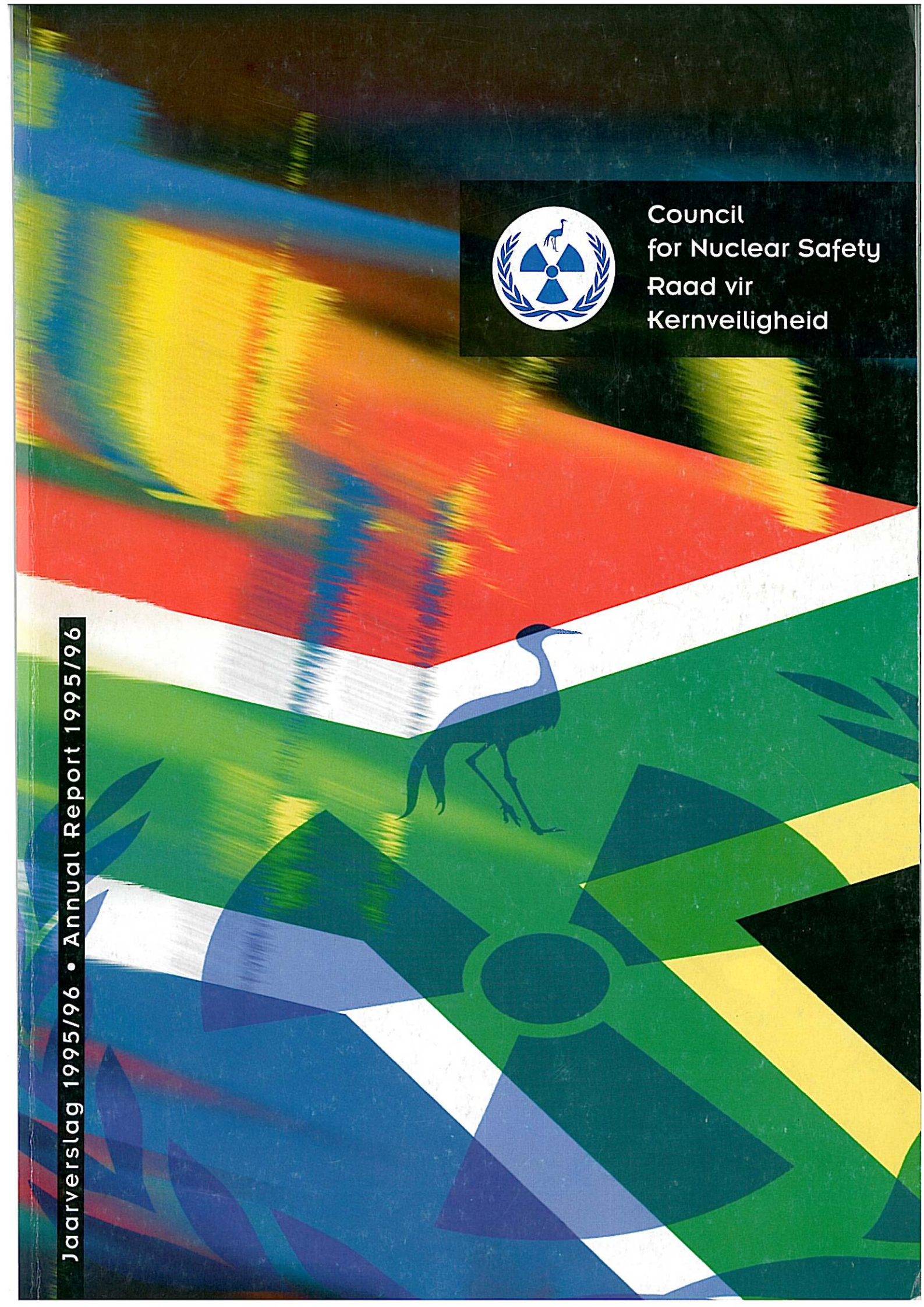


Council
for Nuclear Safety
Raad vir
Kernveiligheid

Jaarverslag 1995/96 • Annual Report 1995/96



Back row from left/Agter van links:

Dr Thomas Auf der Heyde, Dr Daan Reitmann, Prof Hannes Klopper, Prof Simeon Taole, Mr/Mnr BC Winkler.

Front row/voor:

Prof Krish Bharuth Ram (vice chair/ondervoorsitter), Prof John Martin (chair/voorsitter), Dr Maki Mandela.

Our cover symbolises the Council for Nuclear Safety's continuing and increasing involvement and commitment, both nationally (CNS logo front page), and internationally (IAEA logo back page).

Ons omslag simboliseer die Raad vir Kernveiligheid se volgehoue en toenemende betrokkenheid en verbintenis, sowel nasionaal (RKV-embleem voorblad), as internasionaal (IAEA-embleem agterblad).



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Missie:

Die Raad vir Kernveiligheid se missie is om persone en hul eiendom teen gevaar van skade, voortspruitend uit die voortbringing of benutting van kernenergie en die verwante radioaktiewe materiale, in die Republiek van Suid-Afrika te beskerm.

Beleid:

Die beleid van die Raad is:

- om die risiko van kernskade deur die toepassing van 'n kwantitatiewe risiko-analise vas te stel;
- om kostedoeltreffend te wees in die bereiking van sy doelwitte en die uitvoering van sy funksies;
- om die mate waarin hy sy doelwitte bereik, te evalueer.

Strategie:

Om hierdie missie uit te voer deur:

- die uitoefening van verantwoordelike en doeltreffende regulatiewe beheer,
- die bevordering van 'n gehalte- en veiligheidskultuur, beide binne en buite sy eie geledere, en
- die konsekwente strewe om die hoogste mate van integriteit, professionalisme en onafhanklikheid te handhaaf,

deur die aanwending van die vaardighede van sy personeel in die ontwikkeling en toepassing van goeie regulatiewe praktyke wat vernuwende tegnieke omvat, en die handhawing van 'n standaard wat internasionaal vergelykbaar is.

Mission Statement:

It is the mission of the Council for Nuclear Safety to safeguard persons and their property against the risk of damage from the production or exploitation of nuclear energy and associated radioactive materials in the Republic of South Africa.

Policy:

The policy of the Council is:

- to address the risk of nuclear damage through the application of a quantitative risk assessment approach;
- to be cost effective in meeting its objectives and fulfilling its functions;
- to evaluate the extent to which it meets its objectives.

Strategy:

Its strategy is to accomplish this mission through:

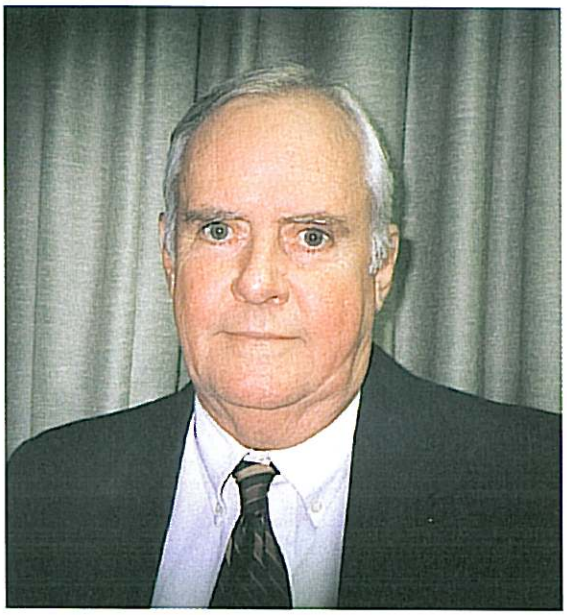
- The exercise of responsible and effective regulatory control,
- the promotion of a quality and safety culture, both within and outside its own ranks, and
- the consistent endeavour to maintain the highest level of integrity, professionalism and independence,

applying the skills of its staff in developing and implementing sound regulatory practices embodying innovative techniques, and maintaining a standard that is comparable internationally.

Chairman's Report

The 1995/96 financial year was a year of considerable change and realignment in South African society, and this has been reflected in the nuclear field in South Africa in general and in the Council for Nuclear Safety in particular. The Council has extended its activities within South Africa, and has also become much more active in international matters.

Cabinet approved a new Council for the CNS on 21 February 1996. The new Council was selected through a transparent and consultative process, and will bring the concerns of a wider community to nuclear regulatory activity. As Chair, I welcome and congratulate the new Council members, and look forward to their contributions.



Prof John Martin

In July 1995, the CNS initiated a process of consultation intended to lead to the formulation of new nuclear safety legislation in which the Council for Nuclear Safety will be treated independently of the Atomic Energy Corporation, which is now one of the licensees of the Council. Several workshops involving major stakeholders were held, and a draft bill is currently being prepared. It is envisaged that a final bill will be ready for consideration by Parliament during 1997. The bill will represent a major step forward in the establishment of a fully independent nuclear regulatory body in South Africa in line with recommended international practice.

The Council for Nuclear Safety held the first of what is intended to become an annual series of prestigious lectures on nuclear safety on 4 May 1995 at Midrand in Gauteng. Dr Sam A Harbison, Chief Inspector of the Nuclear Installations Inspectorate of the United Kingdom, was the invited speaker, and he delivered a lecture on the topic of "The Tolerability of Risk".

On the international scene, the CNS proceeded with preparations for the parliamentary ratification of the Convention on Nuclear Safety. South Africa signed the Convention, whose primary aim is to enhance the safety of land-based nuclear power plants, in September 1994 at the

International Atomic Energy Agency in Vienna. Once ratified, the CNS will be responsible for monitoring the application of this important Convention in South Africa. During July 1995, the CNS also attended the first meeting in Vienna of a group of experts whose task it is to develop an international convention on radioactive waste management. The primary aim of the proposed convention is to develop waste management safety fundamentals, co-ordinate world wide radioactive waste management and prevent the illegal dumping of nuclear waste. The CNS is also playing an increasing role in the multilateral international scene, such as the International Committee for Radiological Protection.

The CNS signed a co-operation agreement with its French counterpart, the Direction de la Sûreté des Installations Nucléaires (DSIN), on 21 September 1995 in Paris. The agreement makes provision for, inter alia, the exchange of relevant nuclear safety information. The agreement with DSIN follows an agreement signed with the United States Nuclear Regulatory Commission, the nuclear regulatory authority in the US. It is foreseen that the CNS will conclude similar agreements with the nuclear regulatory bodies of other countries.

As a consequence of the expansion of its activities, the CNS is under increasing pressure to achieve more with fixed human and financial resources. Its staff have approached this challenge with enthusiasm and determination. With the appointment of a new Council, it is appropriate that a fundamental review of the activities of the CNS be undertaken to ensure that it is properly resourced to carry out its role, as watchdog for nuclear safety issues in various phases of the nuclear fuel cycle, effectively and efficiently.

I would like to thank the Minister and Deputy Minister of Mineral and Energy Affairs, the Chair of the Portfolio Committee, the Director General and his staff, and the members of the Council, for their continued co-operation and support during the year.

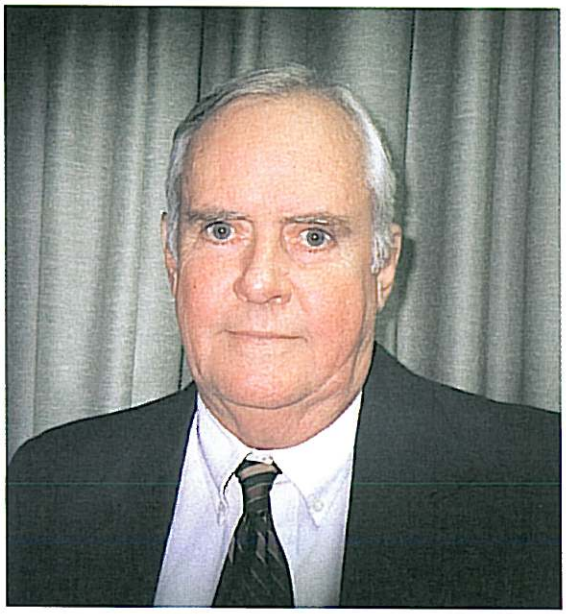


Chairman

Voorsitter se verklaring

Die 1995/96 finansiële jaar was 'n jaar van aansienlike verandering en herrangskikking in die Suid-Afrikaanse gemeenskap. Dit is op die kernkragtoneel in die algemeen in Suid-Afrika, en in die besonder in die Raad vir Kernveiligheid weerspieël. Die RKV het sy bedrywighede in Suid-Afrika uitgebrei en ook meer aktief in internasionale aangeleenthede geword.

Die Kabinet het 'n nuwe Raad vir die RKV op 21 Februarie 1996 goedgekeur. Die nuwe raad is gekies na 'n deursigtige en raadplegende proses, en sal die besorgdheid van 'n wyer gemeenskap na kernkrag se regulatiewe bedrywighede bring. As voorsitter verwelkom ek die nuwe lede en wens ek hulle geluk. Ek sien uit na hul bydraes.



Prof John Martin

In Julie 1995 het die RKV met 'n proses van konsultasie begin wat moet lei tot die formulering van nuwe kernveiligheidwetgewing waar die Raad vir Kernveiligheid onafhanklik van die Atoomenergiekorporasie, nou een van die Raad se gelisensieerdes, gehanteer word. Verskeie werkswinkels is gehou waarby groot rolspelers betrek is, en 'n konsepwetsontwerp word nou voorberei. Dit word in die vooruitsig gestel dat 'n finale wetsontwerp in 1997 vir oorweging deur die Parlement gereed sal wees. Hierdie wetsontwerp sal 'n reuse-stap vorentoe wees om, in ooreenstemmig met die aanbevole internasionale praktyk, 'n ten volle onafhanklike kern-regulatiewe liggaam in Suid-Afrika daar te stel.

Die Raad vir Kernveiligheid het die eerste van 'n beplande jaarlikse prestigelesing oor kernveiligheid op 4 Mei 1995 op Midrand in Gauteng gehou. Dr Sam A Harbison, Hoofinspekteur van die Kerninstallasie Inspektoraat van die Verenigde Koninkryk, was die genooide spreker, en hy het gepraat oor "Die Toleransie van Risiko".

Aan die internasionale front het die RKV voortgegaan met voorbereidings vir die Parlementêre ratifikasie van die Konvensie vir Kernveiligheid. Suid- Afrika het die Konvensie, waarvan die vernaamste oogmerk is om die veiligheid van siviele kernkragreaktors te land te verhoog, in

September 1994 in Wenen geteken. Wanneer dit geratifiseer is, sal die RVN verantwoordelik wees om die toepassing van hierdie belangrike Konvensie in Suid-Afrika te monitor.

In Julie 1995 het die RKV ook die eerste vergadering van 'n groep deskundiges in Wenen bygewoon wie se taak dit is om 'n internasionale konvensie vir die bestuur van radio-aktiewe afval te ontwikkel. Die primêre oogmerk van die beoogde konvensie is om die basiese veiligheids-eienskappe van afvalbestuur te ontwikkel, wêreldwye radioaktiewe afvalbestuur te koördineer, en om die onwettige storting van kernafval te verhoed. Die RKV speel ook 'n al hoe groter wordende rol op die internasionale multilaterale toneel, soos in die Internasionale Komitee vir Radiologiese Beskerming.

Die RKV het 'n samewerkingooreenkoms met sy Franse eweknie, die Direction de la Sûrité des Installations Nucléaires (DSIN) op 21 September 1995 in Parys onderteken. Hierdie ooreenkoms maak voorsiening vir onder meer die uitruil van relevante inligting oor kernveiligheid.

Die ooreenkoms met DSIN volg op die ooreenkoms wat vroeër met die Verenigde State se Regulatoriese Kommissie, die kernregulatiewe owerheid in Amerika, beklink is. Dit word in die vooruitsig gestel dat die RKV nog soortgelyke ooreenkomste met die regulatiewe owerhede van ander lande sal sluit.

As gevolg van die uitbreiding van sy aktiwiteite is die RKV onder toenemende druk om meer met vasstaande menslike en geldelike bronne te bereik. Sy personeel het die uitdaging met geesdrif en vasbeslotenheid aanvaar. Met die aanstelling van 'n nuwe Raad is dit paslik dat 'n fundamentele hersiening van die RKV se bedrywighede onderneem moet word om te verseker dat hy oor die nodige middele beskik om effektief en doeltreffend sy rol as waghond oor die verskillende fases van die kernbrandstof-siklus te speel.

Ek wil graag die Minister en Adjunk-Minister van Minerale en Energie, die Voorsitter van die Portefeuljekomitee, die Direkteur-generaal en sy personeel en die lede van die Raad vir hul volgehoue samewerking en steun deur die jaar bedank.

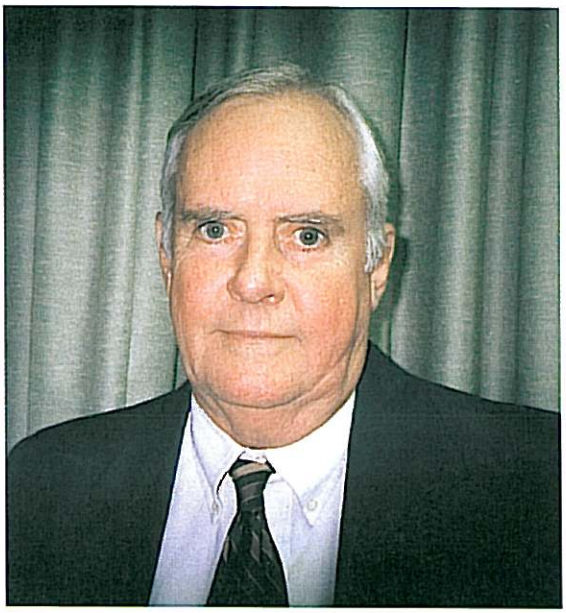


Voorsitter

Umbiko Womphatisihlalo

Unyaka wezimali ka1995/96 bekungowezinguquko ezibabazekayo nokuziseka ngendlela entsha emphakathini weNingizimu Afrika, kanti ke lokho kugqame kakhulu ehlangothini lezenuzi eNingizimu Afrika ngokujwayelekile naseMkhandlwini WezokuPhepha KwezeNuzi (Council for Nuclear Safety-CNS). Umkhandlu lowo wandise imisebenzi yawo ngaphakathi eNingizimu Afrika, waphinda futhi wazimbandakanya kakhulu ezindabeni zomhlaba wonke.

IBandla LawoNgqongqothjhe lavumela umkhandlu omusha weCNS mhlaka 21 kuFebruary 1996. UMkhandlu omusha lowo wakhethwa ngendlela engafihliyo nenokubonisana, futhi izosondeza izinkathalelo zomphakathi wonke emsebenzini wokuqondisa ezenuzi. NjengoMphathisihlalo, ngemukela futhi ngibonge amalungu amasha waloMkhandlu, ngethemba lokuthola isizo lawo.



Umphathisihlalo Prof. John Martin

NgoJuly 1996 iCNS yaqala umsebenzi wokubonisana owenzelwe ukwakha umthetho omusha wezokuphepha kwezenuzi lapho uMkhandlu WezokuPhepha KwezeNuzi uzophathwa njengozimeleyo ngaphandle kweAtomic Energy Corporation, ekungelinye ilungu elinemvume laloMkhandlu. Izifundo zokubonisana ezimbalwa zabanjwa, kanti ke kunomthethosivivinywa osalungiswayo okwamanje. Kunethemba lokuthi umthethosivivinywa lowo uzobonakalisa isinyathelo esikhulu sokwakha inhlangano ezoqondisa ezenuzi ezimeleyo eNingizimu Afrika, ukuhambisana nemigomo ebekwe wumhlaba wonke.

