Objective	Measure	Strategic Initiative	Actual For year	Annual Target for 2009/2010	Comment		
M: Increased compliance by holders to ensure that the activities at regulated entities are carried out safely and timely.	N.12	Implementation of ASN peer review	10	12	83% Completed for the financial year.  A total of 12 deliverables were planned for the financial year and 10 out of 12 deliverables were completed and the 2 outstanding deliverables will be completed in quarter 1 of the 2010/11 year.		
	N.13	Peer review conducted	N/A	Dec 2010	Due for 3rd quarter for the next financial year		
M.1		Number of non compliance offences where no enforcement action was taken by the NNR.(KOEBERG)	0	0	No enforcement actions and directives for non-compliance were taken and issued respectively during the reporting period		
		Number of non compliance offences where no enforcement action was taken by the NNR.(NTWP)	0	0	Enforcement actions were taken in all cases of non-compliance.		
		Number of non compliance offences where no enforcement action was taken by the NNR.(NORM)	0	0	Enforcement actions were taken in all cases of non-compliance.		
M.2	Verification and enforcement regime covering all regulatory requirements	S(31) Implement verification and enforcement regime to ensure full compliance to regulatory requirements.	100%	100%	100% achieved for all regulated nuclear facilities		
M.3	Roll-out of Process Based Licence (PBL) implementation at NTWP	S(5) Continue to apply regulatory control through the development and implementation of compliance assurance programs and safety assessments and enforcement	2.5%	50% approved and implementation verified	The roll-out for PBL is basically re-issuing of separate licences for processes that are already licensed under one site licence. The process delayed due to process of determining the details to be included in the licence. The outstanding licenses will be issued in the new financial year.		

MANDATE DELIVERY



BALANCED SCORECARD						
Strategic Objective	Measure	Strategic Initiative	Actual For Year	Annual Target for 2009/2010	Comment	
L: Strengthen regulatory oversight of nuclear security.	L1	Regulated framework and implementation plan for nuclear security developed.			These deliverables will be done in the next financial year as Nuclear Security Manager commenced work in February 2010.	
	L2	Number of milestones identified in the security plan achieved.				
O: Enhanced implementation and maintenance of co-operative governance agreements.	01	Number of meetings held at JCC level for each co-operative agreement per year.	3	22	Co-operative agreements are in place with 11 entities but due to difficulties experienced with the scheduling of dates, only three (3) meetings were held.	
	02	Number of co-operative projects identified to enhance co-operative governance.	1	2 per year	MOU with NWU has been finalized. Discussions of a MOU with UWC are in progress	

**MANDATE DELIVERY**

BALANCED SCORECARD						
Strategic Objective	Measure	Strategic Initiative	Actual For year	Annual Target for 2009/2010	Comment	
J: Compliance to good governance and operational requirements.	J.1 Receipt of an unqualified audit report.	(S22) Develop compliance monitoring tools (control assessment checklist for managers and checked by the CFO)	N/A	Jul '10	The NNR has received an unqualified audit for the end of the financial year.	
	J.2 On time reporting i.t.o PFMA checklist.	(S24) Develop financial policies, procedures and control system	31 March 2010	As per PFMA schedule	All quarterly reports were submitted on time as per PFMA schedule.	
K: Comprehensive and sound policies and procedures to ensure compliance with good governance.	K.1 Number of reoccurring non-housekeeping audit findings i.t.o internal policies and procedures carried forward from previous internal audit report.	(S24) Develop financial policies, procedures and control system	0	5	There were no reoccurring housekeeping audit findings	
	K.1 % of corporate strategic objectives achieved per annum.	S(25). Develop departmental and individual scorecards  S(51) Strengthen management efficiency and effectiveness and improve divisional co-ordination and co-operation	70%	100%	Some of the goals were not achieved due to capacity constraints in both technical and support areas.  Measures are implemented to address the deliverables that were not delivered on in the next financial year.	
I: Align and streamline business processes.	I.2 Delivery of fully functional Electronic Document Management system and Disaster Recovery Plan	S(23) Develop and implement ElecDMS integrating CSA and QMS for automated processes			Service provider was appointed and work will commence during next financial period to be completed by end of 1st quarter for 2010-2011 period.	
	I.3 Variation between budget expenditure and actual.	Monthly management of the budget to identify variances early	6%	5%	Under expenditure is mainly due to the projects that are in progress or goods and services not yet received or rendered but commitment has been made with the services provider. For example financial liability at Koeberg, development of National Dose Register, delays in the approval and promulgation of authorisation fees.	

INTERNAL BUSINESS PROCESS



**BALANCED SCORECARD**

Strategic Objective	Measure	Strategic Initiative	Actual For year	Annual Target for 2009/2010	Comment	
A: Enhance effectiveness of internal and external communication.	Stakeholder satisfaction survey rating.	S(27) Implement communication strategy		70%	The appointment of a consultant to conduct the stakeholder satisfaction survey has been finalized. The project will start rolling out in the new financial year	
		S(20) Implement stakeholder satisfaction survey				
	External stakeholder satisfaction survey rating.	S(16) Develop a yearly plan to participate in forums		70%		
		S(18) Implement the plan for participation in forums				
		S(20) Implement stakeholder satisfaction survey				
F: Increase stakeholder confidence in the nuclear regulatory system.	Number of engagements held with stakeholders.	S(16) Develop a yearly plan to participate in forums	15	8	A number of Public Safety Information Forums (PSIF) meetings were held during this year at Koeberg, Vaalputs and NECSA. Bi-lateral meetings took place with the USNRC, Canada, UK and Slovenia during the year.	
		S(17) Develop strategy for stakeholder engagement			Will be finalized in the new financial year	
	Number of good vs. negative stories in media.	S(19) Implement the strategy for stakeholder engagement.			Dec 2009	Implementation will be done after development of strategy.
		S(27) Implement communication strategy			0.5 Ratio (good vs. bad)	60% positive media coverage against 40% negative media coverage
		S(34) Develop and implement public education campaign			April '09	The public education campaign will be developed in the new financial year and implementation will follow.
G: Enhance the involvement in regional and international development to harmonise safety standards and practices	Have a network of African regulators established.	S(36) Establish African Regulators Network	1	1	The FNRBA has been established	
		S(35) Participate in international forums in support of core business and reputation.	2	1	NNR staff has participated in IAEA Safety Standards Committee meetings through the year	
	Number of MOAs established with other regulators in SADC region.	S(37) Establish and implement bi-laterals in SADC region	0	1	Due to limited staff resources no bi-laterals were established with SADC countries.	

**STAKEHOLDERS**

BALANCED SCORECARD						
Strategic Objective	Measure	Strategic Initiative	Actual For year	Annual Target for 2009/2010	Comment	
A: Improve infrastructure (ICT and Buildings).	A.1	Technology downtime levels and response times.	More than 4hrs	4 hrs response time incl. resolution by internal resources	There are no monitoring tools to measure and track the number of hours that we are not operational. During the year under review we had two incidents that could not be resolved within four hours. The new ICT solution will be implemented in the new financial year.	
	A.2	ICT Strategy Deliverables.	9	22	Failure to implement strategic initiatives due to capacity constraints.	
	A.3	Number of security issues remedied (as identified in Government report).			This will be done by the new Security Manager in the new financial year.	
	A.4	Business Continuity Plan Finalised		March 2010	The BCP policy will be submitted to the April Board meeting. Implementation will be done after approval.	
B: Exploit the current base of expertise and forums (local and international) to enhance skills coverage and development of core business processes.	B.1	Number of people trained to reduce skills gap (as identified in the skills audit).	75	68	Thirteen more people received training in the fourth quarter which increased the number from 70 the 3rd quarter to 75 exceeding the target of 68.	
	B.2	Number of core business processes identified and documented.	100%	100%	18 Core Business processes (Primary Policies and Procedures) were established, reviewed and finalised as per the QMS Project Plan.	
C: Ensure adequate supply of skills and deliver on NNR mandate for the short and long term.	C.1	% coverage of all positions in the approved organisational structure.	76%	75%	By the end of the fourth quarter, 93 out of 122 approved positions (76%) were covered.	
	C.2	Number of interns per annum across all divisions.	7	8	A total of 7 interns were trained in the year under review. One intern was appointed on a permanent basis 4 interns resigned and 2 are still being trained.	
	C.3	Number of strategic partnerships with universities in science and engineering.	1	2 per year	MOU with NWU has been finalized. Discussions of a MOU with UWC are in progress.	

## BUILDING FOR THE FUTURE



**BALANCED SCORECARD**

Strategic Objective	Measure	Strategic Initiative	Actual For year	Annual Target for 2009/2010	Comment
D: Create an environment that fosters growth and retention of skills (emphasis on effective training and development, performance management, and remuneration and reward).	D.1 Staff climate survey rating.	S(40) Implement a culture change programme		75%	An Exco decision was taken not to undertake the staff climate survey as the culture change project was still being rolled out.
	D.2 % of personnel cost spent on training and IDP development for all staff.	S(39) Implement training and development plan	1.2%	2%	The training cost is 0.8 % behind year to date. The cause is due to under spending in some departments.
	D.3 Total of managers (bands E and D) to undergo leadership development training.	S(48) Implement leadership and development plan	14	18	6 Managers were enrolled for a management development in the 2009/2010 financial year. 4 managers enrolled through a bursary scheme for a management development programme. Other managers who fall in the D and E salary band categories will undergo the leadership development in the 2010-2011 financial year
	D.4 Staff retention ratio (of key identified positions).	S(40) Implement a culture change programme S(41) Review and agree conditions of service. S(43) Review and implement remuneration system	99%	80%	There has been only one resignation of all the identified mission critical positions (Regulatory Officer) in the year under review.
	D.5 % of successors identified and developed for key positions.	S(50) Implement succession plan	20	26	A total of 20 potential successors have been identified through the Talent Forum. Through the implementation of targeted training and development interventions, 12 Employees will be ready within a year and 8 within 2 years
	D.6 Training Plan Developed	S(11) Develop a plan to implement the strategy (skills gap reduction) including milestones		Jun 09	Workplace skills plan developed and submitted to ESETA on 30 June 2009.
	D.6 Training Strategy developed	S(12) Develop strategy to address gaps		Dec 09	The training strategy has been drafted and will be undergoing the process of approval.
	D.7 E E strategy and plan implemented	S(46) Implement EE plan		Dec 09	An E committee was established and trained in the middle of the 3rd quarter. The E report was submitted to the Department of Labour in January 2010. An E audit has been planned in the first quarter of the new financial year, which will give rise to the EE Strategy.
D.8 Update of HR Strategy and plan	S(47) Review HR Strategy and Plan		Dec 09	The HR Strategy review has been finalised in line with the Strategic Plan 2010 - 2013.	

**BUILDING FOR THE FUTURE**

SCIENTIFIC DISCOVERY AND  
SCIENTIFIC KNOWLEDGE HAVE BEEN  
ACHIEVED ONLY BY THOSE WHO  
HAVE GONE IN PURSUIT OF THEM  
WITHOUT ANY PRACTICAL PURPOSE  
WHATSOEVER IN VIEW.

**Max Planck**  
PHYSICIST

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**PART 4:**  
**ANNUAL**  
**FINANCIAL**  
**STATEMENTS**

**Nontutuzelo Mpongo**  
**Regulatory Officer**

Conducts compliance inspections and review safety related submission from NECSA.

**Quote:** "Goals are the fuel in the furnace of achievement" Brian Tracy

## 19.1 DIRECTORS' RESPONSIBILITY STATEMENT

The directors are responsible for the preparation of the Annual Financial Statements of the entity. The directors are also responsible for maintaining a sound system of internal control to safeguard the assets of the entity.

The external auditors are responsible for independently auditing and reporting on the financial statements. The Office of the Auditor-General has audited the NNR Annual Financial Statements and the Auditor-General's report is included on Page 116.

The Annual Financial Statements have been prepared in accordance with the prescribed Standards of Generally Recognised Accounting Practices (GRAP) issued by the Accounting Standards Board. These Annual Financial Statements are based on appropriate accounting policies, supported by reasonable and prudent judgements and estimates.

In order for the directors to discharge their responsibilities, management continues to develop and maintain a system of internal control aimed at reducing the risk of error or loss in a cost-effective manner.

The internal controls include a risk-based system of internal auditing and administrative controls designed to provide reasonable but not absolute assurance that assets are safeguarded and that transactions are executed and recorded in accordance with generally accepted practices and the entity's policies and procedures.