Umkhandlu WezokuPhepha KwezeNuzi wabamba isifundo sokuqala sezokuphepha kwezenuzi mhlaka 4 kuMay 1995 eMidrand eGauteng, esimiselwe ukubanjwa njalo ngonyaka. UDr Sam A Harbison uMhloli Omkhulu WoMkhandlu WabaHloli BezokuSetshenziswa KwezeNuzi (Nuclear Installations Inspectorate) eUnited Kingdom wayeyisikhulumi esiqavile, futhi wethula isifundo ngesihloko esithi "The Tolerability of Risk" (Ikhono lokunyamezela ubuNgozi) Eshashalazini lezomhlaba wonke iCNS yaphumelela emalungiselelweni wokuthola imvume yepalamente yesiVumelwano

SezokuPhepha KwezeNuzi. Iningizimu Afrika yasayinda isiVumelwano leso, esinenjongo enkulu yokwenza ngcono ukuphepha ezindaweni ezisebenza ngezenuzi, ngoSeptember 1994 e-International Atomic Energy Agency eVienna. Nxa sesivunyelwe, iCNS izobhekana nomsebenzi wokuqaphelisisa ukusetjenziswa kwalesi sivumelwano esibalulekileyo eNingizimu Afrika.

Ekuhambeni kwaka-July 1995 iCNS yahambela umhlangano wokuqala eVienna weqembu lezazi ezinomsebenzi wokhwakha isivumelwano somhlaba wonke kwezokuphathwa kokulahlwa kwezinemisebe egijimayo. Injongo enkulu yesivumelwano esiphakayisiweyo leso wukwakha izindlela eziphephile zokusebenza ngensila evela kilokho okukhipha imisebe egijimayo, ukuxhumanisa ezomhlaba wonke kwezokungayelwa kwensila evela kokukhipha imisebe egijimayo nokunqanda ukulahlwa kwayo kwezobudlelwano bamazwe womhlaba, njengakwi - (International Committee for Radiological Protection) Ikomidi Yomhlaba YokuVikela Kwezikhipha Imisebe Egijimayo.

I-CNS yasayinda isivumelwano sokusebenzisana nomlingani wayo waseFrance iDirection de la Surete des Installation Nucleaires (DSIN) mhlaka 21 KuSeptemba 1995 eParis. Isivumelwano leso sibonelela, phakathi nokunye, ukuphakelana ulwazi olufaneleyo lezokuphepha kwezenuzi. Isivumelwano neDSIN silandela emva kwesivumelwano esasayindwa neUnited States Regulatory Commission, iziphathimandla zokuqondisa ezenuzi eUS. Kunethemba lokuthi iCNS izokwenza ezinye izivumelwano ezifanayo neziphathimandla ezenuzi kwamanye amazwe.

Njengomphumela wokwanda kwemisebenzi yayo, iCNS iphoqelelwa ngamandla ukuthi ifeze okuningi ngemithombo yezimali namandla wezisebenzi. Izisebenzi zayo zibhekene nalomsebenzi ngenkulu inselela nokuzimisela. Ngokubekwa koMkhandlu omusha, kuyadingeka ukuthi kubuyekezwe imisebenzi yeCNS ukuqinisekisa ukuthi ihlonyiswe ngendlela efaneleyo ekufezeni umsebenzi wayo, njengomlindi wezokuphepha kwezenuzi emikhakheni ehlukeneyo yamafutha wenuzi, ngempumelelo nangekhono.

Ngithanda ukubonga uNgqongqotjhe neSekela likaNgqongqotjhe WezemiCebo NezaMandla, uMphathisihlalo weKomidi Ephathisiwe, uMqondisi-Jikelele kanye nezisebenzi zakhe, namalungu waloMkhandlu, ekusebenzisaneni kwabo nasekusisekeleni ekuhambeni konyaka.

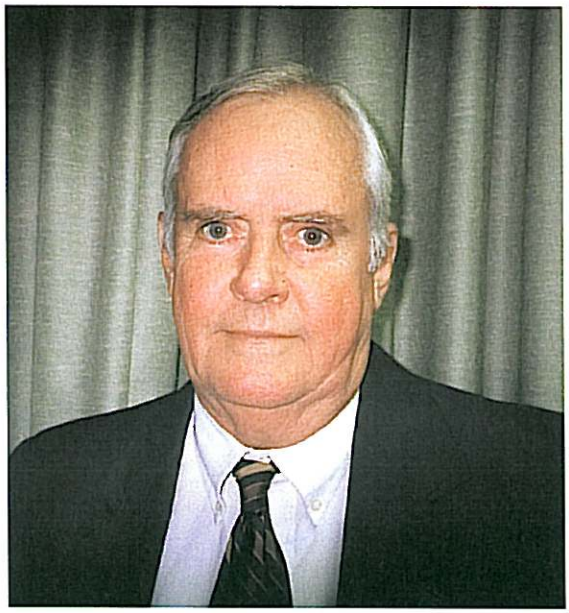


Umphathisihlalo

Pego ya Modula Setulo

Ngwaga wa ditšhelete wa 1995/96 sekete makgolo senyane masome senyane hlano le masome senyane tshela e bile ngwaga wa diphetogo tše kgolo malebana le tshokologo ya setšhaba sa Afrika borwa, mme se se bonagetše kudu le mo ditabeng tša mahlale a nuclear mo Afrika borwa le mo lekgotleng la tša polokego la nuclear. Lekgotla le le okeditše mešomo ya lona mo Afrika borwa, la ba la godiša mešomo ya lona ditabeng tša ditšhabatšhaba.

Khabinete e dumetše gore go hlongwe lekgotla la CNS ka 21 Februari 1996. Lekgotla le leswa le le kgethilwe pepeneneng ka ditherišano, mme lona le tla fahlosa setšhaba ka tša taolo ya nuclear. Bjale ka modula setulo ke nyaka go lebogiša lekgotla le sa tšwang go kgethwa, gomme ke lebeletše gore ba tla katana mo mošomong wa bona.



Modula Setulo John Martin

Ka kgwedi ya Julae 1995 CNS e ile ya hloma ditherišano tšeo nepo ya tšona e beng e le go bopa melao ya polokego, yeo e tlang go kaogantšha lekgotla polokego la Nuclear le la Atomic Energy Corporation, e leng lekgotla le lengwe, leo le swereng laesenthse. go ile gwa ba le ditherišano tše dintšhi tša bao ba amegago go bopa molaotšhišinyo wo o ntšeng o sa sekasekwa. Go bonala e le gore molaotšhišinyo wo o tla rerwa ka palamenteng ngwageng wo wa 1997. Molaotšhišinyo wo o tla bonwa bjale ka legato le legolo go hlongweng ga lekgotla la nuclear leo le ikemetšego ka noši la taolo, mo Afrika borwa, leo le tlang go šoma ka melao ya ditšhaba tšhaba.

Lekgotla polokego la nuclear le thomegile bjale ka molokeloke wa dithuto tša polokego ya nuclear go tloga ka di 4 Mei 1995 kua Midrand Gauteng. Ngaka Sam A Harbison mohlahlobimogolo wa nuclear kua Engelane e be e le yena seboledi segolo a bolela ka "the tolerability of risk".

Mo go tša ditšhabatšhaba CNS e tšwelapele ka go tliša dikagonafatšo ka palamenteng malebana le tša kwano ya polokego ya nuclear. Afrika borwa e ile ya saenela kwano yeo nepokgolo ya yona e bego e le go oketša polokego mo ditishing tša nuclear tša fase ka September 1994, mo

kopaning ya ditšhabatšhaba ya atomic energy agency mo Vienna. Ge e kagonafaditšwe gona CNS e tla rwala boikarabelo bja go hlokomela dinyakwa tša kwano ye bohlokwa ye, mo Afrika borwa.

Ka kgwedi ya Julae 1995 CNS e ile ya ba gona kopanong ya Vienna mo go bego go hlakane ditsebi tša ditšhabatšhaba go akanya ka megwa ya go hlokomela manyela a radioactive mo Afrika borwa. Nepokgolo ya kopano ye ke go hloma metheopolokego, go hlokomela manyela a radioactive, go thibela mekgobo ya koletšo mo go lahlelwang manyela a nuclear. CNS e tla dira karolo ya bohlokwa mo ditšhabatšhabeng, go swana le mo komiting ya ditšhabatšhaba ya radiological protection.

CNS e ile ya saenela kwano le lekgotla le swanang le lona la fora, le bitšwang direction de la surete des installation nucleaires (dsin). Ka 21 September 1995 kua Paris. Kwano ya gona ke ya go thušana ka maano a polokego a nuclear. Kwano ye ya DSIN e latela kwano ya go saenelwa ke khomisene ya Amerika ya taolo (United States Regulatory Commission) e leng lekgotla la taolo la nuclear la America. Go bonagala CNS e tla tla dira dikwano tša mohuta wo le makgotla a mangwe lefaseng ka bophara.

Ka lebaka la go gola ga CNS lekgotla le, le ikhwetša le le kgatelelong ya kgolo go tša ditšhelete le bašomi. Eupša bašomi ba tloga ba ikemišeditše go phethagatša setseka sa bona ka bokgwari. Ka go kgethwa ga lekgotla le leswa le go bohlokwa gore metheo ya CNS e lekolwe, gape go kgonthišišwe, ge e ba le na le thekgo e tiilego, gore le tle le kgone go šoma bjale ka hlodi ya polokego ya tša nuclear mo makaleng kamoka a go hlotla maatla a nuclear ka polokego le ka bokgwari.

Ke nyaka go leboga Tona le Motlatšatona wa tša Maatla le dirafša, Modula setulo wa komoti tiro, Molaodi pharephare le bahlankedi ba gagwe, le ditho tša lekgotla ge ba ile ba nthekga ngwaga kamoka.

Modula Setulo

Uitvoerende Beampte se Oorsig

Inleiding

Een van die hoogtepunte van die jaar was ongetwyfeld die aanstelling, deur die Minister van Mineraal en Energiesake en met ingang van 21 Februarie 1996, van 'n nuwe Raad vir die Raad vir Kernveiligheid. Die goedkeuring van die Kabinet en die daaropvolgende aanstelling van die lede deur die Minister, was die hoogtepunt van 'n ope en deursigtige konsultatiewe proses wat die uitvloeisel was van die nuwe prosedure wat neergelê is vir die aanstelling van sulke Rade.

Sowat twintig genomineerdes uit 'n totaal van 48 se name is vir 'n aanvanklike kortlys gekeur. Twaalf het uiteindelik voor 'n paneel van die Parlementêre Portefeuljekomitee vir Mineraal en Energiesake onder die voorsitterskap van mnr Marcel Golding verskyn. Dit het gelei tot aanbevelings aan die Minister en uiteindelik sy aanstelling van die nuwe lede.



Mnr/Mr Bert Winkler

Die vorige Raad het vyf vergaderings deur die loop van die jaar gehou. Raadslede het die Koeberg Kernkragsentrale in November 1995 besoek ten einde hulself te vergewis van die jongste ontwikkelinge met betrekking tot stralingsveiligheid, afvalbestuur en die lisensiëring van reaktor-operateurs.

Deur die jaar het die RKV sy hoof-statutêre verpligting van regulatoriese beheer oor kerninstallasies, en ander bedrywighede wat kan lei tot die moontlike blootstelling van persone aan ioniserende straling, nagekom. Bykomend was die RKV egter sowel nasionaal as internasionaal betrokke by 'n al hoe groter wordende reeks aanverwante bedrywighede. Nasionaal is insette tot 'n nasionale kernbrandstofsiklus-studie gelewer en

Executive Officer's Report

Introduction

One of the highlights of the year was undoubtedly the appointment of a new Council for the CNS by the Minister of Mineral and Energy Affairs, with effect from 21 February 1996. The approval of the Council by Cabinet and the subsequent appointment of its members by the Minister was the culmination of an open and transparent consultative process which followed the newly approved procedures for appointment of such Councils.

Some twenty persons from a total of forty eight nominations were shortlisted, twelve of whom were ultimately interviewed by a panel of the Parliamentary Portfolio Committee on Mineral and Energy Affairs, chaired by the Chairperson of the Committee, Mr Marcel Golding. This culminated in recommendations to the Minister and finally his appointment of the new members.

The previous Council held five meetings during the course of the year. Council members visited the Koeberg Nuclear Power Station in November 1995 in order to familiarise themselves with recent developments related to radiation safety, waste management and the licensing of reactor operators.

Throughout the year the CNS has executed its prime statutory responsibility of exercising regulatory control over nuclear installations and activities involving potential exposure of persons to ionising radiation. In addition, however, it has been involved in an ever increasing range of related activities both nationally and internationally. At the national level, input was provided to the process of formulating the national energy policy and to the national nuclear fuel cycle study, the latter also

ook tot die formulering van 'n nasionale energiebeleid. Laasgenoemde is ook 'n inisiatief van die Departement van Mineraal- en Energiesake.

Individuele personeellede het 'n aktiewe rol gespeel in die bedrywighede van die Raad vir die Nie-Proliferasie van Wapens van Massa Vernietiging, die Raadplegende Omgewings Beleidsproses (ROM) - geïnisieer deur die Departement van Omgewingsake en Toerisme - en van ander professionele organisasies. Die RKV het ook die Portefeuljekomitee vir Mineraal en Energiesake voorgelig oor eersgenoemde se funksies en verantwoordelikhede.

Internasionale forums

Internasionaal, en as gevolg van die totstandkoming van die Regering van Nasionale Eenheid, kon die RKV vrylik deelneem aan die verskillende internasionale forums wat te doene het met regulatoriese beheer oor kern-aangeleenthede en kan ooreenkomste met oorsese regulatoriese liggame aangegaan word. Die reeds bestaande formele samewerkingsooreenkoms en die uitruil van inligting met die Verenigde State se kernregulatiewe owerheid het gestalte begin aanneem. 'n Soortgelyke ooreenkoms is met Frankryk onderteken. Die RKV het betrokke geraak by die maatreëls wat geformuleer word vir die implementering van die Internasionale Konvensie vir Kernveiligheid. Die formulering van 'n Interasionale Konvensie vir die Veiligheid van Radioaktiewe Afvalbestuur is in die jaar begin, en die RKV was 'n aktiewe deelnemer in voorbereidende vergaderings.

Die terugkeer van Suid-Afrika tot al die bedrywighede van die Internasionale Atoom Energie Agentskap (IAEA) het aanleiding gegee tot die toenemende betrokkenheid van RKV-personeellede

being an initiative by the Department of Mineral and Energy Affairs.

Individual staff members played an active role in the Council for the Non-Proliferation of Weapons of Mass Destruction, the Consultative National Environmental Policy Process (CONNEP) - initiated by the Department of Environmental Affairs and Tourism - and in a range of activities of professional bodies. The Parliamentary Portfolio Committee on Mineral and Energy Affairs received a briefing from the CNS on the functions and responsibilities of the latter.

International relationships

Internationally, following the establishment of the Government of National Unity, the CNS was able to participate freely in the various international forums dealing with nuclear regulatory control. In addition, relationships have been established with overseas regulatory bodies. A formal arrangement for co-operation and the exchange of information, already in existence with the United States Nuclear Regulatory Commission, was signed with the French nuclear regulatory authorities, the Direction de la Sûreté des Installations Nucléaires.

A growing number of staff members were recognised internationally

The CNS became closely involved with the measures being formulated for the implementation of the International Convention on Nuclear Safety. The formulation of an International Convention on the Safety of Radioactive Waste Management began during the year and the CNS was an active participant in the preparatory meetings.

The return of South Africa to full membership of the International Atomic Energy Agency (IAEA) has given rise to increased involvement of CNS staff in

op die gebied van die ontwikkeling en toepassing van internasionale standaarde. Al hoe meer personeellede is internasionaal erken, en genooi om aan raadgewende vergaderings en konsultatiewe missies van die Agentskap deel te neem. Die RKV is ook toenemend versoek om opleiding aan wetenskaplikes uit ontwikkelende lande, veral uit Afrika, onder die beskerming van die IAEA te verskaf.

As 'n gevolg van die aanwysing van Suid-Afrika as Afrika se permanente verteenwoordiger op die Raad van Goewerneurs van die IAEA, het die RKV gereelde insette gelewer aan die Goewerneur, mnr Abdul Minty, Adjunk-direkteur-generaal (Multilaterale Aangeleenthede) van die Departement van Buitelandse Sake.

Mnr Bert Winkler het nog 'n jaar gedien as Ondervoorsitter van Komitee IV van die Internasionale Kommissie vir Stralingsbeskerming (ICRP). Mnr Phil Metcalf was 'n lid van die Uitvoerende Raad van die Internasionale Stralings Beskermings Vereniging (IRPA).

Die organisatoriese bestuur van die RKV, wat essensieel daarop gemik is om gelisensieerde projekte te bestuur en wetenskaplike en tegniese dienste aan hierdie projekte te bied, het gedurende die jaar onveranderd gebly. Die ervaring wat met hierdie struktuur opgedoen is, het getoon dat dit die RKV in staat stel om sy Missie, Strategie en Beleid kragtig na te jaag.

the area of international standards development and application. A growing number of staff members was recognised internationally and invited to participate in advisory meetings and in consultative missions for the Agency. The CNS was also increasingly requested to provide fellowship training to scientists from developing countries, particularly from within Africa, through the aegis of the IAEA.

As a consequence of the election of South Africa to the permanent seat for the Africa Region on the Board of Governors of the IAEA, the CNS provided regular input to the Governor, Mr Abdul Minty, Deputy Director-General, Multilaterial Affairs, of the Department of Foreign Affairs.

Mr Bert Winkler served another year as Vice-Chairman of Committee IV of the International Commission on Radiological Protection. Mr Phil Metcalf served as a member of the Executive Council of the International Radiation Protection Association.

The organisational structure of the CNS, essentially based upon managing licensing projects and providing scientific and technical services to these projects, remained unchanged throughout the year. Experience gained with this structure has shown that this has enabled the CNS to pursue vigorously its Mission, Strategy and Policy.

Die Raad

DIE Raad se lede vir die grootste gedeelte van die jaar was:

- **Voorsitter:** Prof John Martin

  Dekaan, Fakulteit Ingenieurswese, Universiteit van Kaapstad.

- **Vise-voorsitter:** Dr Daan Reitmann,

  Voormalige Direkteur, Nasionale Versnellersentrum, Stigting vir Navorsingsontwikkeling.

- **Mnr Meyer du Toit:**

  Adjunk-direkteur-generaal, Departement Grondsake.

- **Mnr Sydney Gerber**

  Hoofdirekteur, Omgewingsbewaring, Departement van Omgewingsake en Toerisme.

- **Prof Ron Harley**

  Hoof, Departement Elektriese Ingenieurswese, Universiteit van Natal.

- **Dr Reynecke le Roux**

  Direkteur, Stralingsbeheer, Departement van Gesondheid.

- **Prof Anna Steyn**

  Hoof, Departement Sosiologie, Randse Afrikaanse Universiteit.

- **Dr Flip van Heerden**

  Voormalige President, Mediese Navorsingsraad.

- **Mnr Bert Winkler**

  Uitvoerende Beampte van die RKV, ex officio-lid.

The Council

The Council's membership through most of the year was as follows:

- **Chairman:** Prof John Martin

  Dean, Faculty of Engineering, University of Cape Town

- **Vice chairman:** Dr Daan Reitmann

  Former Director, National Accelerator Centre, Foundation for Research Development

- **Mr Meyer du Toit**

  Deputy Director-General, Department of Land Affairs

- **Mr Sydney Gerber**

  Chief Director, Environment Conservation, Department of Environmental Affairs and Tourism

- **Prof Ron Harley**

  Head, Department of Electrical Engineering, University of Natal

- **Dr Reynecke le Roux**

  Director, Radiation Control, Department of Health

- **Prof Anna Steyn**

  Head, Department of Sociology, Rand Afrikaans University

- **Dr Flip van Heerden**

  Former President, Medical Research Council

- **Mr Bert Winkler**

  Executive Officer of the CNS, ex officio member

Die Nuwe Raad

(Van 21 Februarie 1996)

- **Voorsitter:** Prof John Martin
  Adjunk Vise-Kanselier, Navorsing, Universiteit van Kaapstad.

- **Ondervoorsitter:** Prof Krish Bharuth-Ram
  Hoof: Departement Fisika, Universiteit van Durban-Westville.

- **Dr Daan Reitmann:** Voormalige Direkteur, Nasionale Versnellersentrum, Stigting vir Navorsingsontwikkeling.

- **Dr Thomas Auf der Heyde:**
  Senior lektor, Departement Chemie, Universiteit van Kaapstad.

- **Prof Hannes Klopper:**
  Hoof: Departement van Kerngeneeskunde, Tygerberg-hospitaal.

- **Dr Maki Mandela:**
  Adviseur, Beleid oor Regstellende Aksie, Universiteit van die Witwatersrand.

- **Prof Simeon Taole:**
  Hoof: Departement Fisika, Universiteit van die Noordweste.

- **Mnr Bert Winkler:**
  Uitvoerende Beampte van die RKV, ex officio-lid.

  Plaasvervangende lid vir dr Thomas Auf der Heyde: Dr C P R Roberts, Adjunk-direkteur-generaal, Department van Waterwese en Bosbou.

The New Council

(From 21 February 1996)

- **Chairperson:** Prof John Martin
  Deputy Vice-Chancellor, Research, University of Cape Town

- **Vice-chairperson:** Prof Krish Bharuth-Ram
  Head: Physics Department, University of Durban-Westville

- **Dr Daan Reitmann:** Former Director, National Accelerator Centre, Foundation for Research Development

- **Dr Thomas Auf der Heyde**
  Senior Lecturer, Department of Chemistry, University of Cape Town

- **Prof Hannes Klopper**
  Head: Department of Nuclear Medicine, Tygerberg Hospital

- **Dr Maki Mandela**
  Advisor, Affirmative Action Policy, University of the Witwatersrand

- **Prof Simeon Taole**
  Head: Physics Department, University of the North West

- **Mr Bert Winkler**
  Executive Officer of the CNS, ex officio member

  Alternate to Dr Thomas Auf der Heyde: Dr C P R Roberts, Deputy Director-General, Department of Water Affairs and Forestry

Skakeling met provinsiale en plaaslike owerhede

In verskeie vergaderings waaraan die Raad vir Kernveiligheid die afgelope jaar deelgeneem het, is die begeerte uitgespreek dat die RKV se werksaamhede deursigtiger vir potensieel geaffekteerde instansies moet wees. Goeie skakeling is gehandhaaf met die plaaslike en provinsiale owerhede wat betrokke is by noodbeplanning in die gebied naby die Koeberg-kernkragsentrale.

Met die onlangse veranderinge in die plaaslike bestuurstelsel, is die RKV bedag op die noodsaaklikheid om voldoende skakeling te verseker en waar nodig dit verder uit te brei. Daar is met 'n ondersoek begin om belangstellende en geaffekteerde partye met betrekking tot elke lisensiehouer te identifiseer. Ondersoekende vergaderings het reeds plaasgevind.

Noodbeplanning-skakelkomitee vir Koeberg

In die lig van die betrokkenheid van verskeie plaaslike owerhede in die noodbeplanningsmaatreëls vir die Koeberg-kernkragsentrale, is 'n forum 'n aantal jare gelede gestig.

Die belangrikste funksies van die Komitee is om eerstens enige besorgdheid aan te spreek wat die owerhede mag hê met betrekking tot die noodmaatreëls. Daarbenewens moet dit inligting aan die owerhede verskaf ten opsigte van enige ontwikkeling, nasionaal sowel as internasionaal, wat verband hou met kern-noodbeplanning, en moet dit ook die publiek se vertroue in die RKV se regulatoriese proses behou. Heelwat lesse het na vore gekom na die ongeluk by Chernobyl, wat die noodsaak vir goeie beplanning en skakeling met alle betrokke owerhede benadruk het. Die struktuur van hierdie Komitee sal ná die plaaslike verkiesings in die Wes-Kaap hersien word.

Liaison with provincial and local authorities

During the course of various meetings in which the CNS has taken part within the past year, the desire was expressed for the work of the CNS to be more transparent to potentially affected parties. Good liaison has been maintained with the local and provincial authorities involved with emergency planning arrangements for the Koeberg Nuclear Power Station and with population development around the Koeberg site.

With the changes in local government that have occurred, the CNS has been mindful of the need to ensure the adequacy of ongoing liaison and to develop and improve this where necessary. Exploratory initiatives have been launched to identify the relevant interested and affected parties associated with each licensee and initial meetings have taken place.

Koeberg Nuclear Emergency Planning Liaison Committee

In view of the involvement of various local authorities in the emergency planning arrangements for the Koeberg Nuclear Power Station, a forum was established several years ago.

The prime functions of this committee are to address any broader concerns, that the authorities may have in respect of emergency planning arrangements, to provide for the dissemination of information to the authorities in respect of nuclear emergency planning developments, nationally and internationally, and to maintain public confidence in the regulatory process undertaken by the CNS. Many lessons have emerged in the aftermath of the Chernobyl accident which emphasised the need for good planning and liaison with all authorities concerned. The structure of this committee will be reviewed following the local government elections in the Western Cape.

Stedelike Ontwikkeling in die Wes-Kaap

Die demografiese verspreiding om die terrein van 'n kerninstallasie is 'n belangrike oorweging om te bepaal of die betrokke installasie aan die veiligheidskriteria voldoen. Die grootte en verspreiding van die bevolking is 'n bepalende faktor in die beoordeling van die risiko wat installasies inhou, en beïnvloed die lewensvatbaarheid van noodbeplanningsreëlings. Wanneer terreine vir kerninstallasies gekies word, word demografiese oorwegings internasionaal as belangrik beskou.

Dit is daarom belangrik om te verseker dat daar nie groot afwykings van die voorspelde patroon van ontwikkeling tydens die bedryfstyd van die installasie voorkom nie, omrede dit die daargestelde veiligheidskriteria kan kompromitteer. Dit is daarom belangrik dat die plaaslike en provinsiale owerhede bewus moet wees van die impak van ontwikkelings, en geskikte leiding moet aan beplanningsowerhede gegee word. In die lig van die versnelde tempo van ontwikkeling van stedelike gebiede aan die weskus noord van Kaapstad, is 'n vergadering met die betrokke owerhede byeengeroep om die saak te bespreek.

Die vergadering het besluit dat 'n geskikte skakelmeganisme nodig is, en 'n besluit is geneem om 'n hoëvlak-skakelforum sowel as werkskomitees tot stand te bring wat sal verseker dat die verlangde beheer oor stedelike uitbreiding in die gebied uitgeoefen sal word. Die liggame sal ná die plaaslike verkiesing in 1996 in die Wes-Kaap gestig word.

Urban Development in the Western Cape

In demonstrating compliance with the safety criteria laid down for nuclear installations, the demographic distribution around the site of the installation is an important parameter. The magnitude and distribution of the population is a determining factor in the assessment of risk presented by installations and influences the viability of emergency planning arrangements.

In selecting sites for nuclear power stations, demographic considerations are recognised internationally to be important. It is therefore necessary to ensure that there are no major departures from the predicted pattern of development, throughout the life of such an installation, that could compromise the established safety criteria.

The magnitude and distribution of the population is a determining factor in the assessment of risk

To this end it is important that local and provincial authorities are aware of the impact of developments and that the planning authorities are appropriately guided. In view of the accelerated rate of development of urban areas on the west coast north of Cape Town, a meeting was convened of the involved authorities to address this matter.

The meeting concluded that an appropriate liaison mechanism was necessary and a decision was taken to establish a high level liaison forum and working committees which would ensure that the required degree of control could be exercised over urban developments in this area. The bodies would be established following the local elections in the Western Cape in 1996.

Die Bevordering van Nasionale Inisiatiewe

Nasionale Beleid vir die Bestuur van Radioaktiewe Afval

As deel van sy statutêre mandaat word dit van die RKV vereis om te verseker dat lisensiehouers enige radioaktiewe afval veilig bestuur wat deur hulle operasionele bedrywighede gegenereer word. Bykomend moet die RKV wegdoen-terreine vir radioaktiewe afval lisensieër. Dit word gedoen met die oog daarop om te verseker dat die oogmerke van die RKV, met betrekking tot die beskerming van persone teen kernskade, bereik word.

AEK

Die Atoomenergiekorporasie het ook sekere regulatoriese verpligtings met betrekking tot radioaktiewe afval, en wel met die klaarblyklike oogmerk om die voorsiening van geskikte terreine op 'n nasionale grondslag te verseker waar radioaktiewe afval bestuur kan word.

Met die koms van Koeberg is die Vaalputs Nasionale Radioaktiewe Afval Wegdoenterrein deur die AEK ontwikkel om laevlak en intermediêre radioaktiewe afval afkomstig van Koeberg te hanteer. Werk is ook op 'n beperkte skaal begin om die lot van hoogs radioaktiewe afval, hoofsaaklik verbruikte brandstofelemente van Koeberg, te ondersoek.

Die algemeen aanvaarde praktyk in die bestuur van verbruikte brandstofelemente is om voorsiening te maak vir 'n beduidende "afkoelingsperiode" voor finale wegdoening. As gevolg van radioaktiewe verval verminder die hitte-opwekking deur die brandstof mettertyd. Sulke periodes kan 50 jaar en meer duur. Daar is dus voldoende tyd vir noukeurige ondersoek na die optimale wegdoen-

Seeking the optimal disposal solution

Facilitating National Initiatives

National Radioactive Waste Management Policy

As part of its statutory mandate, the CNS is required to ensure that licensees safely manage any radioactive waste generated by their operational activities. In addition, the CNS is required to license radioactive waste disposal sites. This is with a view to achieving the objects of the CNS in respect of the protection of persons from nuclear damage.

AEC

The Atomic Energy Corporation also has certain regulatory responsibilities in respect of radioactive waste with the apparent aim of ensuring the rational provision of appropriate waste management facilities on a national basis.

With the advent of Koeberg, the Vaalputs National Radioactive Waste Disposal Site was developed by the AEC to accept low and intermediate operational radioactive waste arisings from Koeberg. Work also commenced on a limited scale to investigate the accommodation of the high level waste, essentially spent irradiated nuclear fuel from the operation of Koeberg.

Generally accepted practice for the management of spent fuel is to provide for a considerable "cooling" period prior to final disposal, in order to allow for radioactive decay and the accompanying reduction in heat generation from the fuel. Such time periods can extend up to fifty years and beyond. There is therefore sufficient time for careful investigation of the optimal disposal solution, although adequate interim storage arrangements remain necessary.

oplossing, hoewel voldoende tussentydse bergingsmaatreëls nodig bly.

Voor die inbedryfstelling van die Koeberg-kernkragsentrale is geriewe vir die berging van klein hoeveelhede radioaktiewe afval op die AEK se Pelindaba-terrein ontwikkel. Hierdie ontwikkelings in die bestuur van radioaktiewe afval het egter nie die afval aangespreek wat uit die minerale- en mynbou-verwerking ontstaan het nie. Dit het ook nie voorsiening gemaak vir die buitediensstelling van die AEK se uraanverryking- en brandstofvervaardiging -aanlegte nie of vir afval wat sou ontstaan uit die buitediensstelling van kernkragsentrales nie.

Ad hoc-bestuur

In die afwesigheid van 'n oorhoofse en omvattende nasionale beleid vir die bestuur van alle radio-aktiewe afval het die situasie ontstaan waar die RKV toenemend voorstelle van lisensiehouers gekry het om op 'n ad hoc wyse radioaktiewe afval te bestuur. Hierdie voorstelle was nie altyd versoenbaar met die algemeen aanvaarde praktyk nie, en die RKV het toenemend teësinnig geword om sulke voorstelle te aanvaar. Bykomend hiertoe het die rol van die AEK ten opsigte van die regulering van radioaktiewe afval onduidelik gebly, en die noodsaaklikheid om 'n omvattende, konsekwente, en duidelike nasionale beleid vir die bestuur van radioaktiewe afval daar te stel, het al hoe groter geword.

Forum moet beleid formuleer

Die RKV het voorlopige samesprekings gehou met verskeie partye wat betrokke is in die produksie en bestuur van radioaktiewe afval. Die partye het saamgestem oor die noodsaak vir 'n nasionale beleid sowel as die aktiewe betrokkenheid van alle geïnteresseerde en geaffekteerde partye in die ontwikkeling daarvan. 'n Forum is uiteindelik byeengeroep.

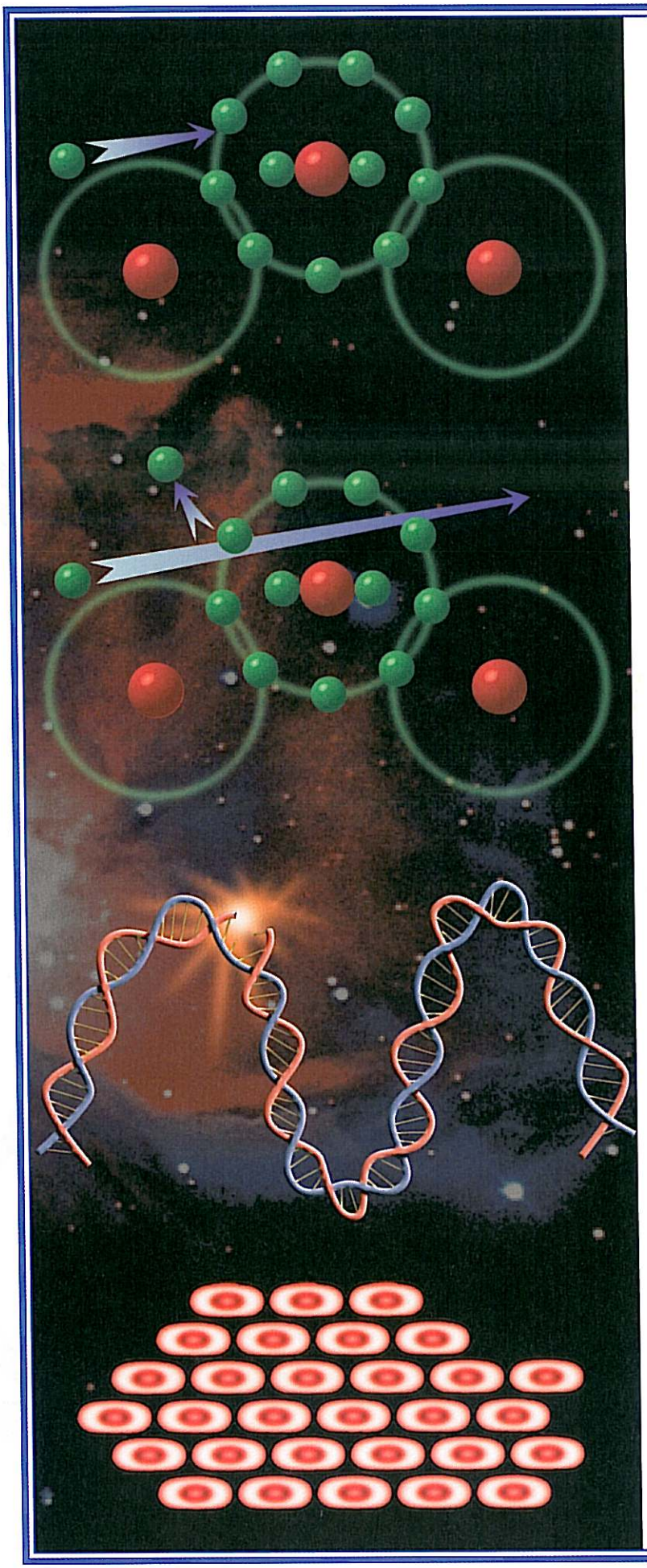
Prior to the commissioning of the Koeberg Nuclear Power Station, facilities for the storage of limited quantities of radioactive waste were developed at the AEC's Pelindaba site. However, these developments in waste management arrangements did not address radioactive waste arising from the mining and minerals processing industries, nor specifically from the decommissioning of the AEC's uranium enrichment and fuel fabrication facilities. They also did not explicitly address decommissioning waste from nuclear power stations.

Ad hoc arrangement

In the absence of an overall and comprehensive national policy for the management of all radioactive wastes, circumstances arose whereby the CNS received submissions from licensees proposing increasingly ad hoc arrangements for the management of radioactive wastes. The proposals were not always compatible with common international practice and the CNS became increasingly reluctant to accept such proposals. In addition, the role of the AEC in regulating radioactive waste remained unclear and the need to establish a comprehensive, consistent and coherent national policy for the management of radioactive waste became increasingly evident.

Preliminary discussions were undertaken by the CNS with various parties involved in the generation and management of radioactive waste. The parties were in agreement with the need for a national policy and with the involvement of all potentially interested and affected parties in its development.

A forum was subsequently convened consisting of organisations whose activities involved the genera-



Radiation and Tissue

Radiation can interact with the electrons in surrounding molecules...

...producing changes such as ionisation.
Ionised water molecules change to 'free radicals' which are highly reactive in a chemical sense, and which can alter important molecules in tissue.

They can produce chemical changes in DNA, the basic material which controls the structure and function of the cells that make up our bodies. Radiation can also ionise DNA molecules directly.

This can lead to biological effects, including abnormal cell development, some of which may not be seen for some time after irradiation.

Dit bestaan uit organisasies wie se aktiwiteite aanleiding gee tot radioaktiewe afval, liggame betrokke in die bestuur van sulke afval (insluitende die wegdoening daarvan), verteenwoordigers uit verskeie vlakke van die regering, en 'n verskeidenheid nie-regeringsorganisasies.

Werkswinkel

By 'n werkswinkel van die forum is die benaderings in ander lande met betrekking tot die daarstelling van 'n nasionale beleid oorweeg, sowel as die ontwikkeling van relevante internasionale standaarde. Die werkswinkel het 'n benadering tot die verdere ontwikkeling van die beleid voorgestel, terwyl hy ook die noodsaaklikheid benadruk het dat die proses op die hoogste regeringsvlak gesanksioneer moet word.

Rehabilitasie van terreine buite myneiendom

Ná die ontdekking in 1993 dat daar radioaktief besmette materiaal vir die doeleindes van verwerking van myneiendom verwyder is, is daar in 1994 uitgebreide ondersoeke gedoen om die mate van sodanige buitebesmetting te bepaal. Hierdie ondersoeke het meer as 40 sulke terreine opgelewer waar operasionele aktiwiteite met betrekking tot die hantering, stoor en prosessering van die gekontamineerde materiaal aanleiding gegee het tot vlakke van radioaktiwiteit wat remediërende stappe genoodsaak het.