The directors, primarily through the Audit and Risk Management Committee, which consists of non-executive directors, meet periodically with the external and internal auditors, as well as executive management to evaluate

matters concerning accounting policies, internal controls, auditing and financial reporting.

Nothing has come to the attention of the directors to indicate that any material breakdown in the functioning of these controls procedures and systems has occurred during the year under review.

The directors are satisfied that the entity have adequate resources to continue in operational existence for the foreseeable future. Accordingly, NNR continues to adopt the going concern basis in preparing the Annual Financial Statements.

Against this background, the directors of the entity accept responsibility for the Annual Financial Statements, which were approved by the Board of Directors on July 28, 2010 and are signed on their behalf by:

Dr T Cohen  
Chairperson



Adv. B Mkhize  
Chief Executive Officer



Centurion, July 28, 2010



**Ramasela Moloto**  
**Chief Financial Officer**



THERE ARE CHILDREN  
PLAYING IN THE  
STREETS WHO COULD  
SOLVE SOME OF MY  
TOP PROBLEMS IN  
PHYSICS, BECAUSE  
THEY HAVE MODES  
OF SENSORY  
PERCEPTION THAT I  
LOST LONG AGO.

**Charles-Augustin de Coulomb**  
PHYSICIST

## 19.2

# REPORT OF THE AUDIT AND RISK MANAGEMENT COMMITTEE

It is with pleasure that we present this report for the financial year ended 31 March 2010.

### AUDIT AND RISK COMMITTEE MEMBERS AND ATTENDANCE

The Audit and Risk Committee comprises the members listed on pages 18 and 19 of the Annual Report, and is required to meet three times per annum, as per its approved Terms of Reference. During the period under review, the Committee met three times. The committee members' meeting attendance is disclosed on page 18 of the Annual Report.

### RESPONSIBILITIES OF THE AUDIT AND RISK COMMITTEE

The Committee adopted appropriate formal Terms of Reference in its Charter, which are in line with the requirements of Section 51(1)(a) of the Public Finance Management Act (Act 1 of 1999), and Treasury Regulation 27.1. The committee also conducted its affairs in compliance with the Charter. The Charter was reviewed and approved by the Board of Directors.

The Committee's main duties and activities during the period under review may be summarised as follows:

#### EFFECTIVENESS OF INTERNAL CONTROL

The system of internal control, applied by the NNR in terms of Financial and Risk management, proved to be effective, efficient and transparent.

In line with the PFMA and the King II Report on Corporate Governance requirements, Internal Audit provided the Audit Committee and Management with the assurance that the internal controls were appropriate and effective. This was achieved by means of the Risk Management process, as well as by the identification of corrective actions and the suggested enhancement of both the controls and processes. From information gathered from reports received from the Auditor-General of South, it was noted that no matters had been reported, indicating any material deficiencies in the system of internal control, and no major deviations either. Accordingly the Committee is in the position to report that, for the period under review, the system of internal control over financial reporting was reasonable, efficient and effective.

#### EVALUATION OF FINANCIAL STATEMENTS

The Committee has:

- Reviewed and discussed the audited Annual Financial Statements to be included in the Annual Report with the Auditor General of South Africa, as well as the Accounting Officer.
- Reviewed the Auditor-General of South Africa's Management Report, as well as Management's response towards the Report.
- Reviewed changes in accounting policies and practices.
- Reviewed significant adjustments, resulting from the audit.

The Committee concurs with, and accepts the Auditor General of South Africa's Report on the Annual Financial Statements, and is of the opinion that the audited



financial statements should be accepted, read together with the Report of the Auditor-General of South Africa.

#### **INTERNAL AUDIT**

During the period under review the NNR had a head of internal audit who was assisted with an outsourced audit firm. The Committee confirmed the Internal Auditors' programme of work and reviewed the reports. The head of internal audit had direct access to both the Chairpersons of the Audit and Risk Management Committee, and the Chairperson of the Board of Directors. The Committee is satisfied with the controls improved in the affairs of the internal audit activity, in assisting to address the risks pertinent to the NNR.

#### **RISK MANAGEMENT ARRANGEMENTS**

The committee reviewed the NNR overall approach to risk management and control, as well as the risk management processes and practices, while specifically including:

- The results of the risk management workshops;
- Management strategies and initiative in managing the risks facing the NNR;
- Period and year-end reports on the status of risk management within the NNR;
- The report from the Chief Financial Officer in terms of business risks, and her positive assurance with regard to operating controls and corporate policies, as well as the quarterly review of business risks and safeguards; and
- The review of the fraud prevention plan and other anti-fraud measures.

#### **AUDITOR-GENERAL OF SOUTH AFRICA**

The Committee reviewed the scope and results of the external audit and its effectiveness. The Committee also met with representatives from the Auditor-General of South Africa to ensure that there were no unresolved issues.

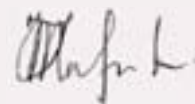
#### **OTHER MATTERS**

The organisation's Code of Conduct was reviewed, updated and implemented during the period under review. This Code provided guidance to individuals on how to behave and conduct themselves in an ethical manner in the performance of the NNR activities.

#### **ASSESSMENT OF THE AUDIT AND RISK MANAGEMENT COMMITTEE**

The Board of Directors evaluated the performance of the Committee and the Committee also conducted self-assessment of its performance.

Mr T Mofokeng  
Chairperson: Audit and Risk  
Management Committee



## 19.3

# REPORT OF THE AUDITOR-GENERAL TO PARLIAMENT ON THE FINANCIAL STATEMENTS OF NATIONAL NUCLEAR REGULATOR FOR THE YEAR ENDED 31 MARCH 2010

### INTRODUCTION

I have audited the accompanying financial statements of the National Nuclear Regulator, which comprised the statement of financial position as at 31 March 2010, and the statement of financial performance, statement of changes in equity and statement of cash flows for the year ended, and a summary of significant accounting policies and other explanatory information, as set out on pages 120 to 147.

### ACCOUNTING AUTHORITY'S RESPONSIBILITY FOR THE FINANCIAL STATEMENTS

The accounting authority is responsible for the preparation and fair presentation of the financial statements in accordance with the South African Standards of Generally Recognised Accounting Practices (SA Standards of GRAP) and in the manner requires by the Public Finance Management Act of South Africa, 1999 (Act No. 1 of 1999) (PFMA). This responsibility includes: designing, implementing and maintaining internal control relevant to the preparation and fair presentation of financial statements that are free from material misstatement, whether due to fraud or error; selecting and applying appropriate accounting policies; and making accounting estimates that are reasonable in the circumstances.

### AUDITOR-GENERAL'S RESPONSIBILITY

As required by section 188 of the Constitution of South Africa and section 4 of the Public Audit Act of South Africa, 2004 (Act No. 25 of 2004) (PAA), my responsibility is to express an opinion on these financial statements based on my audit.

I conducted my audit in accordance with International Standards on Auditing and General Notice 1570 of 2009 issued in Government Gazette 32758 of 27 November 2009. Those standards require that I comply with ethical requirements and plan and perform the audit to obtain reasonable assurance about whether the financial statements are free from material misstatement.

An audit involves performing procedures to obtain audit evidence about the amounts and disclosures in the financial statements. The procedures selected depend on the auditor's judgement, including the assessment of the risks of material misstatement of the financial statements, whether due to fraud or error. In making those risk assessments, the auditor considers internal control relevant to the entity's preparation and fair presentation of the financial statements in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the entity's internal control. An audit also includes evaluating the appropriateness of accounting policies used and the reasonableness of accounting estimates made by management, as well as evaluating the overall presentation of the financial statements.

I believe that the audit evidence I have obtained is sufficient and appropriate to provide a basis for my audit opinion.



#### **OPINION**

In my opinion, these financial statements present fairly, in all material respects, the financial position of National Nuclear Regulator as at 31 March 2010, and its financial performance and its cash flows for the year ended, in accordance with the SA Standards of GRAP and in the manner required by the PFMA.

#### **EMPHASIS OF MATTER**

I draw attention to the matter(s) below. My opinion is not modified in respect of these matters:

#### **RESTATEMENT OF CORRESPONDING FIGURES**

As disclosed in note 23 to the financial statements, the corresponding figures for 31 March 2009 have been restated as a result of an error discovered during 2010 in the financial statements of the National Nuclear Regulator at, and for the year ended, 31 March 2010.

#### **IRREGULAR EXPENDITURE**

As disclosed in note 21 to the financial statements, irregular expenditure to the amount of R3 372 194 was incurred, due to failure by the entity to apply the 80/20 criteria as required by the National Treasury.

#### **REPORT ON OTHER LEGAL AND REGULATORY REQUIREMENTS.**

In terms of the PAA of South Africa and General notice 1570 of 2009, issued in Government Gazette No. 32758 of 27 November 2009 I include below my findings on the report on predetermined objectives, in compliance with the PFMA, the Companies Act of South Africa and financial management (internal control).

#### **FINDINGS**

##### **Predetermined objectives**

No matters to report

##### **COMPLIANCE WITH LAWS AND REGULATIONS**

No matters to report.

##### **INTERNAL CONTROL**

I considered internal control relevant to my audit of the financial statements and the report on predetermined objectives and compliance with the PFMA, but not for the purposes of expressing an opinion on the effectiveness of internal control. The matters reported below are limited to the deficiencies identified due to the audit.

No matters to report.

Auditor General  
South Africa

Pretoria, 31 July 2010

## 19.4 DIRECTORS' REPORT

### INTRODUCTION

The directors have pleasure in submitting the Annual Financial Statements of the entity for the year ended March 31, 2010.

The National Nuclear Regulator is listed as a national public entity in Schedule 3 Part A of the Public Finance Management Act, (Act 1. of 1999, as amended). It was established in terms of Section 3 of the National Nuclear Regulator Act, (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:
  - i) The siting, design, construction, operation, manufacture of component parts, and the decontamination, decommissioning and closure of nuclear installations; and
  - i) Vessels propelled by nuclear power or having radioactive material on board which is capable of causing nuclear damage, through the granting of nuclear authorisations;
- c) Exercise regulatory control over other actions to which the Act applies, through the granting of nuclear authorisations;
- d) Provide assurance of compliance with the conditions of nuclear authorisations through the implementation of a system of compliance inspections;

e) Fulfil national obligations in respect of international legal instruments concerning nuclear safety; and

f) Ensure that provisions for nuclear emergency planning are in place.

The Board of Directors is the Accounting Authority in terms of the Public Finance Management Act.

### NATURE OF BUSINESS

The NNR carries out effective regulatory control by developing and implementing regulatory standards and practices that are comparable to internationally accepted standards and practices. Quantitative and qualitative assessment techniques and safety assurance programmes are applied in an efficient and cost-effective manner.

In the course of implementing its mandate, the NNR maintained focus on its transformation objectives, which are captured in the NNR Strategic Plan. In this regard, the Report on Performance against Objectives following reflects NNR performance relating to core business, alignment of internal processes to strategy, improvement of stakeholder relations, as well as training and capacity development, employment equity, and preferential procurement.

### REVIEW OF OPERATIONS

The total income for the NNR was R108.7 million (2009: R85.8 million) including the Government Grant of R23.8 million (2009: R20.3 million) and the expenditure amounted to R 104.5 million (2009: R 93.7million).

This resulted in operating surplus/(deficit) of R4.2 million (2009: R7.9 million).





#### EVENTS SUBSEQUENT TO REPORTING DATE

There were no subsequent events after the reporting date.

#### MATERIALITY AND SIGNIFICANCE FRAMEWORK

For purposes of material [as per PFMA sections 50(1) and 55(2)] and significant [as per PFMA section 54(2)] the following framework of acceptable levels was agreed with the Executive Authority in consultation with the Auditor General:

- Section 50(1) – Material facts to be disclosed to the Executive Authority are considered to be facts that may influence the decisions or actions of the Stakeholders of the Public Entity.
- Section 55(2) – Disclosure of material losses in the Annual Financial Statements will be for all losses through criminal conduct and any irregular expenditure and fruitless and wasteful expenditure that occurred during the year.
- Section 54(2) – The criteria to determine the level of significance was based upon the guiding principles as set out in the “Practice Note on applications under Section 54 of the PFMA no 1 of 1999 (as amended) by Public Entities” as published by National Treasury during 2006 subject to adjustments for any Section 54(4) exemptions.