Wie moet betaal vir die opruiming?

Die rehabilitasie van hierdie terreine het verskeie kwessies uitgelig. Onder die moeilikste om op te los, was om die party of partye te identifiseer wat verantwoordelik was vir die besmetting op elke terrein; wie moet betaal vir die rehabilitasie van die terreine; waar moet die gekontamineerde afval

tion of radioactive waste, bodies involved in waste management (including disposal), representatives of different levels of government and a spectrum of non-governmental organisations.

Workshop

A workshop was held by the forum at which approaches to the establishment of national radioactive waste management policies adopted in other countries were considered together with the development of associated standards internationally. The workshop proposed an approach to develop further the policy emphasising the necessity for the process to be sanctioned at the highest level of government.

Cleaning-up Off-Mine Sites

Following the discovery in 1993 of contaminated materials being transported from mining sites for re-cycling, extensive investigations were undertaken during 1994 to determine the resulting extent of off-site contamination. These investigations revealed over forty locations at which operational activities involved with the handling, storage and processing of the contaminated materials had given rise to levels of radioactivity, indicating the need for remedial measures to be taken.

The rehabilitation of these sites gave rise to several issues. Amongst the more difficult to address were the identification of the party or parties responsible for the contamination of each site; who should pay for rehabilitation of the sites; where the contaminated waste arising from rehabilitation work should be stored or disposed; the optimal mecha-

wat na die rehabilitasieproses oorbly, gestoor of mee weggedoen word; die optimale meganismes om die terreine te rehabiliteer; en die aanspreeklikheid van kontrakteurs wat in die rehabilitasiewerk betrokke is.

Nywerheidsfonds

Die mynmaatskappye wat gelisensieërde myne bedryf, het 'n nywerheidsfonds gestig om die mate van besmetting buite hul terreine te bepaal, om dringende noodmaatreels in werking te stel, en om die koste van rehabilitasie te ondersoek. Hierdie aktiwiteite is gekoördineer deur die Uitvoerende Koördineringsgroep (UK), wat ook die uitbetaling van fondse beheer het. 'n Gedeelte van die fondse is gebruik om eersgenoemde twee aksies mee te finansier. Wat die derde een aanbetref, het die UK besluit om een van die mees gekontamineerde en problematiese terreine te kies waar 'n ondersoek na opruimingskoste gedoen kon word.

Die terrein wat gekies is, was die plaas Katdoornbosch sowat 20 km noord van Potchefstroom. Die terrein het gekontamineer geraak as gevolg van die prosessering van skrootmateriaal wat hoofsaaklik van naburige myne verkry is. Tydens die hele rapporteringsperiode is daar met die verskillende betrokke liggame onderhandel, en die rehablitasie van die terrein is beplan en uitgevoer.

Skroot geruil

Die AEK is gekontrakteer om sowel die rehabilitasiewerk as radiologiese opmetings ter plaatse te doen. Die koste is deur die nywerheidsfonds gedek. Die Vaal Reefs Eksplorasie en Mynmaatskappy het ingewillig om die hoër kategorie afval in ontvangs te neem en in 'n afgesonderde area te hou. Die maatskappy het ook gereël om die gekontamineerde skrootmateriaal wat op die terrein aanwesig was, vir skoon skroot om te ruil.

nisms to rehabilitate the sites and the liability of contractors involved in rehabilitation work.

Industry fund

The mining companies operating licensed mines established an industry fund to investigate the extent of off-site contamination, to put in place any urgent control measures and to investigate the costs of rehabilitation. These activities were directed by an Executive Co-ordinating Group (ECG), which also oversaw the disbursement of the funds. A portion of the funds was used in conducting the former two activities. With regard to the latter, a decision was taken by the ECG to select one of the more contaminated and problematic sites upon which to undertake the investigation of clean-up costs.

The site chosen was the farm Katdoornbosch some 20 km north of Potchefstroom. This site had become contaminated owing to the processing of scrap materials procured mainly from nearby mines. Throughout the reporting period, negotiations were undertaken with various involved bodies and rehabilitation of the site was planned and executed.

Scrap exchanged

The Atomic Energy Corporation was contracted to carry out the rehabilitation work and radiological surveys on the site. The costs associated with the work were provided from the industry fund. Vaal Reefs Exploration and Mining Company agreed to accept the higher category waste, which was stored in a dedicated area, and also arranged to exchange non-contaminated scrap steel for the contaminated steel present on the site.

Natural Radiation: Cosmic

Radiation doses from cosmic rays increase with latitude and altitude. Little can be done to reduce exposure to cosmic radiation since it readily penetrates ordinary buildings. The average dose is 250 microsieverts each year, with a range of 200-300 microsieverts.



15 km — 10 microsieverts

10 km — 5 microsieverts





6.7 km — 1 microsievert

Himalayan Peaks

5 km

Lhasa Tibet 3.7 km

Mexico City 2.25 km
Johannesburg 2 km
Denver 1.6 km

0.1 microsieverts



0.03 microsieverts

Increase with altitude of dose received each hour

Die Wes-Driefontein Goudmyn het ingewillig om die gekontamineerde grond te ontvang en dit in sy slykdam te stort waar die besmettingsvlak soortgelyk was. Die werk self is deur die AEK uitgevoer en is gedek deur sy bestaande lisensie vir die Pelindaba-terrein. Daardeur is dekking verseker vir enige radiologiese aanspreeklikheid wat uit die rehabilitasiewerk mog ontstaan. Die werk is noukeurig deur die Kamer van Mynwese gemoniteer wat dit moontlik gemaak het om kosteberamings te maak vir die rehabilitasie van die oorblywende terreine.

Vergaderings is vervolgens gehou met verteenwoordigers van die mynbedryf ten opsigte van die voorsiening van fondse vir die werk wat verband hou met die oorblywende terreine. Die nywerheid het sy bereidwilligheid te kenne gegee om verdere fondse beskikbaar te stel om met die werk aan te gaan. Die probleem met betrekking tot die stoor en wegdoening van die afval het egter voortbestaan.

Waar dit moontlik was om voorsiening te maak vir die stoor van 'n beperkte hoeveelheid hoëvlak afval van Katdoornbosch, was dit duidelik dat dit nie moontlik sou wees ten opsigte van al die afval van die ander terreine nie.

Verskeie opsies is ondersoek om uit hierdie doodloopstraat te kom. Een opsie was vir die Staat om verantwoordelikheid vir die erg besmette afval te aanvaar, en vir die stoor daarvan voorsiening te maak in afwagting van 'n oplossing op die langer termyn. Die Staat is hieroor genader. Wanneer die saak opgelos is, word daar verwag dar daar redelike vordering gemaak sal word om hierdie terreine te rehabiliteer en skoon te maak. Dit sal die vereiste vir verdere regulatoriese beheer deur die RKV onnodig maak.

West Driefontein Gold Mine agreed to accept the contaminated soil for disposal in its slimes dam, where the levels of contamination were similar. The work was carried out under the nuclear licence granted to the AEC for its Pelindaba site, thereby ensuring coverage for any radiological liabilities arising from the rehabilitation work. The work was closely monitored by the Chamber of Mines enabling cost estimates to be made for rehabilitation of the remaining sites.

Meetings were held with representatives of the mining industry regarding the provision of funds for work associated with the remaining sites. The industry expressed a willingness to make further funding available to carry out the work. However, the problem remained of storage and disposal of the waste arising. Whilst it was possible to make arrangements for storage of the limited quantities of higher category waste arising from the Katdoornbosch site, it was clear that this would not be possible for the waste arising from all the other sites.

Various options were considered to overcome the impasse

Various options were considered to overcome this impasse. One option was for the State to assume custodianship of the higher level waste and provide for its storage pending longer term identification of disposal options. An approach was made to the government in this regard.

Once this matter is resolved it is anticipated that reasonable progress can be made to rehabilitate and clear these sites, negating the requirement for any further regulatory control by the CNS.

Wysiging van die Beherende Wetgewing

Die huidige Wet op Kernenergie wettig sowel die Raad vir Kernveiligheid as die Atoomenergie-korporasie en maak voorsiening vir hul oogmerke, funksionering en beheer. In die lig van die toenemende klem wat internasionaal geplaas word op die noodsaak om 'n sterk, onafhanklike kern-regulatoriese owerheid te hê - sowel as die erkenning van hierdie beginsel op nasionale vlak - is die bestaan van gemeenskaplike wetgewing vir sowel die AEK as RKV toenemend bevraagteken. Bykomend het die evolusie van die aard, inhoud en struktuur van sulke wetgewing, tesame met die ervaring van die afgelope paar jaar sedert die RKV 'n onafhanklike reguleerder geword het, oortuigende redes verskaf waarom daar afsonderlike wetgewing moet wees ten opsigte van die regulatoriese beheer van kernveiligheid.

Amendment of the Governing Legislation

The current Nuclear Energy Act establishes both the Council for Nuclear Safety and the Atomic Energy Corporation and makes provision for their objects, powers, functioning and control. In view of the increasing emphasis being placed internationally on the need to have a strong independent nuclear regulatory authority and the recognition of this principle nationally, the existence of such legislation common to both the AEC and the CNS has become increasingly questionable. In addition, evolution of the nature, content and structure of such legislation, together with the experiences gained over the past few years since the CNS became an independent regulator, have provided compelling reasons to establish separate legislation dealing with the regulatory control of nuclear safety.

Proses geformuleer

Ten einde so 'n verandering mee te bring, is 'n proses geformuleer waarin die beginsels van deursigtigheid en breë konsultasie omvat is, en wat deur die RKV en die Parlementêre Portefeulje vir Mineraal en Energiesake gesteun word. Tydens die rapporteringsperiode is openbare kommentaar deur middel van die media sowel as in direkte kontak met belangstellende partye versoek. Die kommentaar wat gekry is, is gedokumenteer, gepubliseer en gesirkuleer aan alle partye wat 'n belang in die proses openbaar het.

Twee openbare vergaderings is belê, een in die Wes Kaap en een in Gauteng, om breë bespreking moontlik te maak. Die bywoning van albei vergaderings was goed en het verteenwoordigers van lisensiehouers, vakbonde, openbare belangegroepe, professionele organisasies en nie-regerings-organisasies ingesluit wat oor die omgewing besorg is.

Process formulated

In order to effect such changes a process, endorsed by the CNS and the Parliamentary Portfolio Committee on Mineral and Energy Affairs, was formulated embodying the principles of transparency and broad consultation. During the reporting period, public comment was invited through the media and by direct contact with interested parties. The comments received were documented, published and circulated to all parties expressing an interest in the process.

Two public meetings were convened, one in the Western Cape and one in Gauteng, in order to allow broad discussion. Representation at the meetings was widespread and included representatives of licensees, trade unions, public interest groups, environmentally concerned non-governmental organisations and professional societies.

Die samesprekings, wat 'n wye veld gedek het, het baie gebiede van algemene konsensus opgelewer. Daar was egter ook sommige gebiede waar daar meningsverskille was. Daar was konsensus oor die noodsaak vir sterk, effektiewe regulatoriese beheer oor kerninstallasies en ander aktiwiteite wat bronne van radioaktiewe blootstelling aan sowel die werkerskorps as die publiek behels. Dit is beklemtoon dat die regulatoriese owerheid vry van enige moontlike botsing van belange moet wees; vandaar die nodigheid om heeltemal afsonderlik te wees van organisasies wat kern- of stralingsverwante fasiliteite bedryf of sulke tegnologie bevorder.

Verskeie opsies met betrekking tot watter regeringsinstansie die primêre verantwoordelikheid het ten opsigte van regulatoriese gesag , is vir verdere oorweging geïdentifiseer. Daar was instemming dat die standaarde van veiligheid en beheer vergelykbaar moet wees met internasionale standaarde, maar dat die noodsaak vir volgehoue ontwikkeling terselfdertyd erken moet word. Openheid en deursigtigheid in die regulatoriese proses, sowel as die reg van geaffekteerde en geinteresseerde partye om in daardie proses betrokke te wees, is deur almal as van fundamentele belang beskou. Die RKV het ontwerpwetgewing begin formuleer voordat verdere openbare kommentaar ingewin sal word.

The discussions took place on a wide range of issues and identified many areas of general consensus and some areas where disparate views existed. Consensus was evident in respect of the need for strong effective regulatory control over nuclear installations and other activities involving sources of radiation exposure to both the workforce and the public. The importance of independence of the regulatory body from any potential conflicts of interest was stressed as well as the need for its clear separation from organisations operating nuclear or radiation-related facilities or promoting such technologies.

Various options identified

Various options regarding which arm of government should have prime responsibility for the regulatory authority were identified for further consideration. There was agreement that standards of safety and control should be comparable with internationally endorsed standards, at the same time recognising the need for sustainable development.

Openness and transparency in the regulatory process were agreed by all parties to be of fundamental importance, as was the right of interested and affected parties to be involved in the regulatory process.

The CNS commenced the formulation of draft legislation prior to soliciting further public comment.

Betrokkenheid in sake verwant met Energie en die Omgewing

Die basiese rol van die RKV is om regulatoriese beheer uit te oefen oor kerninstallasies en ander bedrywighede met betrekking tot radioaktiewe materiaal wat die potensiaal het om mense aan straling bloot te stel. Sulke beheer word uitgeoefen oor die installasie of aktiwiteit met die oog daarop om die veiligheid daarvan reg van die begin af te verseker deur 'n goeie ontwerp, konstruksie, instandhouding, werking en buitedienstelling.

Nietemin, dit is belangrik dat die veiligheidsvereistes oorweeg moet word in enige toekomstige opsie wat kernkrag mag insluit. Dit is ook belangrik om die versekering aan die publiek te bied dat dié beheer enige onaanvaarbare besmetting van die omgewing, hetsy deur die vrystelling van vloeibare of gasagtige afval, die wegdoening van vaste afval of die buitediensstelling van installasies, sal verhoed.

As sulks is die RKV aktief betrokke by die voorsiening van advies en ander insette aan 'n reeks beheer- en beplanningsinisiatiewe wat met energie en die omgewing te doen het. In hierdie opsig was die RKV ten nouste betrokke by die ontwikkeling van die Groenskrif oor Energie en die Omgewing en ook die inisiatiewe met betrekking tot CONNEP en die Kernbrandstof-siklus.

Involvement in matters related to Energy and the Environment

The prime role of the CNS is to exercise regulatory control over nuclear installations and other activities involving radioactive material having the potential to expose persons to radiation. Such control is exercised over the installation or activity with a view to ensuring safety at the source by good design, construction, maintenance, operation and decommissioning.

Nevertheless, it is important that the requirements of safety are considered in the future planning of options which may involve nuclear energy. It is also important to provide reassurance to the public that the controls effectively prevent any unacceptable contamination of the environment due to the discharge of effluents, the disposal of wastes or the decommissioning of facilities.

As such, the CNS is actively involved in providing advice and input to a range of energy and environmentally related control and planning initiatives. To this end the CNS has been closely involved with the development of the Green Papers on energy and the environment and with both the CONNEP and Nuclear Fuel Cycle Initiatives.

Skakelaktiwiteite

In ooreenstemming met die RKV se beleid van openlikheid en deursigtigheid, is 'n reeks aktiwiteite van stapel gestuur sodat werksverhoudings onderhou en verbreed kon word met alle partye wat belangstel in en geaffekteer is deur die regulatiewe beheerproses. Bykomend tot sy gereelde skakeling met lisensiehouers, het die RKV ook sy kontak uitgebrei na verteenwoordigers van die georganiseerde arbeid, burgerlike organisasies, openbare belangegroepe, omgewingsgroepe en professionele liggame. Gereelde voorligtingsessies is gehou met sulke groepe wat verband hou met spesifieke lisensiehouers of groepe van lisensiehouers.

Hierdie vergaderings was daarop gemik om 'n begrip van die rol en funksies van die RKV asook van die aard van bestralingsgevare en die beginsels van beheer daar te stel. Daar is ook verslag gedoen oor die status van die verskillende lisensiebedrywighede, en toegang is op 'n deurlopende grondslag beskikbaar gestel tot inligting oor sake wat kommer mag wek.

Kontak is ook behou met verteenwoordigers van die media, en daar is gepoog om 'n bewustheid van lisensiëring en verwante sake met betrekking tot stralingsveiligheid daar te stel en te behou.

Liaison Activities

In line with the CNS policy of openness and transparency, a range of activities has been pursued to broaden and maintain working relationships with all parties interested and affected by the regulatory control process.

In addition to its routine liaison with licensees, the CNS has expanded contact with representatives of organised labour, civic organisations, public interest groups, environmental interest groups and professional societies. Regular briefing meetings were initiated with all such groups related to particular licensees or groups of licensees.

These meetings were aimed at establishing an understanding of the role and functions of the CNS, the nature of radiation hazards and the principles of control. The status of the various licensing activities was also reported upon and the opportunity provided, on an ongoing basis, for access to any information of concern.

Contact was also maintained with representatives of the media and efforts have been expended to maintain an awareness of licensing and related radiation safety matters.

Organisasie van die RKV

Ná die omvattende reorganisasie van die RKV in die vorige belastingjaar, het geen verdere beduidende verandering plaasgevind nie. Die veranderinge het voordelig geblyk te wees, en het die werk van die RKV gefokus op veiligheidsaangeleenthede wat met lisensiebedrywighede geassosieer word. Dit het ook 'n effektiewe meganisme daargestel om die geskiktheid van veiligheidsmaatreëls en hul effektiewe toepassing te beoordeel.

Terselfdertyd word daar vertrou dat die proses toenemend deursigtig gemaak word deur sowel die besorgheid as belange van alle geïnteresseerde en geaffekteerde partye in ag te neem.

Die effektiwiteit van die nuwe organisasie was onderworpe aan voortdurende interne waardering met die oog daarop om voortgaande verbetering in werksmetodes te verkry. Die oogmerk hier was veral om die effektiwiteit en doeltreffendheid van die RKV se funksie te verbeter, asook om nakoming van die Wet op Verslagdoening deur Openbare Entiteite te fasiliteer. Aan die einde van die jaar was daar 77 voltydse personeellede in die diens van die RKV.

Voortdurend interne waardering

Met die oog daarop om die RKV op 'n geskikte en koste-effektiewe manier te bedryf, is daar begin met 'n interne kwaliteitsbeheer-program. Dit sal in die volgende verslagdoeningsperiode ingefaseer word. Die program is gestruktureer om te verseker dat alle aspekte van veiligheid wat met gelisensieërde aktiwiteite geassosieer word, onderworpe is aan geskikte veiligheidswaardering, dat die nodige lisensievoorwaardes geformuleer word, en dat hierdie voorwaardes effektief deur die lisensiehouers toegepas word.

Organisation of the CNS

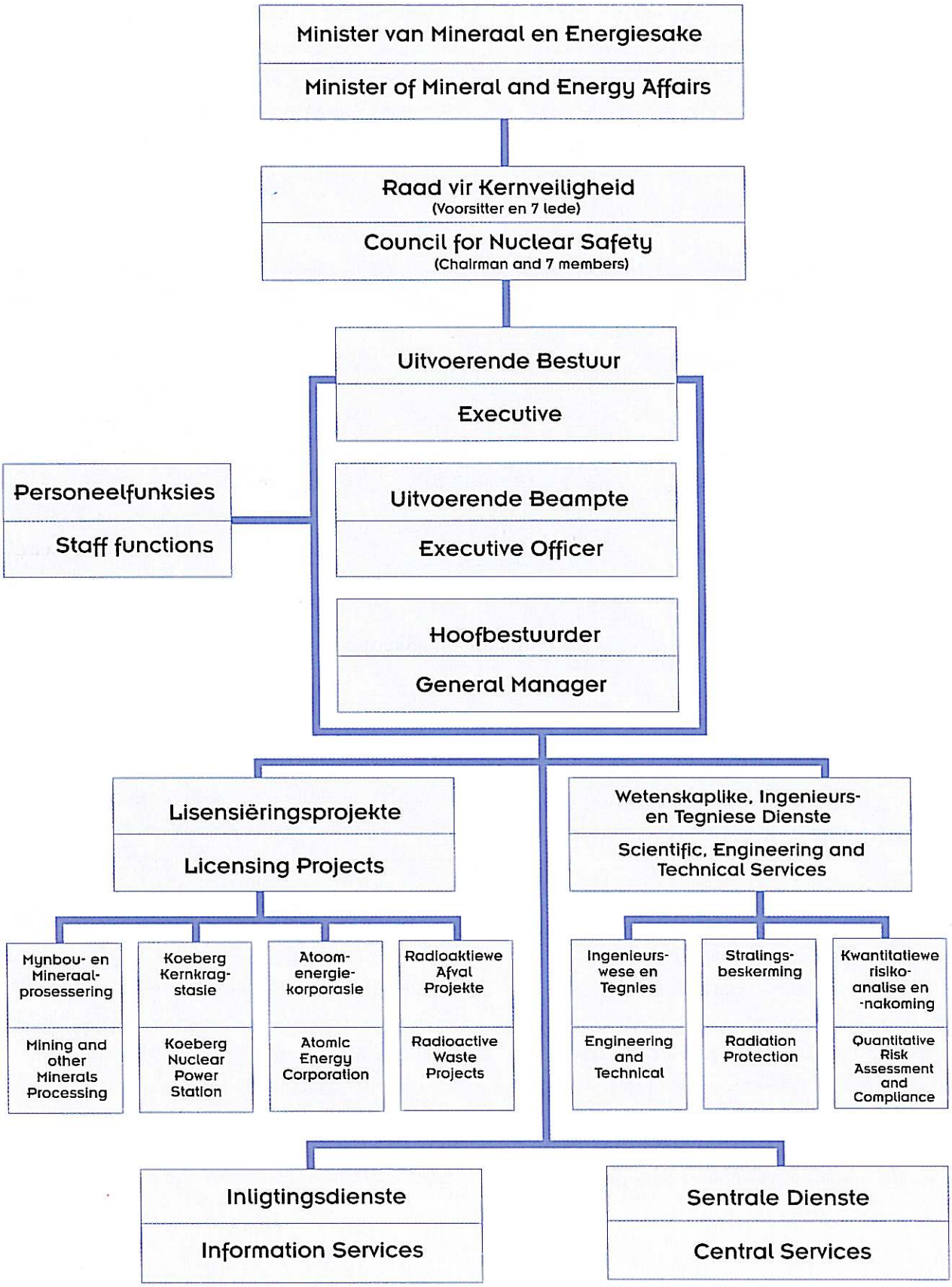
Following the major re-organisation of the CNS during the previous reporting period, no further significant changes have taken place. The changes have proved to be beneficial, focusing the work of the CNS on safety matters associated with licensed activities and providing an efficient mechanism to assess the adequacy of safety provisions and their effective implementation.

At the same time, it is believed that the process is being made increasingly transparent by providing for the concerns of all interested and affected parties.

The effectiveness of the new organisation was subjected to ongoing internal appraisal with a view to achieving continuous improvements in working methods in order to increase the efficiency and effectiveness of the CNS function, and to facilitate compliance with the Reporting by Public Entities Act. At the year end, the CNS comprised seventy seven full-time staff members.

With a view to ensuring the adequate and cost effective conduct of the business of the CNS, an internal quality management programme was extended and will be phased in during the forthcoming reporting period. The programme has been structured to ensure that all aspects of safety associated with licensed activities are subject to appropriate safety assessment, that necessary conditions of licence are formulated and that the conditions are effectively applied by licensees.

Organisasie van die RKV — Organisation of the CNS



Inligtingsdiens

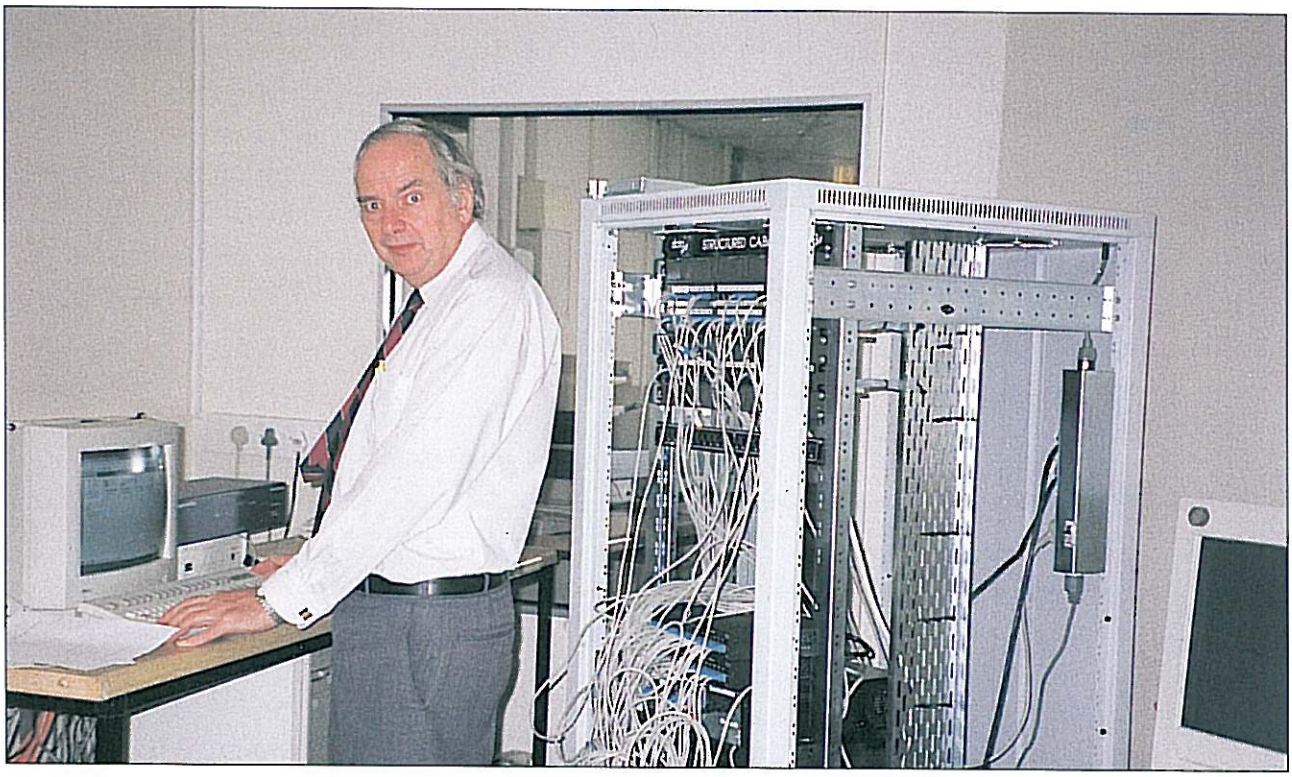
Die RKV se rekenaarnetwerk is verder ontwikkel. Bykomend tot die opgradering van sowel die toerusting as sagteware op hoofkantoor asook in die RKV-kantoor by Koeberg, is elektroniese koppeling tussen hierdie twee terreine bewerkstellig. Daardeur is die oordrag van data tussen RKV-inspekteurs en -veiligheidsassessors makliker gemaak.

Die volume korrespondensie wat in die tydperk deur die RKV se inligtingsdepartement geprosesseer is, het met vyftig persent toegeneem. Dit bewys die nut van die beeldverwerking-, herwinning- en verspreiding-stelsel wat 'n substantiewe toename in produktiwiteit moontlik maak.

Information Services

Further development of the CNS computerised network took place. In addition to equipment and software upgrades at both headquarters and the CNS offices at Koeberg, electronic linkages were installed connecting these sites thereby facilitating transfer of data between CNS inspectors and safety assessors.

The volume of correspondence processed by the CNS Information Services Department increased by 50% over the reporting period, demonstrating the utility of the imaging, retrieval and dissemination system which enabled substantial gains in productivity to be achieved.



Mr. Dave Simpson, head of Information Services, in the computer room.

Stralingsveiligheid

Die RKV se beleid ten opsigte van stralingsveiligheid het onveranderd gebly. In hierdie opsig en in ooreenstemming met internasionale konsensus, word daar vereis dat die risiko vir sowel die werkers in die gelisensieërde bedryf as vir die algemene publiek, nie die voorgeskrewe limiete vir sowel normale bedryf as vir potensiële ongelukke mag oorskry nie. Ook moet sowel individuele as bevolkings-risiko's so laag moontlik gehou word met inagneming van sosiale en ekonomiese faktore.

Hierdie fundamentele beginsels lei tot 'n dosislimietstelsel vir persone wat in hul werk aan straling blootgestel word, sowel as vir lede van die publiek. Eersgenoemde stel spesifieke ontwerp- en operasionele vereistes vir fasiliteite. Met betrekking tot die publiek behels dit 'n beperking op en beheer van die vrystelling van gasagtige en vloeibare afval in die omgewing, beheer oor die bestuur van radioaktiewe afval, en beheer oor die vervoer van radioaktiewe materiaal binne die publieke terrein.

Sover dit moontlike ongelukke aanbetref, word sekere vereistes met betrekking tot die ontwerp, konstruksie en onderhoud, en die toesig oor bedryf van fasiliteite toegepas. Dit word gedoen om die voortdurende integriteit van stelsels en strukture te verseker wat radioaktiewe materiaal bevat, en ook om bronne van radioaktiwiteit af te skerm. Die veiligheidsvereistes van die RKV erken egter ook dat geen kompleks ontwerpte fasiliteit onfeilbaar is nie, en hoewel 'n analise van die geskiktheid van gelisensieërde fasiliteite vereis word, moet voorsiening gemaak word vir beplanning teen ongelukke. Dit vereis dat fasiliteite met 'n potensieël beduidende moontlikheid tot ongelukke, oor noodbeplanning moet beskik, dit in diens moet stel en onderhou. Hierdie beplan-

Radiation safety

The policy of the CNS regarding radiation safety remained unchanged. In this regard and in line with international consensus, it is required that the risks to both the workforce involved in licensed activities and the general public should not exceed prescribed limits for both normal operation and for potential accidents, and that both individual and population risks be maintained as low as reasonably achievable, social and economic factors being taken into consideration.

No complex engineered facility is infallible

These fundamental principles lead to a system of radiation dose limitation for persons occupationally exposed to radiation and for members of the public. The former results in particular design and operational requirements on facilities. For the latter, it results in limitation and control of effluent discharge to the environment, control over the management of radioactive waste and control over the transport of radioactive materials within the public domain.

With respect to potential accidents, certain requirements on the design, construction and maintenance, surveillance and operation of facilities are imposed in order to ensure the ongoing integrity of systems and structures for containing radioactive materials and for shielding sources of radiation.

The safety requirements of the CNS also recognise that no complex engineered facility is infallible and despite requiring an assessment of the adequacy of licensed facilities, consideration must also be given to planning for accidents. This requires that facilities with a propensity for significant accidental impact must establish and maintain emergency plans. The plans must be capable of recognising events which may lead to a significant release of radioactive material or radiation hazard and provide for appropriate mitigatory response.

ning moet in staat wees om voorvalle te herken wat tot 'n beduidende vrylating van radioaktiewe materiaal of stralingsgevaar kan lei, en om te reageer met geskikte versagtende teenoptrede. Laastens moet daar aandag gegee word aan die fisiese sekuriteit van radioaktiewe materiaal om die diefstal of verduistering daarvan te verhinder.

Die Regulatoriese Proses

Die regulatoriese proses wat deur die RKV aanvaar is, behels die bepaling van afgeleide standaarde vir die ontwerp, konstruksie, toesighouding en bedryf van installasies wat sal verseker dat aan neergelegde fundamentele veiligheidsbeginsels voldoen word. Dit vereis dat 'n stelselmatige, kwantitatiewe risiko-analise deurgevoer word.

Dit word gedoen om die geskiktheid van die ontwerp en bedryfstoestande te bevestig, die nodige standaarde te handhaaf, asook om die nodige operasionale beheer-, onderhoud-, inspeksie- en toetsvereistes te identifiseer. Op grond van hierdie analise word die nodige beperkings op bedryfs- en moniterings-vereistes bepaal. Hulle word weer geformuleer in lisensievereistes en die toepassing daarvan word verseker deur 'n stelselmatige program van regulatoriese verslae, oudits, hersienings en inspeksies.

Die aktiwiteite wat onderhewig is aan die lisensiëringsproses, is die bedryf van die Koeberg-kernkragsentrale, die werksaamhede van die Atoomenergie-korporasie, asook aktiwiteite wat saamhang met die mynbedryf en mineraleprosessering en die gebruikers van klein hoeveelhede radioaktiewe materiaal.

Finally, attention must be given to the physical security of radioactive materials to prevent their theft or diversion.

The Regulatory Process

The regulatory process adopted by the CNS entails the determination of derived standards of design, construction, surveillance and operation which will ensure compliance with the fundamental safety principles laid down. It requires the carrying out of a systematic hazards analysis, based upon quantitative risk assessment, in order to confirm the adequacy of design and operational provisions to meet the necessary standards and identify the necessary operational control, maintenance, inspection and testing requirements.

From the assessment, the necessary restrictions on operation and monitoring requirements are established. These are formulated into conditions of licence, the enforcement of which are ensured through a systematic programme of regulatory reports, audits, reviews and inspections.

The activities subject to the licensing process are operation of the Koeberg Nuclear Power Station, the activities of the Atomic Energy Corporation, activities involved in the mining and minerals processing industries associated with radioactive ores, and users of small quantities of radioactive material.

Lisensiëringsprojekte

Koeberg

Veiligheidsanalise

Die Koeberg-kernkragsentrale is operasioneel sedert 1984. Tydens sy operasionele leeftyd is die veiligheidsontleding wat voor die begin van sy indiensstelling gedoen is, voortdurend aangepas met inagneming van modifikasies aan die installasie self, asook sy operasionele prosedures. Sulke modifikasies word gedoen om sowel die veiligheid as doeltreffendheid van die installasie te verhoog.

Nieteenstaande die voortdurende opdatering van die veiligheidsanalise in ooreenstemming met internasionale praktyke, is daar besluit dat 'n algehele herontleding van Koeberg se veiligheid onderneem moet word. Sulke periodieke veiligheidsontledings vergelyk die oorspronklike ontwerp-basis met dit wat geldig sou wees indien dit vandag gebou sou word. Die nuutste ontledings gebruik die jongste tegnieke in veiligheidsraming, en neem die kumulatiewe effekte van veroudering en modifikasies van die fasiliteit in ag.
Die omvattende herontleding is 'n groot onderneming, en omvattende insette is gelewer om die aard en omvang te formuleer van die werk wat gedoen moet word.

DSIN, wat daarvoor verantwoordelik is om kernkragsentrales in die Franse kernkragprogram te lisensieer - wat soortgelyk is aan dié by Koeberg - is by samesprekings betrek. DSIN het 'n soortgelyke herontledingsproses onderneem. Die werk wat oor 'n periode van twee jaar onderneem sal word, sal grootliks daartoe bydra om die voortgesette aanvaarbaarheid van die veiligheidsaspekte in die ontwerp en bedryf van Koeberg te demonstreer.

Licensing projects

Koeberg

Safety Assessment

The Koeberg Nuclear Power Station has been operational since 1984. Throughout its operational lifetime, the safety assessment conducted before initial operation has been regularly updated taking into account modifications to the plant and its operating procedures. Such modifications are made to enhance both the safety and efficiency of the plant.

Despite the ongoing update of the safety assessment, in line with international practice, it was concluded that a major re-appraisal of the safety of Koeberg should be undertaken. Such periodic safety assessments compare the original design bases of the plant with those that would be adopted in plants built today. They employ the latest techniques of safety assessment and take into consideration the cumulative effects of plant ageing and modifications.

The assessment is a major undertaking

The assessment is a major undertaking and extensive efforts have been expended in formulating the nature and extent of work to be undertaken.

Discussions have also taken place with the DSIN, responsible for licensing nuclear power stations similar to Koeberg within the French nuclear power programme, and which has embarked upon a similar reassessment process. The work will be undertaken over a two year period and will contribute greatly to demonstrating the ongoing acceptability of the safety related design and operational aspects of Koeberg.

Beheer van Publieke Blootstelling aan Straling

Die bedryf van kernkragsentrales gee aanleiding tot die voortbrenging van verskillende vorms van radioaktiewe afval wat veilig bestuur moet word. Die meeste oorgeblewe radioaktiwiteit is in die gebruikte brandstof aanwesig wat periodiek uit die reaktorkern verwyder en veilig in spesiaal ontwerpte fasiliteite op die terrein gestoor word. Nadat dit vir 'n tydperk gestoor is - wat toelaat vir die verval van beduidende hoeveelhede radioaktiewe reste - word die verbruikte brandstof nogmaals verwyder vir langdurige tussentydse berging, herprosessering of wegdoening. Hieroor bly die opsies egter oop. Desnieteenstaande sal voldoening aan die nasionale beleid vir die bestuur van radio-aktiewe afval, wat nou in sy ontwikkelingstadium is, gedemonstreer moet word.

Ander operasionele radioaktiewe afval-voorkomste is in gasvorm, as vloeibare proses-afval en 'n verskeidenheid materiale wat tydens die bedryf en onderhoud van die fasiliteit besmet geraak het. Die vloeistowwe en ander materiale word geprosesseer om die kontaminante te verwyder wat dan in dromme of betonhouers gekonsolideer word. Geprosesseerde uitskotwater word dan onder streng beheer in die omgewing vrygelaat om te verseker dat enige oorblywende radioaktiwiteit binne die gemagtigde vlakke bly.

Die vlakke word as Jaarlikse Gemagtigde Vrystellings Hoeveelheid (JGVH) bepaal, wat sal verseker dat die openbare stralingsdosis-limiete nie oorskry sal word nie. Vloeibare uitvloeisels is onderworpe aan 'n voortgaande moniteringsprogram deur Eskom wat onafhanklik deur die RKV geverifieër word. Bykomend hiertoe word 'n uitgebreide omgewings-moniteringsprogram deur bedryfspersoneel toegepas. Dit is ook onderworpe aan onafhanklike verifikasie deur die RKV.

Vloeistof- en gasagtige uitvloeisels wat gedurende 1995 deur Koeberg vrygestel is, het 'n berekende stralingsdosis van 0,45 µSv vir lede van die publiek

Control of Public Exposure to Radiation

Operation of nuclear power stations gives rise to the generation of various radioactive wastes which have to be safely managed. The majority of residual radioactive materials is present in the spent fuel which is periodically removed from the reactor cores and safely stored in purpose-built spent fuel storage facilities on site. Following a period of such storage, which allows for the decay of substantial amounts of shorter lived radioactive residues, the spent fuel will be removed for longer term interim storage, re-processing or disposal. The options remain open, nevertheless compliance with the national radioactive waste policy currently under development will have to be demonstrated.