#### LATE APPROVAL OF AUTHORISATION FEES

While noting the declared surplus by the NNR for this financial year, the Directors record the ongoing concern of the late approval and publication of authorisation fees

which leads, inter alia, to projects not being commissioned on time. The NNR authorisation fees for the period under review were approved in December 2009 (a full 9 months into the financial year). The NNR is however confident that this trend will not obtain in the future as the Minister of Energy has committed to establishing mechanisms for quicker turn-around times in this regard.

#### CAPACITY WITHIN THE NNR

The Directors have noted the performance index of the NNR and established that the ongoing capacity challenges within the nuclear industry in general and the NNR in particular, continue to pose a challenge in this regard. To this end, a comprehensive organisational development initiative has been undertaken in the new financial year to deal with organisational design and related processes to position the NNR as an effective and efficient regulatory body.

Dr T Cohen  
Chairperson

Adv. B Mkhize  
Chief Executive Officer

Centurion,  
July 28, 2010

## 19.5 STATEMENT OF FINANCIAL POSITION

Statement of Financial Position as at 31 March 2010

	NOTES	2010 R	2009 R
<b>ASSETS</b>			
<b>Non-current assets</b>		<b>5,782,115</b>	5,707,137
Property, plant and equipment	2	5,404,448	5,165,038
Intangible assets	3	377,667	542,099
<b>Current Assets</b>		<b>96,844,677</b>	82,146,932
Trade and other receivables	4	2,787,090	6,037,729
Cash and cash equivalents	5	94,057,587	76,109,203
		<b>102,626,792</b>	87,854,069
<b>EQUITY AND LIABILITIES</b>			
<b>Reserves</b>			
Accumulated surplus		39,366,043	29,865,241
<b>Non-current liabilities</b>		<b>33,360,650</b>	30,366,620
Retirement medical benefits	6	33,360,650	29,897,654
Finance lease liability	14.2	-	468,966
<b>Current liabilities</b>		<b>29,900,099</b>	27,622,208
Finance lease liability	14.2	331,487	330,494
Trade and other payables	7	5,889,990	5,256,596
Provisions	8	5,678,622	4,035,118
Deferred income	17	18,000,000	18,000,000
		<b>102,626,792</b>	87,854,069



## 19.6 STATEMENT OF FINANCIAL PERFORMANCE

Statement of Financial Performance for the year ending 31 March 2010

	NOTES	2010 R	2009 R
<b>REVENUE</b>	<b>9</b>	<b>108,675,106</b>	85,803,993
<b>Expenditure</b>		<b>(104,508,357)</b>	(93,704,301)
Employee expenses	10.1	74,750,909	59,638,750
Services fees	10.2	8,035,931	9,527,789
Depreciation, amortisation and write-offs	10.3	1,835,871	1,978,436
Operating leases	10.4	5,603,335	4,938,304
Administrative expenses	10.5	14,282,311	17,621,022
<b>Operating surplus/(deficit)</b>		<b>4,166,749</b>	(7,900,308)
Finance income	11	5,451,320	8,717,316
Finance Charge	12	(117,267)	(306,696)
<b>Net surplus for the year</b>		<b>9,500,802</b>	510,312

## 19.7 STATEMENT OF CHANGE IN EQUITY

Statement of Changes in Equity for the year ending 31 March 2010

	NOTES	Accumulated Surplus	Total R
Balance at 31 March 2008		29,276,597	29,276,597
Prior year adjustment		78,332	78,332
		29,354,929	29,354,929
Surplus as restated		510,312	510,312
Surplus for the period as previously reported		444,008	444,008
Prior year adjustment		66,304	66,304
<b>Balance at 31 March 2009 as restated</b>		<b>29,865,241</b>	29,865,241
<b>Surplus for the period</b>		<b>9,500,802</b>	9,500,802
<b>Balance at 31 March 2010</b>		<b>39,366,043</b>	39,366,043

## 19.8 CASH FLOW STATEMENT

Cash Flow Statement for the year ending 31 March 2010

	NOTES	2010 R	2009 R
<b>Cash flow from operating activities</b>		<b>20,327,206</b>	3,159,948
Cash receipts from authorisation holders and applicants		<b>110,554,797</b>	85,261,559
Cash payments to suppliers and employees		<b>(95,548,020)</b>	(90,584,247)
Cash generated from operations	<b>17</b>	<b>15,006,777</b>	(5,322,688)
Interest paid	<b>12</b>	<b>(95,325)</b>	(154,409)
Interest received	<b>11</b>	<b>5,415,754</b>	8,637,045
<b>Cash flow from investing activities</b>		<b>(1,910,849)</b>	(2,280,060)
Acquisition of property, plant and equipment	<b>2</b>	<b>(1,683,468)</b>	(2,115,743)
Acquisition of intangible assets	<b>3</b>	<b>(227,381)</b>	(164,317)
<b>Cash flow from financing activities</b>		<b>(467,973)</b>	(408,897)
Finance lease		<b>(467,973)</b>	(408,897)
<b>Net increase in cash and cash equivalents</b>		<b>17,948,384</b>	470,996
<b>Cash and cash equivalents at the beginning of the year</b>		<b>76,109,203</b>	75,638,207
<b>Cash and cash equivalents at the end of the year</b>		<b>94,057,587</b>	76,109,203



## 19.9 NOTES TO THE ANNUAL FINANCIAL STATEMENTS

Notes to the Annual Financial Statements for the year ended 31 March 2010

### 1. SIGNIFICANT ACCOUNTING POLICY

The Annual Financial Statements are based upon appropriate policies consistently applied and supported by reasonable and prudent judgements and estimates. The Annual Financial Statements are prepared under the historical cost basis, and incorporate the significant policies set out below:

#### 1.1 Basis of Preparation

The Annual Financial Statements have been prepared in accordance with the Generally Recognised Accounting Practice (GRAP) determined by the Accounting Practices Board, and in the manner required by the Public Finance Management Act (Act No.1 of 1999).

The entity has applied GRAP for the first time for the 2010 financial year. On principle this standard has been applied retrospectively although this has had no material effect on the 2009 comparatives contained in these financial statements.

#### 1.2 Going Concern Assumption

The financial statements have been prepared on a going concern assumption and will continue in operation for the foreseeable future.

#### 1.3 Budget Information – GRAP 1

In preparation of the Annual Financial Statements, paragraphs 11-5 of GRAP 1 were implemented due to the fact that local and international budget reporting standard is effective for this financial year. The inclusion of reconciliation on budget information enhances the usefulness of the financial statements.

#### 1.4 Significant Accounting Judgements and Estimates

The preparation of financial statements requires the use of estimates and assumptions that affect the reported amounts of assets and liabilities and disclosure of contingent assets and liabilities at the date of the financial statements and the reported amounts of revenue and expenses during the reporting periods. Although these estimates are based on management's best knowledge of current events and actions that the entity may undertake in the future, actual results may ultimately differ from those estimates.

The presentation of the results of operations, financial position and cash flows in the financial statements of the entity is dependent upon and is sensitive to the accounting policies, assumptions and estimates that are used as a basis for the preparation of these financial statements. Management has made certain judgements in the process of applying the entity's accounting policies.

#### 1.5 Revenue Recognition

Revenue comprises of authorisation fees and revenue from special projects. Revenue arising from authorisation fees which are published in the Gazette by the Minister on an annual basis is recognised on an accrual basis in accordance with the substance of the relevant arrangement with the licensed holders.

#### 1.6 Government Grants

Government grants are recognised initially when there is reasonable assurance that they will be received and that the entity will comply with the conditions associated with the grant.

## 19.9 NOTES TO THE ANNUAL FINANCIAL STATEMENTS

Notes to the Annual Financial Statements for the year ended 31 March 2010 - continued

### 1.7 IRREGULAR, FRUITLESS AND WASTEFUL EXPENDITURE

Irregular expenditure means expenditure incurred in contravention of, or not in accordance with, a requirement of any applicable legislation, including the PFMA. Fruitless and Wasteful expenditure means expenditure that was made in vain and would have been avoided had reasonable care been exercised. All irregular, and fruitless and wasteful expenditure is charged against income in the period in which it is incurred.

### 1.8 FOREIGN CURRENCIES

Transactions in foreign currencies are accounted for at the rates of exchange ruling on the date of the transactions. Gains and losses arising from the settlement of such transactions are recognised in the income statement.

### 1.9 INTEREST RECEIVED

Interest is recognised on a time proportionate basis taking into account the principal amount outstanding and the effective interest rate.

### 1.10 PROPERTY, PLANT AND EQUIPMENT

Property, plant and equipment are initially recognised at cost and are carried at cost less accumulated depreciation and accumulated impairment losses. An item of property, plant and equipment is derecognised upon disposal or when no future economic benefits are expected from its use. Gains and losses arising on derecognising of the asset are included in the statement of financial performance in the year it is derecognised.

The useful lives of the assets are based on management's estimation. Management considers the impact of changes in technology, service requirements and availability of capital funding to determine the optimum useful life expectation for each of the individual categories of property, plant and equipment. Due to the rapid technological advancement in the scientific, research and information technology industry the estimation of useful lives could differ significantly on an annual basis. The impact of the change in the expected useful life of property, plant and equipment is described more fully in note 10.3. The estimation of residual values of assets is also based on management's judgement whether the assets will be sold or used to the end of their useful lives and what their condition will be like at that time.

The assets are depreciated on a straight line basis as follows:

	Years
Freehold land	Not depreciated
Building	20
Furniture	10 -25
Office equipment	5-25
Computer equipment	3-5
Scientific and Technical equipment	5
Capitalised leased asset	5

### 1.11 Intangible Asset

Research and Development

Expenditure on research activities, undertaken with the prospect of gaining new scientific or technical knowledge and understanding is recognised in the Statement of Financial Performance as an expense in the period incurred.



## 19.9 NOTES TO THE ANNUAL FINANCIAL STATEMENTS

Notes to the Annual Financial Statements for the year ended 31 March 2010 - continued

Expenditure on development activities, whereby research findings are applied to a plan or design for the production of new or substantially improved products and processes is capitalised if the development costs can be measured reliably, the product or process is technically and commercially feasible, future economic benefits are probable, and the entity has sufficient resources to complete development, and to use or sell the asset. The expenditure capitalised includes the cost of materials, direct labour and an appropriate proportion of overheads. Capitalised development expenditure is stated at cost less accumulated amortisation and impairment losses.

### Computer software

Acquired computer software licences are capitalised on the basis of the costs incurred to acquire and bring to use the specific software. The cost of minor software and licences are recognised in the Statement of Financial Performance as an expense when incurred.

### Subsequent expenditure

Subsequent expenditure on capitalised intangible assets is capitalised only when it increases the future economic benefits embodied in the specific asset to which it relates. All other expenditure is recognised in the Statement of Financial Performance as an expense when incurred.

### Amortisation

Amortisation is charged to the Statement of Financial Performance on a straight-line basis over the estimated useful lives of intangible assets unless.

The estimated useful lives are as follows:	Years
Computer Software	3-5

### 1.12 Impairment

At each reporting date management assess whether there are indicators of impairment. If such evidence exists, the estimated present value of the future cash flow of that asset is determined.

Management is required to make judgement concerning the cause, timing and amounts of impairment. In the identification of impairment indicators, management considers the availability of funding, technological obsolescence, discontinuance of services and other circumstances that could indicate that impairment exists. This requires management to make significant judgements concerning the existence of impairment indicators, remaining useful lives of assets and fair value less costs to sell and value in use. Management judgement is also required when assessing whether a previously recognised impairment loss should be reversed.

Where impairment indicators exist, the determination of the recoverable amount of cash generating unit requires management to make assumptions to determine the fair value less costs to sell and value in use. In assessing the expected future cash flows, the asset are discounted to their present value using a discount rate that reflects the current market assessments of the time value money and the risks specific to the asset. The judgements, assumptions and methodologies used can have a material impact on the fair value and ultimately the amount of any impairment.

### 1.13 Accounting for Leases

Finance leases are recognised as assets and liabilities at the lower of the fair value of the asset and the present value of the minimum lease payments at the date of acquisition. Finance costs represent the difference between the total leasing commitments and the fair value of the assets acquired. Finance costs are charged to profit or loss over the term of the lease at interest rates applicable to the lease on the remaining balance of the obligations.

Leases for assets under which all the risks and benefits of ownership are effectively retained by the lessor are classified as operating leases. Operating lease payments are recognised in profit or loss on a straight-line basis over the term of the relevant lease taking into account any fixed escalation

## 19.9 NOTES TO THE ANNUAL FINANCIAL STATEMENTS

Notes to the Annual Financial Statements for the year ended 31 March 2010 - continued

### 1.14 Financial Instruments

#### *Recognition and initial measurement*

All financial instruments are initially recognised at fair value, plus, in the case of financial assets and liabilities not at fair value through profit or loss, transaction costs that are directly attributable to the acquisition or issue. Financial instruments are recognised when the entity becomes a party to their contractual arrangements. All regular way transactions are accounted for on settlement date. Regular way purchases or sales are purchases or sales of financial assets that require delivery of assets within the period generally established by regulation or convention in the marketplace.

#### *De-recognition*

Financial assets are derecognised when the contractual rights to receive cash flows have been transferred or have expired or when substantially all the risks and rewards of ownership have passed. All other assets are derecognised on disposal or when no future economic benefits are expected from their use.

#### *Cash and Cash Equivalent*

Cash comprises cash on hand and demand deposits. Cash equivalents are short-term, highly liquid investments that are readily convertible to known amount of cash and that are subject to insignificant risk of change in value.

#### *Trade and Other Receivables*

Trade and other receivables, are classified as receivables and are subsequently measured at amortised cost less provision for doubtful debts. Write-down of these assets is expensed in profit or loss.

#### *Trade and Other Payables*

All financial liabilities are measured at amortised cost, comprising original debt less principle payments and amortisation.

### 1.15 Employee Benefits

The NNR provides defined benefit plans for certain post-employment benefits. The entity's net obligation in respect of defined benefits is calculated by estimating the amount of future benefits earned in return for services rendered. The obligation and assets related to each of the post-retirement benefits are determined through an actuarial valuation. The actuarial valuation relies heavily on assumptions as disclosed in note 6. The assumptions determined by management make use of information obtained from the entity's employment agreements with staff and pensioners, market related returns on similar investments, and market related discount rates and other available information. The assumptions concerning the expected return on asset and expected change in liabilities are determined on a uniform basis, considering long-term historical returns and future estimates of returns and medical inflation expectations. In the event that further changes in assumptions are required, the future amounts of post-retirement benefits may be affected materially. The overall expected rate of return on asset is determined based on the market prices prevailing at that date, applicable to the period over which the obligation is to be settled.

#### *Post-employment benefits*

The NNR provides defined benefit and defined contribution plans for the benefit of Employees. These plans are funded by the Employees and the entity, taking into account recommendations of the independent actuaries. The post-retirement medical liability is unfunded.

#### *Defined contribution plans*

The entity's funding of the defined contribution plans is charged to Employee expenses in the same year as the related service is provided.





## 19.9 NOTES TO THE ANNUAL FINANCIAL STATEMENTS

Notes to the Annual Financial Statements for the year ended 31 March 2010 - continued

The amount recognised in the statement of financial position represents the present value of the defined benefit obligations, calculated by using the projected unit credit method, as adjusted for unrecognised actuarial gains and losses, unrecognised past service costs if any and reduced by the fair value of the related plan assets.

The amount of any surplus recognised and reflected as deferred expenses is limited to unrecognised actuarial losses and past service costs plus the present value of available refunds and reductions in future contributions to the plan. To the extent that there is uncertainty as to the entitlement to the surplus, no asset is recognised. No gain is recognised solely as a result of an actuarial loss or past service cost in the current period and no loss is recognised solely as a result of an actuarial gain or past service cost in the current period. The entity recognises actuarial gains and losses for all its defined plans in the period in which they occur.

Past service costs are recognised immediately to the extent that the benefits are vested, otherwise they are recognised on a straight-line basis over the average period the benefits become vested.

### Short term Employee benefit

The cost of all short term Employee benefits is recognised during the period in which the Employee renders the related service. Provision for Employee's entitlement to annual leave represents a present obligation which NNR has to pay as a result of Employee's services provided to the reporting date. Annual leave is provided for over the period that the leave accrues.

### 1.16 Provisions and Contingent Liability

Management judgment is required when recognising and measuring provisions and when measuring contingent liabilities as set out in Notes 8 and 14 respectively. The probability that an outflow of economic resources will be required to settle the obligation must be assessed and a reliable estimate must be made of the amount of the obligation.

The entity is required to recognise provisions for claims arising from litigation when the occurrence of the claim is probable and the amount of the loss can be reasonably estimated. Liabilities provided for legal matters require judgments regarding projected outcomes and ranges of losses based on historical experience and recommendations of legal counsel. Litigation is however unpredictable and actual costs incurred could differ materially from those estimated at the reporting date.

### 1.17 Related Parties

Parties are considered to be related if one party has the ability to control the other party or to exercise significant influence or joint control over the other party in making financial and operating decisions.

### 1.18 Comparatives

Comparative figures are restated in the event of a change in accounting policy or prior period error.

## 19.9 NOTES TO THE ANNUAL FINANCIAL STATEMENTS

Notes to the Annual Financial Statements for the year ended 31 March 2010 - continued

### 1.19 Events After Reporting Date

Recognised amounts in the Annual Financial Statements are adjusted to reflect events arising after the reporting date that provide evidence of conditions that existed at the reporting date. Events after the Statement of Financial Position that are indicative of conditions that arose after the reporting date are dealt with by way of a note.

### 1.20 Presentation Currency

All amounts have been presented in the currency of South African Rand which is the functional currency of the entity.

### 1.21 Statements In Issue But Not Yet Effective

At the date of authorisation of these Annual Financial Statements, the following accounting standards of Generally Recognised Accounting Principles (GRAP) were in issue, but not yet effective:

GRAP 18: Segment reporting

GRAP 21: Impairment of non-cash-generating assets

GRAP 23: Revenue from non-exchange transactions (taxes and transfers)

GRAP 24: Presentation of budget information in financial statements

GRAP 25: Employee benefits

GRAP 26: Impairment of cash-generating assets

GRAP 103: Heritage assets

GRAP 104: Financial instruments

## 2. PROPERTY, PLANT AND EQUIPMENT

	Cost R	2010 Accumulated Depreciation R	Carrying Value R	Cost R	2009 Accumulated Depreciation R	Carrying Value R
<b>Property, Plant and Equipment</b>	<b>10,024,278</b>	<b>4,619,830</b>	<b>5,404,448</b>	9,324,666	4,159,628	5,165,038
Furniture	1,959,685	660,481	1,299,204	1,524,631	594,420	930,211
Office equipment	1,204,834	595,283	609,551	1,135,762	810,695	325,067
Computer equipment	3,416,655	1,560,484	1,856,171	3,285,803	1,346,174	1,939,629
Scientific and Technical equipment	1,384,456	553,684	830,772	1,530,670	479,330	1,051,340
Capitalised leased asset	1,420,300	1,116,930	303,370	1,420,300	811,776	608,524
Motor vehicle	210,848	5,047	205,801	-	-	-
Building	213,750	127,921	85,829	213,750	117,233	96,517
Freehold land	213,750	-	213,750	213,750	-	213,750

Fully depreciated assets with a cost of R983,856 were derecognised in the 2010 financial year. This has reduced both the cost price and accumulated depreciation of property, plant and equipment.



## 19.9 NOTES TO THE ANNUAL FINANCIAL STATEMENTS

Notes to the Annual Financial Statements for the year ended 31 March 2010 - continued

### 2. PROPERTY, PLANT AND EQUIPMENT continues

The carrying amounts of property, plant and equipment can be reconciled as follows:

	Carrying value at the beginning of the year	Additions	Depreciation	Impairment losses and write-offs	Transfer in/(out)	Carrying value at the end of the year
<b>2010</b>						
Furniture	930,211	496,164	(114,428)	(12,743)	-	1,299,204
Office equipment	325,067	362,231	(98,551)	(135)	20,939	609,551
Computer equipment	1,939,629	566,345	(627,654)	(1,210)	(20,939)	1,856,171
Scientific and Technical equipment	1,051,340	47,880	(268,448)	-	-	830,772
Capitalised leased asset	608,524	-	(305,154)	-	-	303,370
Motor vehicle	-	210,848	(5,047)	-	-	205,801
Building	96,517	-	(10,688)	-	-	85,829
Freehold land	213,750	-	-	-	-	213,750
	<b>5,165,038</b>	<b>1,683,468</b>	<b>(1,429,970)</b>	<b>(14,088)</b>	<b>-</b>	<b>5,404,448</b>

	Carrying value at the beginning of the year	Additions	Depreciation	Impairment losses and write-offs	Transfer in/(out)	Carrying value at the end of the year
<b>2009</b>						
Furniture	657,290	287,208	(13,938)	(349)	-	930,211
Office equipment	384,474	96,718	(108,625)	(47,500)	-	325,067
Computer equipment	2,155,386	528,393	(631,622)	(112,528)	-	1,939,629
Scientific and Technical equipment	94,733	1,203,424	(239,699)	(7,118)	-	1,051,340
Capitalised leased asset	913,448	-	(304,924)	-	-	608,524
Building	107,205	-	(10,688)	-	-	96,517
Freehold land	213,750	-	-	-	-	213,750
	<b>4,526,286</b>	<b>2,115,743</b>	<b>(1,309,496)</b>	<b>(167,495)</b>	<b>-</b>	<b>5,165,038</b>

The Freehold land and building consist of office block situated on erf 3187 Melkbosch Strand in the Blaauwberg Municipality, Cape Division, Western Cape.

## 19.9 NOTES TO THE ANNUAL FINANCIAL STATEMENTS

Notes to the Annual Financial Statements for the year ended 31 March 2010 - continued

### 3. INTANGIBLE ASSET

	Cost R	2010 Accumulated Depreciation R	Book value R	Cost R	2009 Accumulated Depreciation R	Book value R
Computer software	1,272,858	895,191	377,667	1,946,175	(1,404,076)	542,099

Fully amortised assets with a cost of R900, 698 were derecognised in the 2010 financial year. This has reduced both the cost price and accumulated amortisation of intangible asset.

The carrying amounts of intangible assets can be reconciled as follows:

	Carrying value at the beginning of the year R	Additions R	Amortisation R	Impairment losses and write-offs R	Carrying value at the end of the year R
<b>2010</b>					
Computer software	542,099	227,381	(391,813)	-	377,667
<b>2009</b>					
Computer software	879,227	164,317	(473,048)	(28,397)	542,099

	2010 R	2009 R
<b>4. TRADE AND OTHER RECEIVABLES</b>		
Trade receivables	2,701,307	5,205,470
Less: Provision for doubtful debts	(716,253)	(145,498)
Less: Fair value adjustment	(21,942)	(42,927)
Net trade receivables	1,963,112	5,107,045
Other receivables	823,978	1,020,684
	<b>2,787,090</b>	<b>6,037,729</b>



## 19.9 NOTES TO THE ANNUAL FINANCIAL STATEMENTS

Notes to the Annual Financial Statements for the year ended 31 March 2010 - continued

	2010 R	2009 R
<b>5. CASH AND CASH EQUIVALENT</b>		
Bank balance	55,251,847	39,910,391
Call Account	38,798,240	36,191,312
Petty cash	7,500	7,500
	<b>94,057,587</b>	76,109,203

### 6. EMPLOYEE BENEFIT

The NNR provides a benefit for all its permanent employees through the National Nuclear Regulator Retirement Fund, membership of the fund is compulsory. The fund consists of both defined benefit and defined contribution fund. The fund is governed by the Pension Fund Act, 1956 (Act no.24 of 1956).

In addition, certain retired employees receive medical aid benefits. The liabilities for all of the benefits are actuarially determined in accordance with accounting requirements each year. In addition, a statutory funding valuation for the retirement is performed at intervals not exceeding three years.

At 31 March 2010, the entity employed 94 employees (2009: 91)

Actuarial valuations were performed by qualified actuaries to determine the benefit obligation, plan asset and service costs for the pension and retirement funds for each of the financial periods presented.

#### 6.1 The National Nuclear Regulator Retirement Fund

The latest actuarial valuation performed at 31 March 2010 indicates that the pension fund is in a surplus position of R8,593,000, after unrecognised gains. The recognition of the surplus is limited due to the application of the asset limitation criteria in IAS19 (revised).