Other operational radioactive waste arisings are gaseous and liquid process fluids and a range of materials that become contaminated during operation and maintenance of the plant. The fluids and other materials are processed to remove the contaminants which are then drummed or consolidated into concrete containers. Processed effluents are discharged to the environment under strict control to ensure that any residual radioactivity is within authorised levels.

The levels are set as Annual Authorised Discharge Quantities (AADQ's) which ensure that public radiation dose limits will not be exceeded. Effluent discharges are subject to an ongoing monitoring programme by Eskom and this is independently verified by the CNS. In addition, an extensive environmental monitoring programme is conducted by the operators and this is also subject to independent verification by the CNS.

Liquid and gaseous effluents discharged from Koeberg during 1995 resulted in a calculated radiation dose to the public of 0,45 µSv. This is well below the public dose limit of 250 µSv laid down by the CNS. **Table 1** illustrates the fraction of AADQ values measured for the dominant radioactive species discharged during 1995 through the

tot gevolg gehad. Dit is heelwat laer as die publieke dosislimiet van 250 µSv wat deur die RKV neergelê is. **Tabel 1** illustreer die fraksies van JGVH waardes vir die dominante radioaktiewe spesies wat in 1995 langs die verskillende verspreidingsroetes vrygestel is. In geen geval is 'n individuele JGVH oorskry nie.

Verbeteringe is aangebring in die prosessering van radioaktiewe afval, wat weer tot gevolg gehad het dat die volume geprosesseerde afval verminder het, soos in **Tabel 2** aangedui. Gevolglik is geen radioaktiewe afval tydens die verslagperiode aan Vaalputs gelewer nie.

different pathways. In no instance has an individual AADQ been exceeded.

Improvements were made in radioactive waste processing which enabled the volume of processed waste to be reduced, as shown in **Table 2**. Consequently, no deliveries of radioactive waste were made to the Vaalputs National Radioactive Waste Disposal Site during this reporting period.

Tabel 1 / Table 1

% of AADQ Discharged in Effluents from Koeberg in 1995
% van JGVH vrygelaat vanaf Koeberg in 1995

Atmospheric Transport Pathway **Luggedrae Vrystelling**		**Liquid Transport Pathway** **Vloeistofvrystelling**	
Radionuclide Radionukliede	% of AADQ % van JGVH	Radionuclide Radionukliede	% of AADQ % van JGVH
^{134}I	65	^{124}Sb	19
^{138}Xe	52	^{110m}Ag	11
^{3}H	16	^{90}Sr	9
^{132}I	12	^{3}H	9

Tabel 2 / Table 2

Waste contained in concrete drums **Afval in betondromme**	**Volume (m^3)**	**Gross activity in waste (Bq)** **Bruto-aktiwiteit in afval**
Resins, spent filter cartridges, evaporator concentrates. **Hars, filterelemente, verdampingskonsentrate.**	**28.7**	**2×10^{12}**

Beheer van Beroepsblootstelling

Die blootstelling van die werkerskorps by Koeberg word beperk met 'n reeks ontwerps- en operasionele kermerke, wat daarop gemik is om dosisse so ver as wat redelikerwys moontlik is, onder die limiete te hou. Die jaarlikse gesamentlike dosis aan die beroepsblootgestelde werksmag tydens die verslagperiode was 1.46 man-Sv. Die hoogste individuele dosis was 20 mSv, veilig benede die jaarlikse dosislimiet van 50 mSv.

Die RKV het 'n jaarlikse gemiddelde dosislimiet van 10 mSv vir die beroeps-blootgestelde werksmag daargestel. Die verspreiding van beroepsblootstelling word in **Figuur 1** voorgestel. Met altesaam 1680 beroepsblootgestelde persone, beteken dit 'n jaarlikse gemiddelde beroepsblootstelling van 0.87 mSv.

Vergelykende syfers vir 1994 en 1995 word in **Tabel 3** weergegee. Die jaarlikse kollektiewe dosis vir 1995 was dieselfde as dié vir 1994, aangesien daar in elke jaar een onderbreking was om brandstof te herlaai. Die jaarlikse gemiddelde dosis onder die beroeps-blootgestelde gemeenskap was steeds gemaklik binne die RKV se kriteria van 10

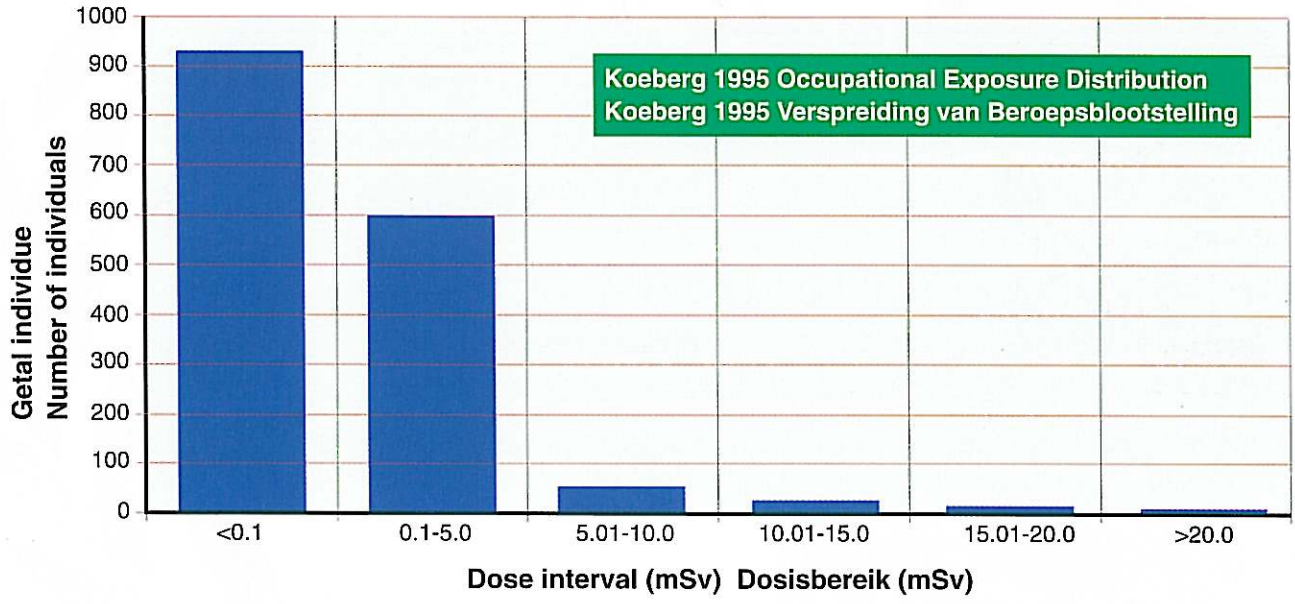
Control of Occupational Exposure

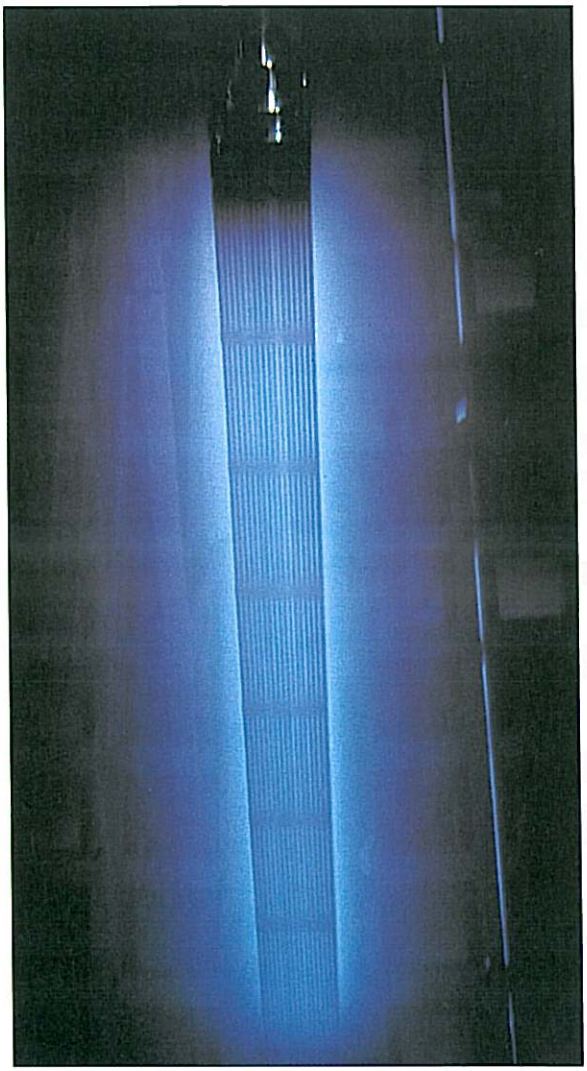
The exposure of the workforce at Koeberg is controlled by a range of design and operational features aimed at maintaining doses as far below limits as is reasonably achievable. The annual collective dose to the occupationally exposed workforce during the reporting period was 1.46 man-Sv. The highest individual dose accrued was 20 mSv and therefore no worker received a dose in the region of the annual dose limit of 50 mSv.

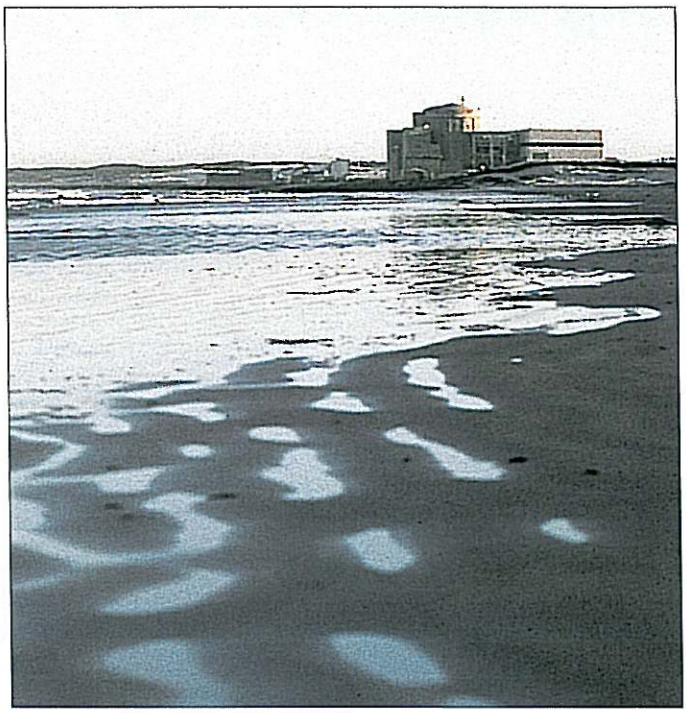
The CNS has imposed a limit on the average dose amongst the occupationally exposed workforce of 10 mSv. The distribution of occupational exposures is presented in **Figure 1**. With the total number of occupationally exposed persons being 1680, the annual average occupational exposure was 0.87 mSv.

Comparative figures for 1994 and 1995 are presented in **Table 3**. The annual collective dose for 1995 was similar to that for 1994, there having been one refuelling outage in each year. The annual average dose amongst the occupationally exposed population in both years was still well within the CNS criterion of 10 mSv. These figures attest to

Figuur /Figure 1



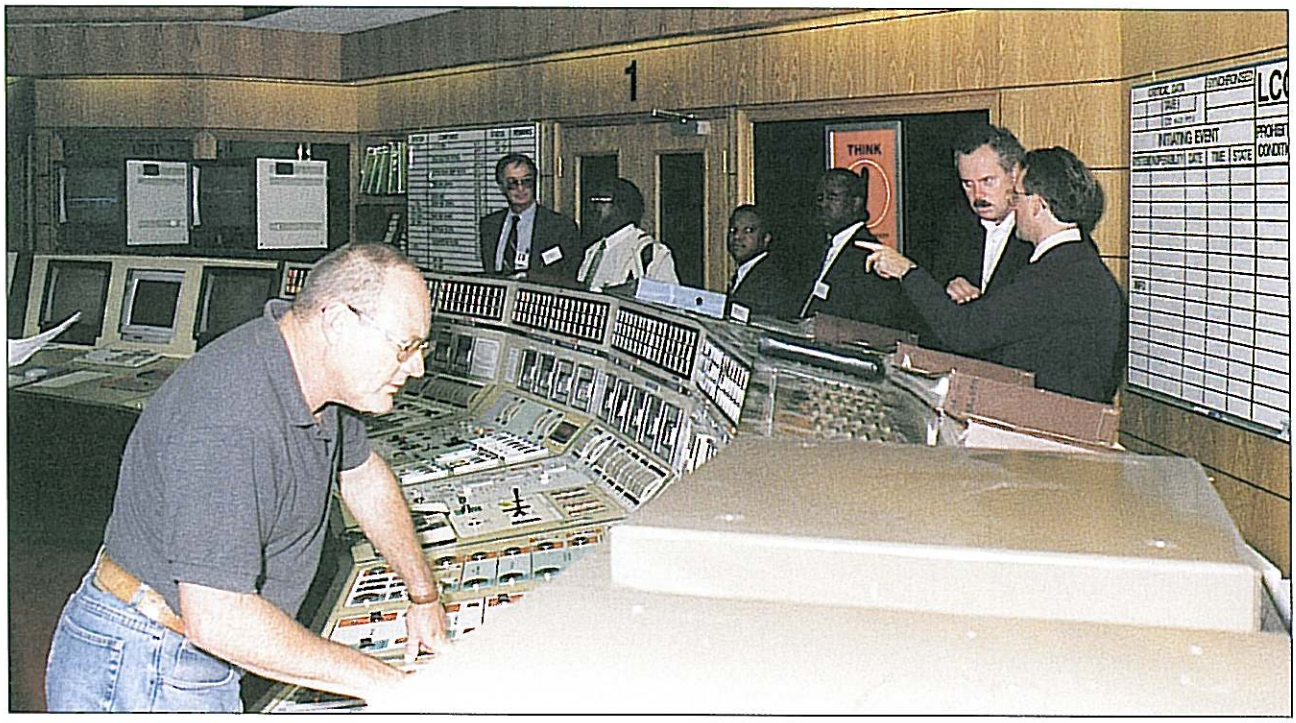




Emergency

Eskom conducts emergency exercises at regular intervals and under the watchful eye of the CNS.





exercise at Koeberg

Clockwise from top left is:
A fuel assembly;
Koeberg from a distance;
Some of the national and international dignitaries in one if the control rooms;
CNS staff members and guests listen intently to an explanation of the excercise.
Springtime view of Koeberg.



mSv. Hierdie syfers getuig van die sukses van die operasionele stralings-beskermingsprogram by Koeberg, wat as oogmerk het om stralingsdosisse so ver doenlik te verminder.

the success of the operational radiation protection programme at Koeberg in keeping radiation doses as far below the limit as is reasonably achievable.

Tabel 3 / Table 3

Occupational Radiation Exposure at Koeberg Nuclear Power Station
Beroepsblootstelling aan straling by Koeberg Kernkragsentrale

	1994	1995
Number of Outages Getal brandstofhervullings	1	1
Annual Collective Dose Jaarlikse gesamentlik dosis	1.61 man-Sv	1.46 man-Sv
Number of Occupationally Exposed Individuals Getal Beroepsblootgestelde Individue	1689	1680
Average Annual Dose Per Individual Gemiddelde Jaarlikse Dosis per Individu	0.95 mSv	0.87 mSv

Inspeksie en Sekerheidsaktiwiteite

Inspekteurs van die RKV het tydens die volle verslagtydperk 'n gerekenariseerde inspeksieprogram vir lisensie-ooreenstemming geïmplementeer. Die program het inspeksie-aktiwiteite volgens veiligheidsimpak ingedeel en bewerkstellig 'n goedgefokusde uitvoering van inspeksies.

Lisensiëringsaktiwiteite vir reaktor-operateurs is gedurende die hele jaar onderneem. Twee lisensies vir senior operateurs en ses vir reaktor-operateurs is toegeken.

Die voorval-databasis wat deur die RKV ontwikkel is, is verder gebruik vir die verifikasie van fasiliteitveiligheid asook om vergelykings met internasionale neigings te tref. Die RKV beskou Koeberg se prestasie ten opsigte van albei aspekte as bevredigend.

'n Groot noodplan-oefening is in Maart 1996 gehou, ten einde die gereedheid van Koeberg te toets om op 'n ernstige reaktor-ongeluk te reageer.

Inspection and Assurance Activities

A computerised licence compliance inspection programme was implemented by CNS inspection staff throughout the year. The programme prioritises inspection activities in terms of safety importance and provides for a well-focused application of inspections.

Reactor operator licensing activities continued throughout the year and two Senior Reactor Operator licences and six Reactor Operator licences were awarded.

An occurrence database developed by the CNS continued to be used in the verification of plant safety and as a means of comparison with international trends. The performance of Koeberg was judged by the CNS to be satisfactory with regard to both these aspects.

A major emergency plan exercise was conducted in March 1996 in order to test the level of preparedness of the Koeberg operating organisation to

Die oefening is gehou op die grondslag van 'n gesimuleerde ongeluk-scenario wat deur die RKV ontwerp en ontwikkel is. Die oefening het van Eskom vereis om die Burgerlike Beskermingsreaksiebekwaamhede van die Kaapse Metropolitaanse Raad, die Kaapstadse stadsraad, ander plaaslike owerhede en die SAUK te toets.

A major emergency exercise

Verskeie genooide nasionale gaste het saam met 'n groep plaaslike en buitelandse tegniese deskundiges die oefening as waarnemers bygewoon. Lede van die media het 'n vooraf-inligtingsessie bygewoon, en die oefening self in die Eskom-mediasentrum gevolg. Hoewel die oefening enkele gebiede uitgelig het waar verbeterings aangebring kan word, was die algemene vlak van gereedheid en reaksie vir die RKV bevredigend.

respond to a serious reactor accident. The exercise was conducted on the basis of a simulated accident scenario designed and developed by the CNS. The exercise required Eskom to activate the Civil Protection response capabilities of the Cape Metropolitan Council, Cape Town City Council, other local authorities and the SABC.

Several invited national dignitaries, together with a group of technical experts from South Africa and overseas, observed the exercise. Members of the media attended a pre-exercise briefing and followed the exercise in the Eskom media centre. Although the exercise highlighted a few areas where improvements could be made, notwithstanding these the overall level of readiness and response was determined by the CNS to be satisfactory.

Atoomenergiekorporasie

Veiligheidswaardering

Nieteenstaande die feit dat die AEK sedert die vroeë 1960's al uitgebreide aktiwiteite onderneem het, was die organisasie eers sedert 1990 aan formele regulatoriese beheer onderworpe. Op die basis van die vorige operasionele bedryfsgeskiedenis van sy fasiliteite, is 'n retrospektiewe veiligheidsontleding en regulatoriese beheerproses aanvaar.

Dit het nie net die regulatoriese beheer bemoeilik nie, maar het saamgeval met probleme wat ervaar is terwyl die AEK ingekrimp en omvorm is op pad na 'n organisasie wat minder van staatsfondse afhanklik is met meer klem op ontwikkeling en kommersialisering. Bykomend het die buitedienststelling van groot fasiliteite aanleiding gegee tot 'n bykomende werklas en het dit uitgebreide lisensiëringsaktiwiteite vereis. Hoewel interne veilig-

Atomic Energy Corporation

Safety Assessment

Despite having undertaken extensive activities since the early 1960's, the facilities of the AEC were only subjected to formal nuclear regulatory control in 1990. On the basis of the previous operating history of the facilities, a retrospective safety assessment and regulatory control process was adopted.