The last statutory funding valuation of the fund performed in 31 March 2010 indicated that the fund is fully funded. The current contributions are based on that valuation.

As of 1 August 2008 the NNR Retirement Fund became a hybrid defined benefit and defined contribution plan. The existing Employees were given the option to either remain in the defined benefit plan or be transferred to the defined contribution plan. 75 members were transferred to the defined contribution plan. The defined plan was closed for all new Employees. New members joining the fund after 1 August 2008 could only belong to the defined contribution plan.

## 19.9 NOTES TO THE ANNUAL FINANCIAL STATEMENTS

Notes to the Annual Financial Statements for the year ended 31 March 2010 - continued

	2010 R	2009 R
<b>6.1 The National Nuclear Regulator Retirement Fund</b> (continues)		
The funded status of the National Nuclear Regulator Fund is disclosed below.		
<b>Defined Benefit Plan</b>		
The net periodic retirement costs include the following components:		
Service cost	785,000	2,873,000
Interest costs	3,614,000	4,434,000
Expected return on plan asset	(4,157,000)	(6,892,000)
Recognised actuarial loss	506,000	193,960
Recognised actuarial loss on curtailment	-	4,770,000
Net periodic retirement costs	<b>748,000</b>	5,288,960
Movement in liability		
<b>Opening balance</b>	<b>41,516,000</b>	64,740,000
Amounts recognised in income statement	<b>4,905,000</b>	19,106,000
Current service cost	<b>785,000</b>	2,873,000
Interest cost	<b>3,614,000</b>	4,434,000
Recognised actuarial loss on curtailment	-	4,770,000
Actuarial loss	<b>506,000</b>	7,029,000
Curtailment	-	(36,671,000)
Benefit paid	<b>(2,635,000)</b>	(5,659,000)
<b>Closing balance</b>	<b>43,786,000</b>	41,516,000
Plan asset at fair value		
<b>Opening balance</b>	<b>42,937,000</b>	89,931,000
Expected return on plan asset	<b>4,157,000</b>	6,892,000
Benefit paid	<b>(2,635,000)</b>	(5,659,000)
Curtailment	-	(36,671,000)
Contributions	<b>689,000</b>	2,991,000
Actuarial gain/(loss)	<b>7,231,000</b>	(14,547,000)
<b>Closing balance</b>	<b>52,379,000</b>	42,937,000
<b>Status of the Retirement Fund:</b>		
Present value of funded obligation	<b>(43,786,000)</b>	(41,516,000)
Fair value of plan assets	<b>52,379,000</b>	42,937,000
Fund status	<b>8,593,000</b>	1,421,000
	<b>(8,593,000)</b>	(1,421,000)



## 19.9 NOTES TO THE ANNUAL FINANCIAL STATEMENTS

Notes to the Annual Financial Statements for the year ended 31 March 2010 - continued

	2010 R	2009 R
<b>6.1 The National Nuclear Regulator Retirement Fund</b> (continues)		
Net liability		
<i>Net liability limited as per IAS19 paragraph 58</i>		
Expected return on plan asset	4,157,000	6,892,000
Actuarial (loss)/gain on plan asset	7,231,000	(14,547,000)
Actual return on plan asset	11,388,000	7,655,000
Funding levels		
	119.6%	103.4%
<b>Principal actuarial assumptions were as follows:</b>		
Discount rate %	9.20%	8.90%
Expected return on plan assets %	9.70%	9.90%
General inflation rate	5.70%	5.90%
Salary inflation rate %	6.70%	6.80%
Pension increase %	4.00%	4.00%
Valuation rate of interest and expected return on investment was determined in reference to the current market yield of government bond. The discount rate is based on the yield of R186 government bond.		
General inflation rate is based on the yield of R186 fixed interest government bond and the R197 index linked to government bond as at each valuation date.		
The fund portfolio consists of the following:		
<b>Equity</b>	<b>70%</b>	70%
<b>Bond</b>	<b>30%</b>	30%
The number of pensioners registered under the NNR Retirement Fund		
	6	7
The number of in-service Employees registered under the NNR Retirement Fund		
	34	33

### 6.2 Defined Contribution Fund

All new Employees and existing Employees that selected to be transferred to the defined contribution plan are members of the NNR Retirement Fund - defined contribution plan. The plan is administered by ABSA Consultants and Actuaries (Proprietary) Limited. The current contributions to the retirement fund amounted to R7, 616,000 (2009: R4, 120,510).

### 6.3 Post-Retirement Medical benefit

The NNR makes certain contributions to medical funds in respect of current and retired Employees. The expense in respect of current Employees' medical aid is disclosed in note 10.1. The NNR has terminated future post-retirement medical benefits in respect of Employees joining after December 31 1995.

The entity pays 100% of the membership subscriptions for staff members who had retired from the services of the NNR (the then Council of Nuclear Science) on or before 30 July 1990 and also for those staff members retiring from the services of the entity

## 19.9 NOTES TO THE ANNUAL FINANCIAL STATEMENTS

Notes to the Annual Financial Statements for the year ended 31 March 2010 - continued

	2010 R	2009 R
<b>6.3 Post-Retirement Medical benefit</b> (continues)		
on or after 1 July 1990 who were in the continuous employment of the entity before 1 July 1990 to the date of retirement.		
The NNR introduced a sliding scale for membership subscriptions for staff joining after 1 July 1990. Subsidy reduced stepwise from 100% each six months to a minimum of 60% for Employees that joined the NNR after 1 July 1990 and before 31 December 1995.		
Eligible Employees must be employed by NNR until retirement age to qualify for the post-retirement medical aid benefit. The most recent actuarial valuation of the benefit was performed as at 31 March 2010.		
The obligation is unfunded*.		
Movement in liability		
<b>Opening balance</b>	<b>29,897,654</b>	28,499,867
Amounts recognised in profit and loss	<b>4,878,000</b>	2,670,802
Current service cost	<b>369,000</b>	431,039
Interest cost	<b>2,539,000</b>	2,613,907
Actuarial loss/(gain)	<b>1,970,000</b>	(374,144)
Benefit paid	(1,415,004)	(1,273,015)
<b>Closing balance</b>	<b>33,360,650</b>	29,897,654
Present value of unfunded obligation	<b>33,360,650</b>	29,897,654
Principal actuarial assumptions were as follows:		
Discount rate %	<b>9.25%</b>	8.60%
Medical inflation rate %	<b>8.25%</b>	7.60%
Number of members in active employment	<b>19</b>	20
Number of pensioners	<b>34</b>	33
Average retirement age	<b>60</b>	60

The mortality rate for pre-retirement is 55% of SA85-90 light mortality table and for post-retirement the published PA90 (ultimate) mortality tables for males and females were used.

\* The Liability for post-retirement liability is unfunded as the NNR does not have funds invested in a plan asset as defined by accounting standard. The NNR has however allocated funds to partially cover this liability, while in the process of determining the appropriate manner of managing this going forward.





## 19.9 NOTES TO THE ANNUAL FINANCIAL STATEMENTS

Notes to the Annual Financial Statements for the year ended 31 March 2010 - continued

	2010 R	2009 R
<b>7. TRADE AND OTHER PAYABLES</b>		
Trade payables	<b>4,385,163</b>	2,361,300
Less: Fair value adjustment	<b>(35,566)</b>	(32,179)
Net trade payables	<b>4,349,597</b>	2,329,121
Other payables	<b>1,540,393</b>	2,927,475
	<b>5,889,990</b>	5,256,596

	2010 R			2009 R		
	Annual leave	Bonus*	Total	Annual leave	Bonus*	Total
<b>8. PROVISIONS</b>						
Opening balance	<b>3,332,551</b>	<b>702,567</b>	<b>4,035,118</b>	3,177,513	1,473,633	4,651,146
Charge to employee costs	<b>2,040,323</b>	<b>4,329,420</b>	<b>6,369,743</b>	1,184,531	1,183,431	2,367,962
Utilisation of provisions	<b>(588,170)</b>	<b>(4,138,069)</b>	<b>(4,726,239)</b>	(1,029,493)	(1,954,497)	(2,983,990)
	<b>4,784,704</b>	<b>893,918</b>	<b>5,678,622</b>	3,332,551	702,567	4,035,118

\* This represents 13th cheque as per Employee salary structure.

	2010 R	2009 R
<b>9. OPERATING INCOME</b>		
Authorisation fees	<b>83,834,651</b>	64,513,264
Other income	<b>755,490</b>	957,729
	<b>84,590,141</b>	65,470,993
Government grant	<b>23,793,000</b>	20,333,000
	<b>108,383,141</b>	85,803,993

## 19.9 NOTES TO THE ANNUAL FINANCIAL STATEMENTS

Notes to the Annual Financial Statements for the year ended 31 March 2010 - continued

	2010 R	2009 R
<b>10. OPERATING EXPENSES</b>		
<b>10.1 Employee expenses</b>	<b>74,750,909</b>	59,638,750
Employee expenses include:		
Salaries	<b>55,015,678</b>	43,802,030
Employer contribution to medical aid	<b>1,898,133</b>	1,690,225
Employer contribution to retirement fund –defined benefit	<b>478,000</b>	2,214,000
Employer contribution to retirement fund –defined contribution	<b>4,650,425</b>	4,120,000
Post-retirement retirement fund: defined benefit	<b>7,920,000</b>	2,991,000
Current service cost	<b>785,000</b>	2,873,000
Interest cost	<b>3,614,000</b>	4,434,000
Recognised actuarial loss on curtailment	-	4,770,000
Actuarial loss	<b>506,000</b>	21,576,000
Expected return on plan asset	<b>(4,157,000)</b>	(6,892,000)
Reversal of prior-year un-recognised post-retirement benefit asset	<b>(1,421,000)</b>	(25,191,000)
Unrecognised post-employment benefit asset	<b>8,593,000</b>	1,421,000
Post-retirement medical benefit	<b>4,878,000</b>	2,670,802
Current service costs	<b>369,000</b>	431,039
Interest costs	<b>2,539,000</b>	2,613,907
Actuarial gain	<b>1,970,000</b>	(374,144)
<b>10.2 Service fees</b>	<b>8,035,931</b>	9,527,789
Technical services	<b>2,263,572</b>	6,376,104
Services contracts	<b>3,152,253</b>	1,707,440
External audit	<b>1,053,456</b>	586,494
Current year	<b>842,764</b>	586,494
Prior year	<b>210,691</b>	-
Internal audit	<b>900,855</b>	293,422
Audit	<b>801,486</b>	293,422
Other	<b>99,369</b>	-
Legal fees	<b>17,278</b>	-
Non-executive directors-for services as directors	<b>629,035</b>	539,138
Independent Audit Committee Member	<b>19,482</b>	25,191



## 19.9 NOTES TO THE ANNUAL FINANCIAL STATEMENTS

Notes to the Annual Financial Statements for the year ended 31 March 2010 - continued

	2010 R	2009 R
<b>10.3 Depreciation, amortisation, write-offs and impairment</b>	<b>1,835,871</b>	1,978,436
Depreciation on property, plant and equipment	<b>1,429,970</b>	1,309,496
Amortisation on intangible assets	<b>391,813</b>	473,048
Write-offs & impairment on property, plant and equipment	<b>14,088</b>	167,495
Write-offs & impairment on intangible asset	-	28,397

In recognition of the changed usage patterns of certain items of property, plant and equipment and the entity reviewed their remaining useful lives as at March 31. The assets affected were Furniture and Office Equipment. The revised estimated useful lives of these assets as set out below resulted in a decrease of the current year depreciation charges of R40, 230.

	Revised lives	Useful lives Yrs
<b>Property, plant and equipment</b>		
Furniture	<b>10-25</b>	<b>10-15</b>
Office equipment	<b>5-25</b>	<b>5-20</b>

	2010 R	2009 R
<b>10.4 Operating leases</b>	<b>5,603,335</b>	4,938,304
Office building	<b>5,454,980</b>	4,881,015
Vehicles	<b>148,355</b>	57,289

<b>10.5 Administrative Expenses</b>	<b>14,282,311</b>	17,621,022
Repairs and maintenance	<b>167,615</b>	549,126
Training and development	<b>1,854,531</b>	3,133,929
Travelling	<b>4,543,412</b>	5,442,288
General expenses	<b>7,716,753</b>	8,495,679

<b>11. FINANCE INCOME</b>	<b>5,451,320</b>	8,717,316
Interest received	<b>5,415,754</b>	8,637,045
Fair value adjustment on financial instrument	<b>35,566</b>	80,271

<b>12. FINANCE CHARGES</b>	<b>117,267</b>	306,696
Interest on finance lease	<b>95,324</b>	154,409
Fair value adjustment on financial instrument	<b>21,943</b>	152,287

## 19.9 NOTES TO THE ANNUAL FINANCIAL STATEMENTS

Notes to the Annual Financial Statements for the year ended 31 March 2010 - continued

2010	Fees	Performance Bonus	Retirement fund contribution	Other benefits	Total
<b>13. DIRECTORS EMOULMENTS</b>					
<b>Non-executive director</b>					
Prof MA Hermanus- Chairperson*	89,829	-	-	-	89,829
Dr TR Cohen- Chairperson**	19,962	-	-	-	19,962
Mr DP Elbrecht***	75,107	-	-	-	75,107
Mr K Govender*	34,650	-	-	-	34,650
Mr TN Mofokeng***	88,573	-	-	-	88,573
Ms Lieverink**	19,800	-	-	-	19,800
Mr WN Lesufi***	88,077	-	-	-	88,077
Ms TN Mgoduso*	62,062	-	-	-	62,062
Mr J Leaver**	19,800	-	-	-	19,800
Mr BA Ramahlo*	61,875	-	-	-	61,875
Prof D van der Merwe***	69,300	-	-	-	69,300
	<b>629,035</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>629,035</b>
<b>Independent Audit Committee Member</b>					
Ms P Mzizi	19,482	-	-	-	19,482
* Director term expired on 30 November 2009					
** Director appointed from 1 December 2009					
*** Director reappointed from 1 December 2009					

2010	Salary	Performance Bonus	Retirement fund contribution	Other benefits	Total
<b>Executive Director</b>					
Adv BM Mkhize (CEO) #	169,555	-	11,667	-	181,222
Mr G Clapisson (Acting CEO) ##	1,142,749	54,028	132,107	31,505	1,360,389
	<b>1,312,304</b>	<b>54,028</b>	<b>143,774</b>	<b>31,505</b>	<b>1,541,611</b>
<b>Executive Staff</b>					
Ms RJ Moloto	1,168,181	-	97,088	29,232	1,294,501
Ms LG Mashishi	1,035,569	36,350	49,016	-	1,120,935
Mr NM Msebenzi*	1,132,455	-	113,229	18,646	1,264,330
Mr JN Mwase**	917,399	-	130,246	19,428	1,067,073
	<b>4,253,604</b>	<b>36,350</b>	<b>389,579</b>	<b>67,306</b>	<b>4,746,839</b>

# Adv BM Mkhize was appointed CEO from 15 February 2010  
 ## Mr. G Clapisson term expired as Acting CEO from 15 February 2010  
 \* Mr. NM Msebenzi was appointed on 1 May 2009  
 \*\* Mr. JN Mwase was appointed on 1 June 2009



## 19.9 NOTES TO THE ANNUAL FINANCIAL STATEMENTS

Notes to the Annual Financial Statements for the year ended 31 March 2010 - continued

2009	Fees	Performance Bonus	Retirement fund contribution	Other benefits	Total
<b>13. DIRECTORS EMOULMENTS cont.</b>					
<b>Non-executive director</b>					
Prof MA Hermanus	60,220	-	-	-	60,220
Mr DP Elbrecht	84,178	-	-	-	84,178
Mr K Govender	31,046	-	-	-	31,046
Rev P Grove	28,806	-	-	-	28,806
Mr WN Lesufi	60,166	-	-	-	60,166
Ms TN Mgoduso	78,230	-	-	-	78,230
Adv BM Mkhize	73,606	-	-	-	73,606
Mr BA Ramahlo	66,886	-	-	-	66,886
Prof D van der Merwe	56,000	-	-	-	56,000
	539,138	-	-	-	539,138

### Independent Audit Committee Member

Ms P Mzizi	25,191	-	-	-	25,191
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2009	Salary	Performance Bonus	Retirement fund contribution	Other benefits	Total
<b>Executive Director</b>					
Mr M Magugumela (CEO)#	473,078	-	-	-	473,078
Mr G Clapissou (Acting CEO) ##	496,410	-	69,720	16,243	582,373
	969,488	-	69,720	16,243	1,055,451
<b>Executive Staff</b>					
Mr GA Clapissou	404,319	67,094	49,800	11,602	532,815
Mr ME Khoahli *	223,749	-	31,624	7,913	263,286
Ms RJ Moloto	451,243	-	37,500	10,819	499,562
Ms LG Mashishi	681,635	-	49,707	-	731,342
Mr CO Phillips	817,910	67,094	89,029	33,038	1,007,071
Dr T Hill	795,844	75,260	126,234	15,473	1,012,811
	3,374,700	209,448	383,894	78,845	4,046,887

- \* Mr. M Khoali resigned at the end of June 2008  
 # Mr. M Magugumela resigned as CEO at the end of June 2008  
 ## Mr G Clapissou was appointed Acting CEO from July 1, 2008  
 \*\* Ms. LG Mashishi was appointed on July 1, 2008  
 \*\*\* Ms. R Moloto was appointed on November 1, 2008

## 19.9 NOTES TO THE ANNUAL FINANCIAL STATEMENTS

Notes to the Annual Financial Statements for the year ended 31 March 2010 - continued

	Total R	Up to 1 year R	1 to 5 years R
<b>14. COMMITMENT</b>			
<b>2010</b>			
<b>14.1 Operating Lease</b>			
Building	59,596,937	6,337,992	53,258,945
Vehicles	52,514	52,514	-
	<b>59,649,451</b>	<b>6,390,506</b>	<b>53,258,945</b>
<b>2009</b>			
Building	4,881,015	4,881,015	-
Vehicles	109,803	57,289	52,514
	5,869,056	5,231,050	638,006
	<b>Future minimum lease payments R</b>	<b>Finance charges R</b>	<b>Present value of minimum lease payments R</b>
<b>14.2 Finance Lease</b>			
<b>2010</b>			
Less than one year	348,160	16,673	331,487
<b>2009</b>			
Less than one year	414,607	84,113	330,494
Between 1-5 years	485,309	16,313	468,996
	899,916	100,426	799,490

Finance leases are in respect of photocopiers and telephone system. Leases are classified as finance leases whenever the terms of the lease transfer substantially all the risks and rewards of ownership to the lessee.

The average remaining term of photocopier finance leases is 0.67 years. The interest rate inherent in the leases is at the prime interest rate for the duration of the lease term. The effective interest rate contracted is approximately 8%.

	2010 R	2009 R
<b>14.3 Capital expenditure</b>		
Commitments against authorised capital expenditure	1,335,984	305,403
Authorised capital expenditure not yet contracted	2,302,117	605,490
Capital commitment authorised	3,638,101	910,893



## 19.9 NOTES TO THE ANNUAL FINANCIAL STATEMENTS

Notes to the Annual Financial Statements for the year ended 31 March 2010 - continued

	2010 R	2009 R
<b>15. CONTINGENT LIABILITY</b>		
Surplus	9,500,802	510,312

A contingent liability has arisen as a result of NNR having a surplus for the reporting period. The extent to which an outflow of funds will be required is dependent on the outcome of the application to retain the funds in terms of Section 53 (3) of the PFMA.

### 16. RELATED PARTIES

During the year under review, the NNR, in the ordinary course of its business, entered into various transactions with related parties which terms are no less favourable than with third parties.

#### Directors

Details of directors' emoluments are disclosed under note 13.

#### Transactions with Directors

All directors have given general declarations of interest in terms of section 243 (3a) of the Companies Act. These declarations indicate that no member of the Board hold other directorships in South African entities with whom transactions are conducted by NNR in terms of a customer/supplier relationship.

#### Transactions with National Departments of Government

All National Departments of Government are regarded to be related parties in accordance with circular 4 of 2005: Guidance on the term "State controlled entities" in the context of IAS 24 (AC 126) - Related Parties, issued by the South African Institute of Chartered Accountants. No transactions are implicated by simply the nature of the existence of the relationship between entities. However, the following transactions were recorded relating to transactions with related parties as defined above:

Name of related party	Nature of the transaction	2010	2009
<b>Income</b>			
Department of Minerals and Energy	Grant	23,793,000	20,333,000
Eskom-Koeberg Power Station	Authorisation fees	34,527,996	32,712,413
Eskom	Special projects	12,563,694	25,273,719
Eskom - Pebble Modular Reactor	Authorisation fees	15,163,981	11,029,751
PBMR - Fuel Fabrication Plant	Authorisation fees	4,459,994	2,524,177
NECSA – Pelindaba	Authorisation fees	14,825,982	6,947,000
NECSA – Vaalputs	Authorisation fees	2,675,997	2,488,775
The SA Navy	Authorisation fees	291,966	79,288
Transnet Port Terminals	Authorisation fees	147,171	9,298
SAPS- Forensic Science Laboratory	Authorisation fees	15,912	12,452
South African Air Force	Authorisation fees	17,480	-

## 19.9 NOTES TO THE ANNUAL FINANCIAL STATEMENTS

Notes to the Annual Financial Statements for the year ended 31 March 2010 - continued

Name of related party	Nature of the transaction	2010 R	2009 R
<b>Expenses</b>			
Eskom	Special projects	12,563,694	25,273,719
Telkom	Telephone	634,084	683,553
SARS	PAYE	17,811,402	16,361,005
NECSA	Sample analysis	204,314	46,179
<b>Accounts receivables</b>			
Eskom	Special projects	128,406	642,638
The SA Navy	Authorisation fees	291,966	79,288
Transnet Port Terminals	Authorisation fees	147,171	9,298
SAPS- Forensic Science Laboratory	Authorisation fees	15,912	12,452
South African Air Force	Authorisation fees	17,480	-

	2010 R	2009 R
<b>17. RECONCILIATION OF SURPLUS FOR THE YEAR TO CASH GENERATED FROM OPERATIONS</b>		
Operating surplus/(deficit) for the year	4,166,749	(7,900,308)
Non-cash items	12,319,635	6,897,777
Depreciations	1,429,970	1,309,496
Amortisations	391,813	473,048
Write-offs and impairment on property, plant and equipment	14,088	167,495
Write-offs and impairment on intangible assets	-	28,397
Increase in provision for leave pay and bonuses	6,369,742	2,367,962
Provision for doubtful debt	651,026	495,983
Bad debt	-	657,609
Increase in provision for retirement medical benefit	3,462,996	1,397,787
Working capital changes	(1,479,607)	(4,320,157)
Decrease/(Increase) in accounts receivables	2,635,179	(34,902)
Decrease in provision for leave and bonus	(4,726,239)	(2,983,990)
Increase/(Decrease) in accounts payables	611,453	(1,301,265)
	15,006,777	(5,322,688)

### 18. FINANCIAL INSTRUMENTS

Financial instruments consist of cash and cash equivalents, trade and other receivables, and trade and other payables.





## 19.9 NOTES TO THE ANNUAL FINANCIAL STATEMENTS

Notes to the Annual Financial Statements for the year ended 31 March 2010 - continued

2010  
R

2009  
R

### 18.1 Credit Risk

Financial assets, which potentially subject the NNR to concentrations of credit risk, consist principally of cash and trade receivables. Trade receivables are presented net of the allowance for doubtful debts. Credit risk with respect to trade receivables is limited owing to the large number of license holders being dispersed across different industries. Accordingly the NNR has no significant concentration of credit risk.

The carrying amounts of financial assets included in the Statement of Financial Position represent the exposure of the NNR to credit risk in relation to those assets. Trade and other receivables are managed by applying policies and procedures.

The NNR does not have exposure to any single individual license holder or counter party.

### 18.2 Interest Rate Risk

The level of exposure to interest rate fluctuation is very low as NNR does not have debt. The interest on assets is also very limited.

### 18.3 Fair Value of Financial Instrument

At 31 March 2010 the carrying amounts of cash, accounts receivable and accounts payable approximated their fair values due to the short-term maturities of these assets and liabilities. The net fair value of the assets and liabilities of the NNR are stated below:

#### Assets

Cash and cash equivalent	94,057,587	76,109,203
Trade and other receivables	2,787,090	6,037,729

#### Liabilities

Trade and other payables	5,889,990	5,256,596
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## 19. DEFERRED INCOME

### 19.1 Nature and Extent of Government Grant

The Department of Minerals and Energy has approved the allocation of the funds towards the establishment of a laboratory.