This not only complicated the regulatory approach but coincided with difficulties experienced as the AEC down-sized and transformed towards an organisation less dependent upon state funding with greater emphasis being placed upon development and commercialisation activities. In addition, the decommissioning of large facilities gave rise to an additional workload and required extensive licensing activities. Although internal safety

heidsverslae vir die verskillende fasiliteite voorberei was, het dit nie beantwoord aan die geformaliseerde standaarde van veiligheidsanalise wat deur die lisensiëringsproses vereis word nie. Ook was daar 'n gebrek aan doelgerigte operasionele spesifikasies wat veiligheid benadruk as 'n primêre bedryfsoorweging, soos deur die lisensie vereis.

'n Retrospektiewe waarderingsprogram is begin, maar dit het objektiewe ooreenstemmingsinspeksieprogramme bemoeilik. Voorvalle het voorgekom wat die noodsaaklikheid vir beter beheer benadruk het.

reports were compiled for the various facilities, these did not meet the formalised standards of safety assessment called for by the licensing process, nor did the reports give rise to focused operating specifications emphasising safety as a major operational consideration as demanded by the licence.

A programme of retrospective assessment was initiated but made objective compliance inspection programmes more difficult to implement and occurrences arose indicating the need for improved control.

Die Beheer van Publieke Blootstelling aan Straling

Luggedrae aktiwiteit vanaf die AEK se fasiliteite word in **Tabel 4** weergegee. Publieke blootstelling is met hierdie data, asook met terrein-spesifieke meterologiese en demografiese inligting met betrekking tot die Pelindaba-terrein, bereken. Die maksimum berekende dosis vir 'n lid van die publiek in 1995 was 12 µSv, wat heelwat minder is as die publieke dosislimiet van 250 µSv.

Control of Public Exposure to Radiation

Airborne effluent discharges from the AEC facilities are provided in **Table 4**. Public exposure was calculated from these data together with site specific meteorological and demographic information relating to the Pelindaba site. The maximum calculated dose to a member of the public was 12 µSv during 1995, well below the public dose limit of 250 µSv .

Tabel 4 / Table 4

Radionuclide-specific releases in gaseous effluent from AEC facilities during 1995
Luggedrae vrystellings van die AEK fasiliteite gedurende 1995

Radionuclide Radionukliede	Activity release during 1995 [Bq] Aktiwiteit in 1995 vrygestel [Bq]
^{238}U	8.1 E+09
^{234}Th	8.1 E+09
^{234m}Pa	8.1 E+09
^{235}U	3.8 E+08
^{231}Th	3.8 E+08
^{234}U	4.5 E+09

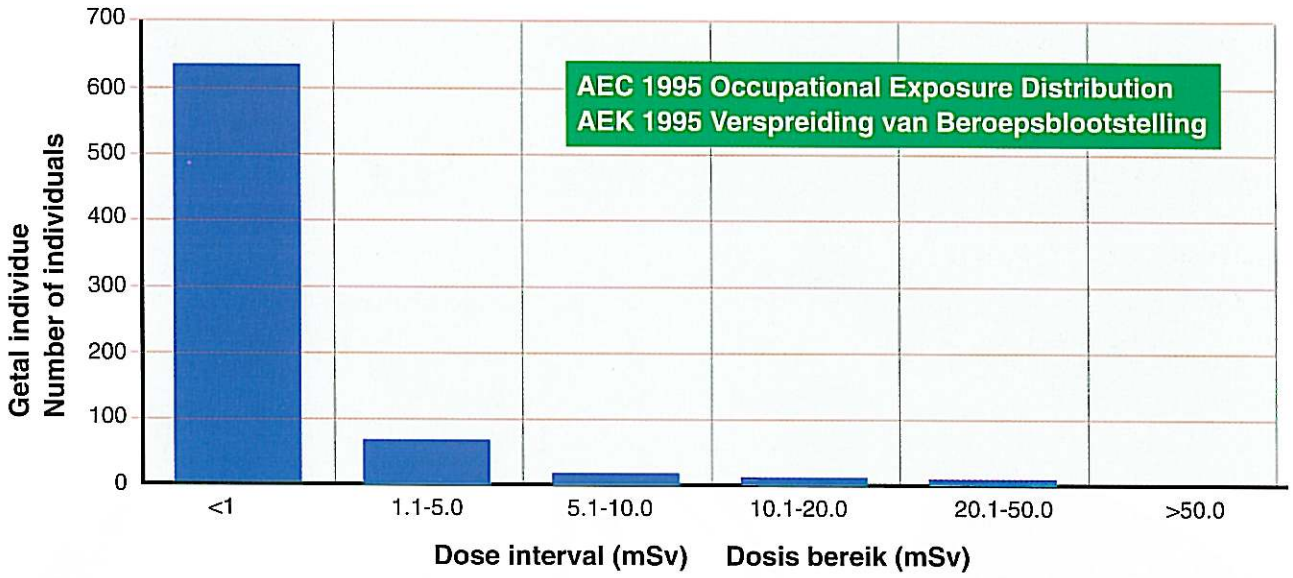
Die Beheer van Beroepsblootstelling

Die totale getal beroeps-blootgestelde werkers was in 1995 altesaam 722. Hul kollektiewe jaarlikse dosis was 0.42 man-Sv. Niemand het 'n dosis groter as die jaarlikse dosislimiet van 50 mSv gekry nie en die jaarlikse gemiddelde individuele dosis was 0.59 mSv. Die verspreiding van beroepsblootstelling word in **Figuur 2** weergegee. Die jaarlikse kollektiewe dosis onder die beroeps-blootgestelde werkers-korps van die AEK is 'n fraksie van die RKV se kriteria van 10 mSv. Die doeltreffendheid van die operasionele stralingsbeskermingsprogram by die AEK word dus as baie bevredigend beskou.

Control of Occupational Exposure

The total occupationally exposed workforce in 1995 numbered 722 whose collective annual exposure was 0.42 man-Sv. No individual received a dose in excess of the annual dose limit of 50 mSv with the annual average individual dose being 0.59 mSv. The distribution of occupational exposures is presented in **Figure 2**. The annual collective dose amongst the occupationally exposed workforce of the AEC is a fraction of the CNS criterion of 10 mSv. The effectiveness of the operational radiation programme in place at the AEC is therefore considered to be very satisfactory.

Figuur /Figure 2



Inspeksie- en Versekeringsaktiwiteite

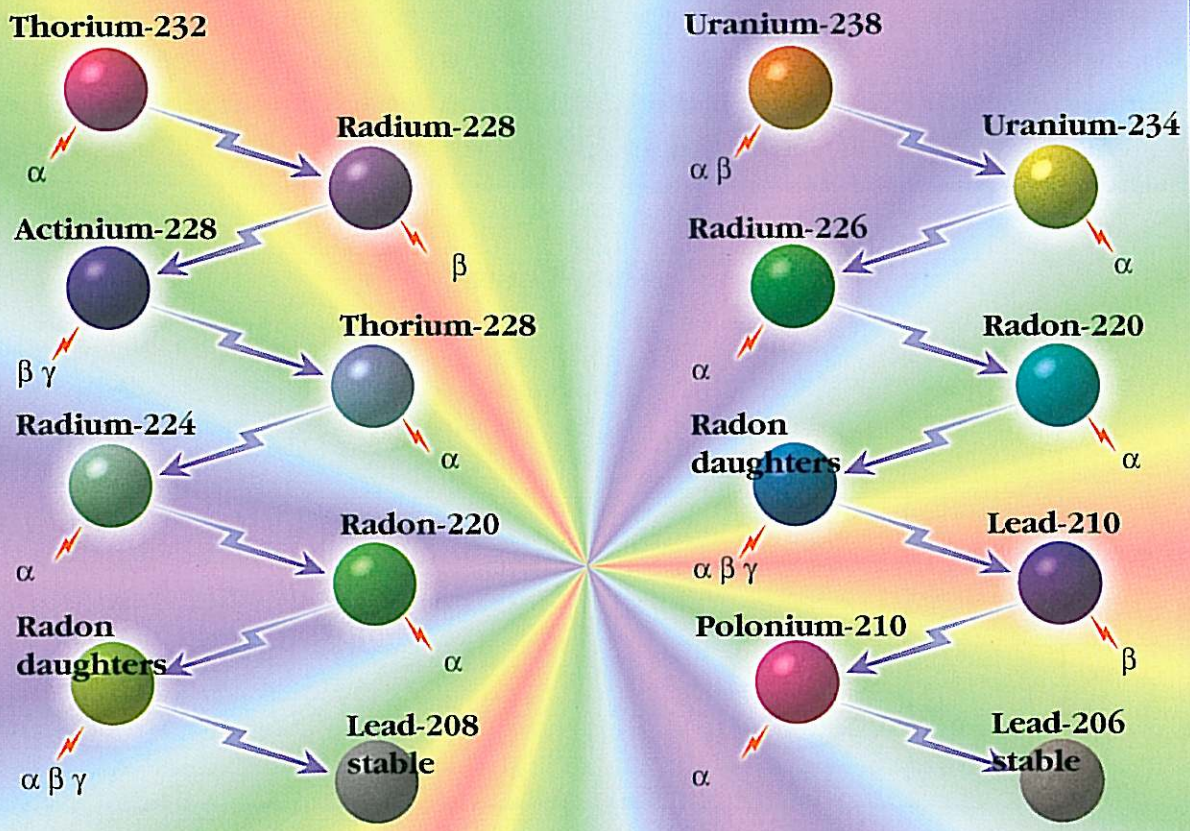
Uitgebreide inspeksie-aktiwiteite is gedurende die verslagperiode uitgevoer. Oor die algemeen is voldoen aan veiligheidsvereistes, hoewel enkele strydige gevalle van nie-voldoening waargeneem is. Wat laasgenoemde aanbetref, is ondersoeke na die kernoorsake van die strydigheid aangevra en is korrektiewe programme geïnisieer.

Inspection and Assurance Activities

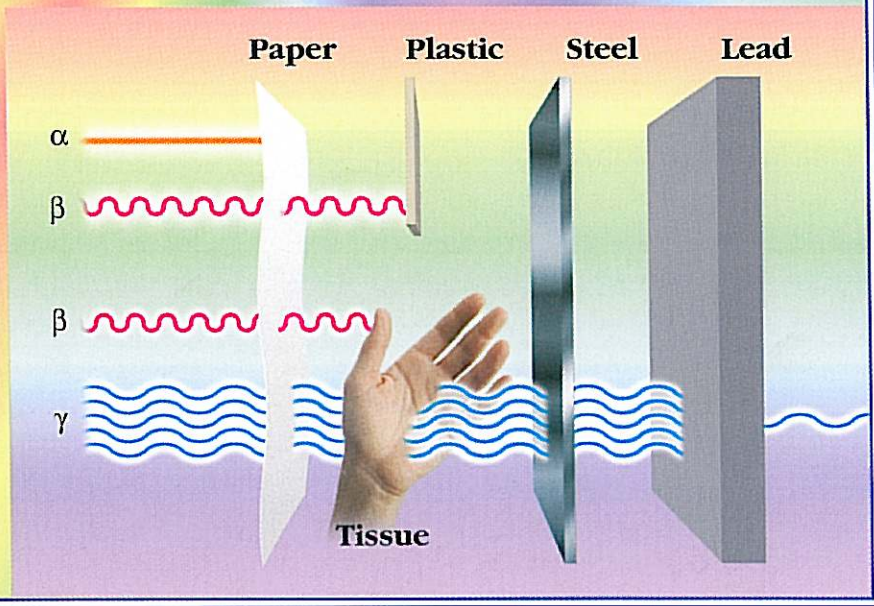
Extensive inspection activities were carried out throughout the reporting period; these generally indicated compliance with safety requirements although a few cases of non-compliance were observed. In these latter instances, investigations into the root cause of the non-compliance were required and corrective action programmes initiated.

Radioactivity and Radiations

Uranium and thorium occur naturally in all rocks. Certain rocks, such as granite, contain relatively high concentrations.
Decay of these radioactive materials produces series of other radioactive materials. Three types of radiation are emitted: alpha (α), beta (β), and gamma (γ) rays.



Alpha particles travel only a few cm in air and are incapable of penetrating the skin. Beta particles have a range of more than 1 metre in air and up to 1 cm or so in tissue. Gamma rays are very penetrating. They will even pass through the steel walls of pipes and vessels.



'n Aantal voorvalle is deur die jaar aangemeld wat aangedui het dat daar verbeterings op verskeie gebiede nodig is. Twee het heelwat media-aandag gekry, naamlik die Stralingsheuwelvoorval en die diefstal van houers wat vir radioaktiewe afval gebruik word. Hoewel die RKV raam dat hierdie voorvalle nie aanleiding gegee het tot buitensporige stralings-blootstellings nie, het dit tog die aanwesigheid van 'n beduidende hoeveelheid radio-aktiewe afval op die Pelindaba-terrein onder die kollig geplaas. Dit noodsaak die veilige beheer daarvan in die toekoms. Die totstandkoming van 'n nasionale bestuursbeleid vir radioaktiewe afval sal help in hierdie verband.

A number of occurrences were reported throughout the year indicating that improvements were required in several areas. Notable amongst the occurrences were two that attracted considerable media attention, namely the Radiation Hill incident and the theft of radioactive waste storage containers. Whilst neither of these occurrences were assessed by the CNS to have given rise to excessive radiation exposures, they highlighted the existence of considerable amounts of radioactive waste at the Pelindaba site, necessitating safe management in the future. The establishment of a national radioactive waste management policy will assist in this regard.

Mynbou en Mineraalprosessering

Veiligheidswaardering

Tydens die verslagdoeningsperiode is vyf lisensies toegeken aan fasiliteite vir myn- en mineraalverwerkings-aktiwiteite, asook een aan 'n prosesseerder van skrootmeteriaal wat uit sulke fasiliteite voortkom. Veertig fasiliteite vir myn- en mineraalverwerkings is nou by die RKV gelisensieër. Sewe skroothandelaars is ook gelisensieër. Altesaam 25 aansoeke word oorweeg van mineraal-verwerkers wie se aktiwiteite hoofsaaklik die prosessering van sirkoon behels. Hierdie materiaal is van nature radioaktief, met vlakke effens hoër as wat in die Wet op Kernenergie gespesifiseer word.

Risiko-analises word apart ten opsigte van die ondergrondse werkerskorps, die bogrondse werksnemers en vir lede van die publiek gedoen. Gegrond op die uitslae van hierdie ramings word stralingsbeskermings- en afvalbestuurs-programme in die vorm van bindende lisensieverpligtinge ingestel. So word die terugwerkende aard van die regulatoriese proses erken.

Mining and Mineral Processing

Safety Assessment

During the reporting period, five licences were granted to mining and minerals processing facilities and one to a processor of scrap material arising from such facilities. This brought the number of mining and minerals processing facilities licensed by the CNS to a total of forty. Currently, seven recyclers of scrap material are also licensed. Twenty five applications are under consideration from minerals processors whose activities mainly involve processing of zircon. The material is naturally radioactive at levels slightly above those specified in the Nuclear Energy Act.

Hazard assessments are being conducted separately in respect of the underground workforce, the surface workforce and for members of the public. Based on the results of the assessments, radiation protection and waste management programmes are being introduced in terms of licence binding schedules, thus recognising the retrospective nature of the regulatory process.

Die Beheer van Publieke Blootstelling aan Straling

Blootstelling van die algemene publiek aan mynbou- en minerale prosesserings-fasiliteite kan voorkom deur migrasie van enige van die geassosieërde radioaktiewe materiale na die openbare sfeer. Talle potensiële transport-meganismes en verspreidingsroetes bestaan, insluitende vloeibare afval, die verduistering van materiaal, lopende water, lekkasies na die grondwater, die luggedrae stof van mynhope, ens.

Ten einde te verseker dat geen onnodige blootstelling ervaar word nie, is dit nodig om sistematies alle moontlike bronne van radioaktiewe besmetting te identifiseer, die omvang van die blootstelling te kwantifiseer en die nodige beheer en moniteringsregimes daar te stel. Laasgenoemde is duur, daarom moet die ramingsproses noukeurig en sistematies gestruktureer en uitgevoer word.

'n Voorlopige studie is deur die Kamer van Mynwese namens sy lidmaatskappye in verskillende geografiese gebiede onderneem. Die studie het die identifikasie van vrystellings-roetes, die kwantifisering van radioaktiewe bronterme, die modellering van transportmeganismes en die berekening van stralingsdosisse ingesluit.

Hierdie studie is deur die RKV geëvalueer. Daar is bevind dat dit baie nuttige inligting bevat, veral met betrekking tot lugverspreiding. Nietemin, dit het ook vir verdere studie 'n verskeidenheid gebiede geïdentifiseer wat spesifiek verband hou met bronterm-kwantifisering en die seleksie en bevestiging van transport- en dosis-skattingmodelle.

Met hierdie werk as basis, is 'n groep tegniese kundiges getaak om gedetailleerde riglyne te bepaal waarmee analises gedoen kan word. Gedurende die verslagperiode en as deel van die

Control of Public Exposure to Radiation

Exposure of the general public from mining and minerals processing facilities can arise from any of the associated radioactive materials migrating from the site into the public domain. Numerous potential transport mechanisms and pathways exist including effluent discharge, material diversion, waterborne run-off, seepage into groundwater, displacement of dust from mine dumps etc.

In order to ensure that no undue exposures are being experienced, it is necessary to systematically identify all the possible sources of radioactive contamination, quantify their magnitude of exposure and establish the necessary controls and monitoring regimes. These are complex and expensive to quantify and control and therefore the public exposure assessment process must be carefully and systematically structured and executed.

Canadian software presented

A preliminary study was undertaken by the Chamber of Mines on behalf of its member companies in different geographical areas. The study included the identification of release pathways, the quantification of radioactive source terms, the modelling of transport mechanisms and calculation of radiation doses. This study was evaluated by the CNS and found to contain much useful information particularly in respect of airborne pathways. However, it also identified for further study a variety of areas particularly relating to selection and validation of transport and dose assessment models and source term quantification.

On the basis of this work, a group of technical experts was tasked to prepare detailed guidelines for conducting assessments. During the course of the reporting period and as part of the initiative to establish an adequate and cost effective assessment process, a seminar was held at which a software

inisiatief om 'n geskikte en koste-effektiewe waarderingsproses daar te stel, is 'n seminaar gehou waar 'n sagteware-pakket deur 'n Kanadese organisasie bekendgestel is. Die sagteware, wat vir die Kanadese Atoomenergie-beheerraad ontwikkel was - wat ook by die seminaar verteenwoordig was - maak die ramingsproses vir 'n wye spektrum belangstellende en geaffekteerde partye deursigtig.

Afvalbestuur-aktiwiteite bly steeds van primêre belang in publieke impak-analise. 'n Besondere gebied wat heelwat aandag in die jaar ontvang het, was die prosessering van besmette skrootmateriaal. Sulke materiaal het 'n beduidende ekonomiese waarde, en die herprosessering daarvan gee aanleiding tot aansienlike kommersiële aktiwiteite. Eksperimente is gedoen oor die smelting van uitgesoekte materiale met die oog daarop om die beheermaatreëls vas te stel wat nodig is om hul aanvaarbaar veilige gebruik moontlik te maak. Die uitslae van die eksperimente is aan die RKV vir evaluasie verskaf.

package was presented by a Canadian organisation. The software, developed for the Canadian Atomic Energy Control Board which was also represented at the seminar, also makes the assessment process transparent to a broad range of interested and affected parties.