### 19.2 Unfulfilled conditions in terms of the Grant

Government grant received	18,000,000	18,000,000
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## 19.9 NOTES TO THE ANNUAL FINANCIAL STATEMENTS

Notes to the Annual Financial Statements for the year ended 31 March 2010 - continued

	2010 R	2009 R
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### 20. SPECIAL PROJECT

In terms of section 5(b)(i) of the NNR Act, (Act No 47 of 1999) the Regulator should exercise regulatory control related to safety over the siting, design, construction, operation, manufacture of component parts, and decontamination, decommissioning and closure of nuclear installations. In compliance with the afore going during the financial year the NNR had an arrangement with Eskom, the applicant for the Pebble Bed Modular Reactor nuclear installation licence, for certain fees, disbursements and expenses necessarily incurred and not provided for in the licence application fee as contemplated in section 28 of the National Nuclear Regulator Act project. The full income and expenditure associated with the project has been:

Fees received from Eskom	12,563,694	25,273,719
Fees paid for the project to consultants	(12,563,694)	(25,273,719)
	-	-

### 21. IRREGULAR EXPENDITURE

#### 21.1 Reconciliation of fruitless and wasteful expenditure

Opening balance	3,543,388	4,426,026
Add: Irregular Expenditure – current year	3,372,194	1,891,491
Less: Amounts condoned	(171,000)	(2,774,129)
Irregular Expenditure awaiting condonation	6,744,582	3,543,388

#### Details of Irregular Expenditure

<b>21.2 Finance lease office equipment</b>	<b>331,487</b>	799,460
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Irregular expenditure was identified and has been recognised due to the reclassification of operating leases to finance leases. The expenditure has been treated as an asset in the statement of financial position until it is recovered, written off as irrecoverable; lease is terminated or condoned by the National Treasury.

Irregular expenditure has been recognised as a result of non-compliance with Treasury Regulation Practice note 8 of 2007/08. The total expenditure has been treated as operating expenses in the statement of financial performance. The expenditure will be disclosed until it is condoned by the relevant authority.



## 19.9 NOTES TO THE ANNUAL FINANCIAL STATEMENTS

Notes to the Annual Financial Statements for the year ended 31 March 2010 - continued

### 21.3 Irregular expenditure

Description	Incident	2010 R	2009 R
Goods and services with a transaction value above R10 000 but not exceeding R500 000 were procured without inviting at least three price quotations. This expenditure was condoned.	Board Valuation	171,000	-
The preference point system as required by the Preferential Procurement Policy Framework Act (Act no. 5 of 2000) was not applied in the procurement of all goods and services between R30 000 and R300 000. The items were grouped per category of expenditure. To be presented to the appropriate authority to determine whether to condone or not.	Human resource consulted	557,756	-
	Plant, property and equipment	627,086	-
	Cleaning contract	166,324	-
	Public relations	281,910	-
	Meeting, Venue Coordinator	222,982	-
	Repairs and maintenance	104,508	-
	IT related services	157,411	-
	Consultant (PR)	645,780	-
	Consultant (RENS)	352,879	-
	Maintenance & service contracts	85,000	-
Goods and services with a transaction value above R10 000 but not exceeding R500 000 were procured without inviting at least three price quotations. These items were condoned.	Actuarial Services	-	43,320
	Asset valuation services	-	103,856
	Printing Works	-	282,081
	Accounting Services	-	412,908
	Internal Audit Services	-	294,241
	Insurance Services	-	275,902
	Meeting, Venue Coordinator	-	173,269
	Salary restructuring process	-	211,914
	Finance lease	-	799,460
	Human resource consulted	-	2,633,015

### 22. TAXATION

The entity is exempted from income tax as more than 80% of the expenditure is defrayed from funds voted by Parliament. The entity also is exempted from Value Added Tax (VAT) on grant received and authorisation fees as they comprises, funds voted by Parliament. As a result, any Vat paid the entity is also non-refundable from SARS.

### 23. COMPARATIVES

Comparative figures have been restated to account for :

**23.1** Change in value of assets previous acquired at cost much lower than the fair value. These assets were considered at the end of the previous year to be idling and have reached their useful lives. Their useful lives were extended in lieu of the fact that the NNR will be relocating and replacement will only take place then.

**23.2** Correcting the classification of the telephone system from an operating lease to finance lease. The system was acquired in 2006 and was acquired under rental agreement for 48 months. This was considered to be an operating lease as the asset will be returned at the end of the term to the lessor.

The impact are as follows:

## 19.9 NOTES TO THE ANNUAL FINANCIAL STATEMENTS

Notes to the Annual Financial Statements for the year ended 31 March 2010 - continued

	2010 R	2009 R
<b>23. COMPARATIVES continues</b>		
<b>Statement of Financial Performance</b>		
Fees paid for the project to consultants	-	38,351
Net increase of depreciation on property, plant and equipment	-	(137,010)
Decrease in rental charge on telephone system	-	32,355
Increase in finance charges		
<b>Statement of Financial Position</b>		
Increase in carrying balance of property, plant and equipment	-	203,154
Increase in financial liability - noncurrent liability	-	44,323
Increase in financial liability - current liability	-	120,880
<b>Changes in net asset</b>		
Accumulated reserve at the beginning of the period	66,304	28,353
<b>24. POST REPORTING DATE EVENT</b>		
In June 2010, NNR acquired branded soccer t-shirts for it staff and directors as shown in page 147 .		
		<b>2010 R</b>
<b>25. BUDGET SURPLUS/DEFICIT – GRAP 1 REQUIREMENT</b>		
<b>Reconciliation between budget and statement of financial performance</b>		
Reconciliation of budget surplus/deficit with the surplus/deficit in the statement of financial performance		
Net surplus per the statement of financial performance		<b>9,500,802</b>
Adjusted for:		<b>4,128,110</b>
Write-offs and impairment on property, plant and equipment		<b>14,088</b>
Provision for doubtful debt		<b>651,026</b>
Increase in provision for retirement medical benefit		<b>3,462,996</b>
Total surplus for the year		<b>13,628,912</b>
<b>Income:</b>		
Interest received		<b>(1,118,705)</b>
		<b>12,510,207</b>
<b>Expenditure:</b>		
		<b>13,166,527</b>
Consultancy cost		<b>5,902,838</b>
Personnel expenditure		<b>4,752,068</b>
Administrative expenses		<b>2,511,621</b>
<i>Net deficit per approved budget</i>		<b>(656,320)</b>

## 19.9 NOTES TO THE ANNUAL FINANCIAL STATEMENTS

Notes to the Annual Financial Statements for the year ended 31 March 2010 - continued

### Schedule A: World Cup Expenditure

Purchase of other World Cup apparel	Quantity	2009/10	2008/09
		R	R
Specify the nature of the purchase (e.g T-shirts, caps etc)			
NNR Branded T-shirts	130	99,886	-
	130	99,886	-
Total World Cup Expenditure		99,886	-

MOREOVER, THE SCIENCES ARE  
MONUMENTS DEVOTED TO THE PUBLIC  
GOOD; EACH CITIZEN OWES TO THEM A  
TRIBUTE PROPORTIONAL TO HIS TALENTS.

**Charles-Augustin de Coulomb**  
PHYSICIST



## 20.

## ABBREVIATIONS/ACRONYMS

<b>AADQ</b>	Annual Authorised Discharge Quantity	<b>EPSOC</b>	Emergency Planning, Steering and Oversight Committee
<b>ACR</b>	Authorisation Change Request	<b>E-SETA</b>	Energy Sector Education and Training Authority
<b>AFRA</b>	African Regional Co-operative Agreement	<b>FRAREG</b>	Forum of Regulators Group of Framatome Power Reactors
<b>ALARA</b>	As Low as Reasonably Achievable	<b>FNRBA</b>	Forum of Nuclear Regulatory Bodies in Africa
<b>AECC</b>	Alternative Emergency Control Centre	<b>GAAP</b>	Generally Accepted Accounting Practice
<b>ARN</b>	Argentinean Nuclear Regulatory Authority	<b>GRAP</b>	Generally Recognised Accounting Practice
<b>ARPANSA</b>	Australian Radiation Protection and Nuclear Safety Authority	<b>HAZCOM</b>	Hazardous Materials in the Metallic Raw Material Recycling Industry
<b>ASN</b>	French Nuclear Regulatory Authority	<b>HEU</b>	Highly Enriched Uranium
<b>ASP</b>	Aerodynamic Separation Process	<b>HPC</b>	Health Physics Controller
<b>BAT</b>	Best Available Techniques	<b>HSE</b>	Health and Safety Executive
<b>BCP</b>	Business Continuity Plan	<b>HTGR</b>	High Temperature Gas-Cooled Reactor
<b>BEP</b>	Best Environmental Practice	<b>IAEA</b>	International Atomic Energy Agency
<b>Bq</b>	Becquerel	<b>ICRP</b>	International Commission on Radiation Protection
<b>CAA</b>	Civil Aviation Authority	<b>ICT</b>	Information Communication and Technology
<b>CBO</b>	Community-Based Organisations	<b>IDP</b>	Individual Development Plan
<b>CEO</b>	Chief Executive Officer	<b>INES</b>	International Nuclear Event Scale
<b>CMC</b>	Cape Metropolitan Council	<b>INPO</b>	International Nuclear Power Operations
<b>CNS</b>	Convention on Nuclear Safety	<b>INSAG</b>	International Nuclear Safety Advisory Group of the IAEA
<b>CoCT</b>	City of Cape Town	<b>IRRS</b>	Integrated Regulatory Review Service
<b>CODIRPA</b>	Committee for the Post-Accident Management Phase	<b>IRSN</b>	Institute of Radiation Protection and Nuclear Safety
<b>COM</b>	Chamber of Mines	<b>INLA</b>	International Nuclear Law Association
<b>COR</b>	Certificate of Registration	<b>INLEX</b>	International Nuclear Liability Expert Group
<b>CSS</b>	Commission on Safety Standards	<b>ISI</b>	In-service Inspection
<b>DEAT</b>	Department of Environmental Affairs and Tourism	<b>KEDC</b>	Koeberg Environs Development Committee
<b>DGSNR</b>	Directorate of Nuclear and Radiation Protection	<b>KLLC</b>	Koeberg Licensing Liaison Committee
<b>DME</b>	Department of Minerals and Energy	<b>KLI</b>	Key Licensing Issue
<b>DOA</b>	Department of Agriculture	<b>KNPS</b>	Koeberg Nuclear Power Station
<b>DOC</b>	Disaster Operations Centre	<b>LEU</b>	Low Enriched Uranium
<b>DOE</b>	Department of Energy	<b>LOCA</b>	Loss of Coolant Accident
<b>DG</b>	Director General	<b>LMC</b>	Licence Management Committee
<b>DOL</b>	Department of Labour	<b>LPM</b>	Licensing Project Meeting
<b>DPP</b>	Demonstration Power Plant	<b>LSA</b>	Low Specific Activity
<b>DWAF</b>	Department of Water Affairs and Forestry	<b>LUA</b>	Lead Use Assembly
<b>EE</b>	Employment Equity	<b>MDEP</b>	Multinational Design Evaluation Programme
<b>ECC</b>	Emergency Control Centre	<b>µSv</b>	microSievert
<b>EdF</b>	Electricite de France	<b>mSv</b>	milliSievert
<b>EPR</b>	European Pressurised Reactor		



<b>MIG</b>	Mining Interest Group	<b>RENS</b>	Regulation of Natural Sources
<b>MOA</b>	Memorandum of Agreement	<b>RO</b>	Regulatory Officers
<b>MOU</b>	Memorandum of Understanding	<b>RPM</b>	Radiation Protection Monitor
<b>MTR</b>	Material Test Reactors	<b>RPO</b>	Radiation Protection Officer
<b>MWe</b>	Megawatt Electrical	<b>RPS</b>	Radiation Protection Specialist
<b>NDE</b>	Non-destructive Evaluation	<b>RPV</b>	Reactor Pressure Vessel
<b>Necsa</b>	South African Nuclear Energy Corporation	<b>RSR</b>	Railway Safety Regulator
<b>NEPROC</b>	Nuclear Emergency Preparedness Regulatory Oversight Committee	<b>RSRP</b>	Regulations on Safety Standards and Regulatory Practices
<b>NERS</b>	Network of Regulators of Countries with Small Nuclear Programmes	<b>RTMC</b>	Road Transport Management Corporation
<b>NGO</b>	Non-governmental Organisation	<b>SADC</b>	Southern African Development Community
<b>NIA</b>	National Intelligence Agency	<b>SAG</b>	European Union Safety Advisory Group
<b>NLM</b>	Nuclear Liabilities Management	<b>SAMSA</b>	South African Maritime Safety Authority
<b>NNR</b>	National Nuclear Regulator	<b>SAR</b>	Safety Analysis Report
<b>NNR Act</b>	National Nuclear Regulator Act	<b>SARS</b>	South African Revenue Services
<b>NORM</b>	Naturally Occurring Radioactive Material	<b>SALTO</b>	Safety Assessment Long Term Operation
<b>NRC</b>	Nuclear Regulatory Commission	<b>SCM</b>	Special Case Mine
<b>NTWP</b>	Nuclear Technology and Waste Projects	<b>SCS</b>	Special Case Shaft
<b>NUSSC</b>	Nuclear Safety Standards Committee	<b>SETA</b>	Sector Education and Training Authority
<b>NWU</b>	North West University	<b>SRA-2</b>	Second Safety Reassessment
<b>OTS</b>	Operating Technical Specification	<b>SSC</b>	Structure, System, Component
<b>OEP</b>	Occupationally Exposed Personnel	<b>SSRP</b>	Safety Standards and Regulatory Practices
<b>PAM</b>	Protective Action Management System	<b>STC</b>	Steering Technical Committee
<b>PAZ</b>	Protective Action Zone	<b>TC</b>	Technical Cooperation
<b>PAYE</b>	Pay As you Earn	<b>TLD</b>	Thermo-Luminescent Dosimeter
<b>PBL</b>	Process-Based Licensing	<b>TOR</b>	Terms of Reference
<b>PBMR</b>	Pebble Bed Modular Reactor	<b>TSC</b>	Technical Support Centre
<b>PFMA</b>	Public Finance Management Act	<b>TRANSSC</b>	Transport Safety Standards Committee
<b>PFPP</b>	Proposed Pebble Bed Modular Reactor Fuel Manufacturing Plant	<b>TSO</b>	Technical Support Organisation
<b>PN</b>	Problem Notification	<b>USNRC</b>	United States Nuclear Regulatory Commission
<b>PRPP</b>	Public Radiation Protection Programme	<b>UTS/SRSM</b>	Upgraded Technical Specification and Safety Related Surveillance Manual
<b>PSA</b>	Public Safety Assessments	<b>UWC</b>	University of Western Cape
<b>PSIF</b>	Public Safety Information Forum	<b>VAT</b>	Value Added Tax
<b>PWR</b>	Pressurised Water Reactor	<b>WANO</b>	World Association of Nuclear Operators
<b>QFD</b>	Quartz Fibre Dosimeter	<b>WASSC</b>	Waste Safety Standards Committee
<b>RADCON</b>	Radiation Control	<b>WCA</b>	Wonderfonteinspruit Catchment Area
<b>RaSIA</b>	Radiation Safety Infrastructure Appraisal	<b>WGCMO</b>	Working Group on Component Manufacturing Oversight
<b>RASSC</b>	Radiation Safety Standards Committee	<b>WHO</b>	World Health Organisation
<b>RD</b>	Requirement Document		

# 21.

## GLOSSARY

Term	Definition
Action	<p>The use, possession, production, storage, enrichment, processing, reprocessing, conveying or disposal, or causing to be conveyed, of radioactive material.</p> <p>Any action, the performance of which may result in persons accumulating a radiation dose resulting from exposure to ionising radiation</p> <p>Any other action involving radioactive material.</p>
Assessment	The process, and the result, of systematically analysing the hazards associated with sources and actions, and associated protection and safety measures, aimed at quantifying performance measures for comparison with criteria.
Becquerel (Bq)	The unit of radioactivity in nuclear transformations (or disintegrations) per second.
Clearance	Removal of radioactive materials or radioactive objects within actions authorised by a nuclear installation licence, nuclear vessel licence or certificate of registration from any further control by the Regulator.
Collective dose	An expression of the total radiation dose incurred by a population, defined as the product of the number of individuals exposed to a source and their average radiation dose. The collective dose is expressed in person-sievert (person.sv).
Critical group	A group of members of the public that is reasonably homogeneous with respect to its exposure to a given radiation source and given exposure pathway, and is typical of individuals receiving the highest effective dose or equivalent dose (as applicable) by the given exposure pathway from the given source.
Decommissioning	Administrative and technical actions taken to allow the removal of all of the regulatory controls from a facility (except for a repository which is closed and not decommissioned).
Defence in depth	The application of more than a single protective measure for a given radiation or nuclear safety objective, so that the objective is achieved, even if one of the protective measures fails.
Discharge	A planned and controlled release of radioactive nuclides into the environment.
Disposal	The emplacement of radioactive waste in an approved, specified facility without the intention of retrieval. The term "dispose of" has a corresponding meaning.
Disused sealed source	A radioactive source, comprising radioactive material that is permanently sealed in a capsule or closely bonded and in a solid form (excluding reactor fuel elements) that is no longer used and is not intended to be used for the action for which an authorisation had been granted.
Dose	The amount of radiation received, where the use of a more specific term, such as "effective dose" or "equivalent dose" is not necessary for defining the quantity of interest.
Dose constraint	<p>A prospective and source-related restriction on the individual dose, arising from the predicted operation of the authorised action, which serves exclusively as a bound on the optimisation of radiation protection and nuclear safety:</p> <p>to limit the range of options considered in the optimisation process; and</p> <p>to restrict the doses via all exposure pathways to the average member of the critical group, in order to ensure that the sum of the doses received by that individual from all controlled sources remains</p>





Term	Definition
Dose constraint cont.	within the dose limit, and which, if found retrospectively to have been exceeded, should not be regarded as an infringement of regulatory requirements but rather as a call for the reassessment of the optimisation of radiation protection.
Dose limit	The value of the effective dose or equivalent dose to individuals from actions authorised by a nuclear installation licence, nuclear vessel licence or certificate of registration, which must not be exceeded.
Emergency planning	The process of developing and maintaining the capability to take action that will reduce the impact of an emergency on persons, property or the environment.
Emergency preparedness	The capability to promptly take action that will effectively reduce the impact of an emergency on persons, property or the environment.
Emergency response	The performance of action to reduce the impact of an emergency on persons, property or the environment.
Environmental monitoring	The measurement of external dose rates, due to sources in the environment, and of radioactive nuclide concentrations in environmental media.
Exposure	The act or condition of being subject to irradiation.
Exposure pathways	A route by which radioactive material can reach or irradiate humans.
Inspector	The person appointed as such in terms of Section 41(1) of the NNR Act.
Minister	The Minister of Minerals and Energy.
Monitoring	The continuous or periodic measurement of radiological and other parameters, or the determination of the status of a system.
Nuclear accident	Any event or succession of events having the same origin and resulting in an unintended/unauthorised exposure to radiation or the release of radioactive material, which is capable of giving rise to an effective dose in excess of 1 msv to the public off-site within a year, or in excess of 50 msv to a worker on site, essentially received at the time of the event.
Nuclear authorisation	A nuclear installation licence, nuclear vessel licence, certificate of registration or certificate of exemption.
Nuclear damage	Any injury to or the death or any sickness or disease of a person; or other damage, including any damage to or any loss of use of property or damage to the environment, which arises out of, or from, or is attributable to, the ionising radiation associated with a nuclear installation, nuclear vessel or action.
Nuclear incident	Any unintended event that is reasonably capable of giving rise to an effective dose equal to, or in excess of 0.1 msv to the public off site received essentially at the time of the event, or the unintended spread of radioactive contamination or exposure to radiation, which could reasonably give rise to an effective dose in excess of 20 msv to a worker on site, received essentially at the time of the event, or significant failure of safety provisions.
Nuclear installation	A facility, installation, plant or structure, designed or adapted for, or which may involve the conducting of any process, other than the mining and processing of ore, within the nuclear fuel cycle, involving radioactive material, including, but not limited to: <ul style="list-style-type: none"> <li>a uranium or thorium refinement or conversion facility;</li> <li>a uranium enrichment facility;</li> <li>a nuclear fuel fabrication facility</li> <li>a nuclear reactor, including a nuclear fission reactor or any other facility intended to create nuclear fusion;</li> <li>a spent nuclear fuel reprocessing facility;</li> </ul>

**Marie Steyn**  
**Payroll Administrator**



**Marijke Botes**  
**Debtors Clerk**

Ensuring accurate invoicing of all NNR holders and other debtors. Insuring payments are done accurately and on time. Following up on all queries and resolving them as quick as possible.

**Philosophy:** Treat others as you want them to treat you. Your tone of voice can turn a difficult client completely around.



Term	Definition
Nuclear installation Cont.	a spent nuclear fuel storage facility; an enriched uranium processing and storage facility; and a facility, specifically designed to handle, treat, condition, temporarily store or permanently dispose of any radioactive material that is intended to be disposed of as waste material; or any facility, installation, plant or structure, declared to be a nuclear installation, in terms of Section 2(3) of the NNR Act.
Nuclear safety	The achievement of safe operating conditions, the prevention of nuclear accidents or the limiting of nuclear accident consequences, resulting in the protection of workers, the public and the environment, against the potential harmful effects of ionising radiation or radioactive material.
Radiation protection	The protection of people from the effects of exposure to ionising radiation, and the means of achieving this.
Radiation protection monitor	A person, technically competent in radiation protection matters, relevant to a given type of action, who is designated by the holder of a nuclear authorisation to perform radiation measurements.
Radiation protection officer	A person, technically competent in radiation protection matters, relevant for a given type of action, who is designated by the holder of a nuclear authorisation to oversee the application of relevant requirements.
Radiation protection specialist	A person trained in radiation protection and other areas of specialisation necessary to be able to assess radiological conditions, to limit radiological consequences or to control doses.
Radioactive material	Any substance consisting of, or containing any radioactive nuclide, whether natural or artificial, including, but not limited to, radioactive waste and spent nuclear fuel.
Radioactive nuclide	Any unstable atomic nucleus, which decays spontaneously with the accompanying emission of ionising radiation.
Radioactive waste	Any material, whatever its physical form, remaining from an action requiring a nuclear installation licence, nuclear vessel licence or certificate of registration, and for which no further use is foreseen, and that contains or is contaminated with radioactive material and does not comply with the requirements for clearance.
Radioactive waste acceptance criteria	The quantitative or qualitative criteria, specified by the operator and approved by the regulator, for radioactive waste to be accepted by the operator of a repository for disposal, or by the operator of a storage facility for storage.
Risk	(Qualitatively expressed), the probability of a specified health effect occurring in a person or a group of persons, as a result of exposure to radiation or (quantitatively expressed), a multi-attribute quantity expressing hazard, danger or chance of harmful or injurious consequences associated with actual or potential exposure relating to quantities, such as the probability that specific deleterious consequences may arise, as well as the magnitude and character of such consequences.
Safety assessment	An analysis to evaluate the performance of an overall system and its impact, where the performance measure is radiological impact or some other global measure of impact on safety.
Safety case	A collection of arguments and evidence in support of the safety of a facility or action. This normally includes the findings of a safety assessment and a statement of confidence in these findings.
Source	Anything that may cause radiation exposure, such as by emitting ionising radiation or releasing radioactive substances or materials; a complex or multiple installation situated at one location or site may, as appropriate, be considered as a single source.







Protecting People, Property & the Environment

IT STANDS TO THE  
EVERLASTING CREDIT  
OF SCIENCE THAT BY  
ACTING ON THE HUMAN  
MIND, IT HAS OVERCOME  
MAN'S INSECURITY  
BEFORE HIMSELF AND  
BEFORE NATURE.

**Albert Einstein**  
THEORETICAL PHYSICIST



NOTHING IN LIFE IS TO BE FEARED, IT  
IS ONLY TO BE UNDERSTOOD. NOW  
IS THE TIME TO UNDERSTAND MORE,  
SO THAT WE MAY FEAR LESS.

**Marie Curie**

CHEMIST AND PHYSICIST



**NATIONAL NUCLEAR REGULATOR**

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**ISBN: 978-0-621-39371-2 | RP: RP78/2010**