Waste management activities continued to be of prime concern in public impact assessment. One particular area that received considerable attention during the year was the processing of contaminated scrap material. Such material has a significant economic value and its re-processing gives rise to substantial commercial activity. Experiments were conducted on the melting of selected materials with a view to determining the controls necessary to allow their re-cycling in an acceptably safe manner. The results of the experiment were submitted to the CNS for evaluation.

Die Beheer van Beroepsblootstelling

Die bepaling van stralingsgevare aan die werkerskorps het tydens die verslagperiode gevorder. Die RKV het, vir kommentaar, konsep-riglyne oor bogrondse stralingsrisikobepaling aan belangstellende en geaffekteerde partye gesirkuleer. Beduidende vordering is ook ten opsigte van ondergrondse mynbedrywighede gemaak. In die lig van die uitgebreide aard van sulke werksaamhede, asook die veranderlikheid van stralingsvlakke, het die beoordeling van die betroubaarheid van die ramings egter moeilik geblyk te wees. Daar word nietemin verwag dat die implementering van stralings-beskermingsprogramme dit as voldoende sal bevestig. Die ramings is aan die gang, en hul huidige status word in **Figuur 3** weergegee.

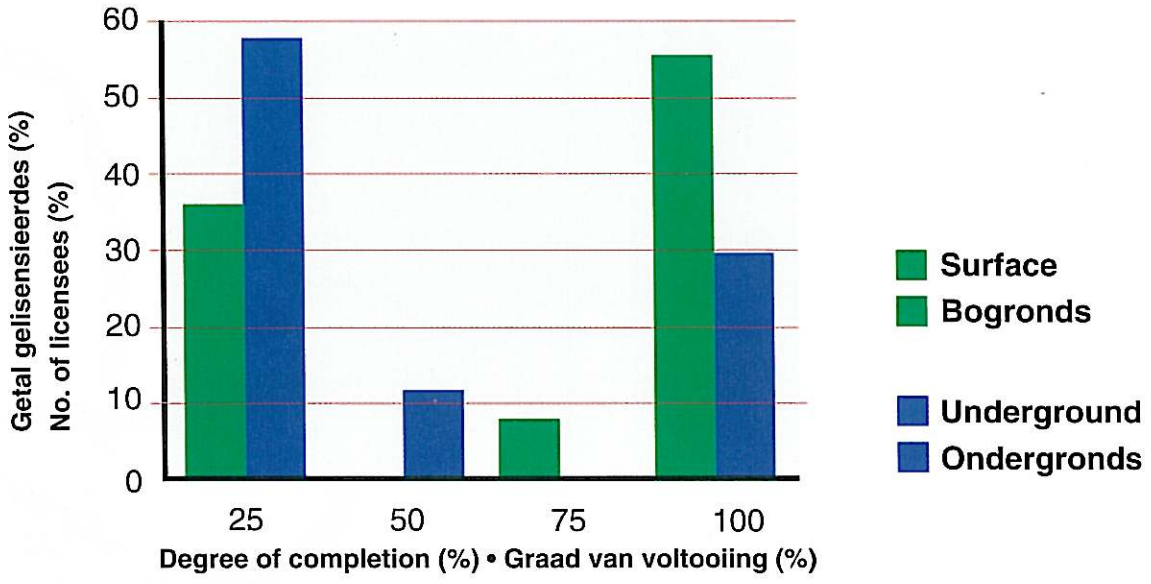
Fundamenteel tot die implementering van enige effektiewe stralings-beskermingsprogram, is die beskikbaarheid van tegnies bekwame personeel in 'n organisasie wat funksioneel geskik is. Vir hierdie doel is riglyne vir gelisensieërde fasiliteite ontwerp, en 'n konsep-lisensiegids oor kwalifikasies, ervaring, opleiding, verantwoordelikheid en die aanstelling van persone met stralingsbeskermings-verantwoordelikhede is aan lisensiehouers en vakbonde vir kommentaar gesirkuleer.

Control of Occupational Exposure

Assessment of radiation hazards to the workforce has progressed during the reporting period. The CNS distributed for comment draft guidance on surface hazard assessment to interested and affected parties. Considerable progress has also been made in respect of underground operations. In view of the extensive nature of such operations and the variability of radiation levels, judging the adequacy of the assessments proved difficult. Nevertheless it is anticipated that implementation of radiation protection programmes will confirm their adequacy. The assessments are underway and their current status is indicated in **Figure 3**.

Fundamental to the implementation of any effective radiation protection programme is the availability of technically competent personnel in a functionally adequate organisation. To this end guidance was developed for licensed facilities and a draft licensing guide on qualifications, training, experience, responsibilities and appointment of persons with radiation protection responsibilities was circulated to licensees and trade unions for comment.

Figuur /Figure 3



Internasionale deelname

Regulatoriese beheer oor kernkrag en ander tegnologie wat stralingsgevare ervaar, is sedert die 1950's toegepas toe sulke tegnologie beduidend begin groei het. Die proses om veiligheidstandaarde sowel as die regulatoriese praktyk daarvan te ontwikkel, het in parallel op nasionale en internasionale vlak voortgegaan. Hierdie aktiwiteite het grootliks op die internasionale vlak versnel ná die ongelukke by Three Mile Island en Chernobyl, toe die noodsaak vir gelykvormige, konsekwente en duidelike standaarde vir die veiligheid en regulatoriese beheer van kern-bestraling en -afval geïdentifiseer is. Bykomend hiertoe, het die noodsaak vir deursigtigheid in hierdie prosesse in belangrikheid toegeneem. In hierdie verband het die RKV steeds beduidende pogings aangewend om die kaliber en bewustheid van sy personeel te bewaar, en het soos nodig aan hierdie ontwikkelinge deelgeneem.

Die bydraes van RKV-personeel in hierdie verband is deur die internasionale gemeenskap erken. Verskeie personeellede is gekies of genooi om op 'n senior vlak op 'n verskeidenheid internasionale liggame te dien. Bykomend hiertoe is personeellede by verskeie geleenthede versoek om as konsultante vir die IAEA op te tree, om namens die organisasie op deskundige missies te dien, en om portuur-aktiwiteite te beoordeel of om opleiding en raad aan ontwikkelende lande te gee.

Die besondere aktiwiteite word hier onder opgesom:

- Mnr Bert Winkler het die vergadering van die Internasionale Kommissie vir Radiologiese Beskerming (IKRB) in Duitsland in sy hoedanigheid as visie-voorsitter van die IKRB se Komitee 4 bygewoon. Hy het ook die Algemene Vergadering van die IAEA en 'n vergadering van hierdie organisasie se Raad van Goewerneurs in Wenen, Oostenryk, bygewoon.

International participation

Regulatory control over nuclear and other technologies experiencing radiation hazards has been exercised since the 1950's when the use of such technologies started to increase significantly. The process of developing standards of safety and regulatory practice has continued in parallel both at national and international levels. These activities were greatly accelerated at the international level following the accidents at Three Mile Island and Chernobyl when the need was identified for unified, consistent and coherent standards of safety and regulatory control of nuclear radiation and waste safety. In addition, the need for transparency in these processes increased in importance. In this regard the CNS continued to expend considerable effort in maintaining the awareness and calibre of its staff and participated as appropriate in these developments.

The contribution made by CNS staff has been recognised by the international community and several members were elected, or invited to serve, at senior levels on a variety of international bodies. In addition, staff members have on several occasions been requested to act as consultants to the International Atomic Energy Agency and to serve on expert missions on behalf of the Agency in peer review activities and provide training and advisory services to developing countries.

The particular activities are summarised below:

- Mr Bert Winkler attended the International Commission on Radiological Protection (ICRP) meeting in Germany in his capacity as Vice Chairman of ICRP Committee 4. He attended the General Conference of the International Atomic Energy Agency (IAEA) and a meeting of the IAEA Board of Governors in Vienna, Austria.

- Mnr Jeff Leaver het die tweede voorbereidende vergadering vir die implementering van die Konvensie vir Kernveiligheid in Wenen bygewoon. Hy het ook samesprekings met die Britse maatskappy British Nuclear Fuels Ltd oor verbeterde brandstofontwerp en vervaardiging, asook met die VK se Departement van die Omgewing en die Inspektoraat op Kerninstallasies, gevoer.

- Mnr Phil Metcalf het twee adviserende groepvergaderings van die IAEA in Wenen, wat gehandel het oor die toepassing van regulasies en opleiding, bygewoon. Hy is ook 'n lid van die groep tegniese- en regs-kenners wat gereeld in Wenen byeengekom het om die Konvensie oor die Veiligheid van Radioaktiewe Afvalbestuur te ontwikkel. Hy het ook konsulterende dienste in verband met die bestuur van afval uit die mynbdryf aan die IAEA gelewer . Hy het lesings en opleidingskursusse oor stralingsbeskerming en die regulatoriese proses in Zambië en in die VSA aangebied. Hy het ook die Kanadese Atoomenergiebeheerraad in Ottawa besoek vir samesprekings oor die bestuur van radioaktiewe afval.

- Mnr Guy Clapisson het samesprekings met die Franse kernregulatoriese owerheid (DSIN) oor die periodieke veiligheidsevaluasie van kernkragsentrales gevoer.

- Mnr Sietse van der Woude het aan 'n tegniese komitee-vergadering van die IAEA in Wenen oor regulatoriese stelsels vir stralingsbeskerming deelgeneem.

- Mnr Alan Hall het die IAEA se jaarlikse tegniese komitee-vergadering oor die INES-skaal in Wenen bygewoon, en ook konsultant-dienste aan die internasionale organisasie gelewer met betrekking tot regulatoriese praktyke om kernveiligheid en veiligheidsevaluasie te verbeter. Hy het ook deelgeneem aan 'n missie na Hongarye wat 'n veiligheidskultuur moes beoordeel. Hy het samesprekings met die Franse

- Mr Jeff Leaver participated in the second preparatory meeting for implementation of the Convention on Nuclear Safety, in Vienna. He also had discussions with British Nuclear Fuels Ltd, UK on improved fuel design and manufacture and with the UK Department of Environment and the Nuclear Installations Inspectorate on radioactive waste management policies.

- Mr Phil Metcalf attended two IAEA advisory group meetings, in Vienna, on the application of regulations and training. He was also a member of the group of legal and technical experts who met in Vienna to develop the Convention on the Safety of Radioactive Waste Management, and has provided consultancy services to the IAEA in respect of the management of waste from the mining industry. He presented lectures at training courses on radiation protection and the regulatory process in the USA and Zambia. He also visited the Canadian Atomic Energy Control Board in Ottawa for discussions on radioactive waste management.

- Mr Guy Clapisson held discussions with the French nuclear regulatory authorities (DSIN) concerning the periodic safety assessment of nuclear power stations.

- Mr Sietse van der Woude attended an IAEA technical committee meeting in Vienna on regulatory systems for radiation protection.

- Mr Alan Hall attended the IAEA annual technical committee meeting in Vienna on the International Nuclear Event Scale and provided consultancy services to the IAEA in Vienna in respect of regulatory practices to enhance nuclear safety and safety assessment. He participated in a safety culture assessment mission to Hungary. He held discussions with the French regulatory authorities on aspects of regulatory compliance.

regulatoriese owerheid oor aspekte van regulatoriese vereistes gehou.

- Mnr Neil Henderson, in sy hoedanigheid as Nasionale Koördineerder, het die IAEA se koördineringsvergadering van dié se Voorvalrapporteringstelsel in Meksiko bygewoon. Hy het ook samesprekings met die Verenigde State se Kernregulatiewe Kommissie (VSKK), wat gehandel het oor die tussentydse berging van gebruikte brandstofelemente sowel as voorvalanalise, gevoer.

- Mnr Dick Kirk het 'n internasionale seminaar oor die toepassing van Lek-voor-Breek in Franse kernkrag-opwekking bygewoon. Hy het ook DSIN en die VK se Sweisinstituut besoek en samesprekings gevoer met betrekking tot die integriteit van materiale en inspeksie-aspekte.

- Mnr Shaun Guy het konsulterende dienste aan die IAEA in Wenen gelewer met betrekking tot die operasionele veiligheidsraming van mynfasiliteite.

- Me Terma Kussman het 'n lesing met die titel "Die gebruik van kansgebaseerde risiko-analise in die kernregulatoriese raamwerk in Suid-Afrika" by 'n IAEA-konferensie in Suid-Korea aangebied.

- Mnre Paul Hinrichsen en ID Kruger het met welslae die Verenigde Koninkryk se Nasionale Stralingsbeskermingsraad se nagraadse kursus in Stralingsbeskerming voltooi.

- Mnr Frank Barrett het 'n opleidingskursus van die IAEA wat gehandel het oor koppelvlakke tussen operateur/reguleerder, in die VSA bygewoon.

- Mnr Ross Garcin het die VSKK se Regulatoriese Inligtingskonferensie in die VSA bygewoon, en samesprekings oor kwaliteitbeheer met plaaslike bedryfspersoneel gevoer.

- Mr Neil Henderson, in his capacity as National Co-ordinator, attended the IAEA Incident Reporting System co-ordinators' meeting in Mexico and held discussions with the United States Nuclear Regulatory Commission (US NRC) on spent fuel interim storage and event analysis.

- Mr Dick Kirk attended an international seminar on the application of Leak-before-Break in Nuclear Power Generation in France. He also visited DSIN and the UK Welding Institute for discussions on materials integrity and inspection aspects.

- Mr Shaun Guy provided consultancy services to the IAEA in Vienna in respect of the operational safety assessment of mining facilities.

- Ms Terma Kussman presented a paper entitled "The use of probabilistic risk assessment in the nuclear regulatory framework in South Africa" at an IAEA conference in South Korea.

- Messrs Paul Hinrichsen and ID Kruger successfully completed the UK National Radiation Protection Board Post Graduate course on Radiation Protection.

- Mr Frank Barrett attended an IAEA training course on operator/regulator interfaces held in the United States.

- Mr Ross Garcin attended the USNRC Regulatory Information Conference and held discussions on quality management with US utility staff.

Raadsverslag vir die jaar geëindig 31 Maart 1996

1. Aard van besigheid

Die Raad vir Kernveiligheid (RKV) het ingevolge Artikel 33 van die Wet op Kernenergie, 1993 (Wet no. 131 van 1993), tot stand gekom om – deur die toekenning van lisensies – kerninstallasies en ander aktiwiteite rakende radio-aktiewe materiaal te reguleer en om beheer daaroor uit te oefen met die oog daarop om mense teen kernskade te beveilig. Dit sluit gevalle in waar die radio-aktiewe materiaal 'n bygevolg is van die lisensiehouer se hoofbedrywigheid.

2. Stand van sake

Die strategie van die RKV is om sy missie te volbring deur die toepassing van gesonde, internasionaal vergelykbare regulatoriese beginsels, en deur optimaal gebruik te maak van sy personeel se vaardighede in die toepassing van kwantitatiewe risikobepalingstegnieke en veiligheidsversekeringsprogramme.

Die bedrywighede van die RKV, wat die gesondheid en welvaart van die Suid-Afrikaanse publiek ten doel het, is steeds ten volle konsekwent met die breë Regeringsbeleid in hierdie verband.

Die uitslae van veiligheidsevaluerings en -ondersoeke wat deur die RKV op 'n deurlopende grondslag by sy altesaam tagtig lisensiehouers onderneem is, het hom in staat gestel om 'n genoegsame begrip van die kernveiligheidstatus op 'n nasionale grondslag te verkry, en om daarop te reageer met die oog op die verbetering van veiligheid waar nodig geag.

Council's Report for the year ended 31 March 1996

1. Nature of business

The Council for Nuclear Safety (CNS) was established in terms of Section 33 of the Nuclear Energy Act, 1993 (Act No 131 of 1993), to regulate and exercise control, through the granting of licences, over nuclear installations and other activities involving radioactive materials, including situations where the radioactive material is incidental to the main business of the licensee, with a view to the safeguarding of persons against nuclear damage.

2. State of affairs

The strategy of the CNS is to accomplish its mission through the application of sound regulatory practices, comparable internationally, utilising to the maximum extent the skills of its staff in applying quantitative risk assessment techniques and safety assurance programmes.

The activities of the CNS, aimed at the health and welfare of South Africa's public, continued to be entirely consistent with broad Government policy in this regard.

The results from safety assessments and inspections conducted by the CNS on a continual basis in respect of all its eighty licensees have enabled it to obtain a satisfactory understanding of the status of nuclear safety on a national basis and to react with a view to improving safety where it has considered this necessary.

3. Bedryfsresultate en finansiële posisie

Die finansiële state sit die bedryfsresultate van die jaar uiteen. Inkomste het R22,957m beloop (1995: R19,177m), waarvan die Staat se bydrae tot besteding R5,4m (1995: R5,48m) was, vergeleke met die begrote inkomste van R23,249m (1995: R19,297). Besteding het R20,591m (1995: R19,275) beloop, in vergelyking met 'n begroting van R22,948m (1995: R19,297m).

Na-balansstaat

Die voornemens van die Raad ten opsigte van die benutting van fondse is die volgende:

Die Raad beoog om in die komende jaar die kantoorruimte aan te koop wat deur sy streekspersoneel in die Wes-Kaap Provinsie gebruik word. Ministeriële goedkeuring is vir die aankoop van die gebou verkry, en R380 000 is vir dié doel opsygesit.

Die Raad het 'n verpligting ten opsigte van die voorsiening van mediese voordele vir sekere van sy personeellede ná aftrede. Die doel van die Raad is om hierdie verpligting vooruit te finansier, en 'n voorlegging in hierdie verband, waarin Ministeriële goedkeuring vir die totstandbringing van 'n fonds vir hierdie doeleinde versoek word, is aan die Minister gedoen. 'n Bedrag van R1,6m is as 'n aanvanklike betaling tot hierdie fonds opsygesit.

3. Operating results and financial position

The financial statements set out the operating results for the year. Income amounted to R22,957m (1995 : R19,177m) of which the contribution to expenditure by the State amounted to R5,4m (1995 : R5,48m) compared with the budgeted income of R23,249m (1995 : R19,297m). Expenditure amounted to R20,591m (1995 : R19,275m) compared with a budget of R22,948m (1995 : R19,297m).

Post Balance Sheet

The intentions of the Council with regard to the utilisation of funds are the following:

In the coming year the Council intends to purchase the office accommodation being used by its regional staff in the Western Cape Province. Ministerial approval has been obtained for the purchase of this building and R380 000 has been set aside for this purpose.

The Council has a liability with regard to the provision of post retirement medical benefits for certain of its staff. The aim of the Council is to prefund this liability and a submission has been made to the Minister requesting his approval to establish a fund for this purpose. An amount of R1,6m has been set aside for an initial payment to this fund.

4. Voorafbepaalde doelwitte

Die doelwitte van die RKV word in breedweg, dog in ernstige terme, vooraf bepaal deur Artikel 34 van die Wet op Kernenergie. Sedert dit in 1993 as 'n gelyste entiteit ingevolge die Wet op Verslagdoening deur Openbare Entiteite, 1992 (Wet no. 93 van 1992), benoem is, het die RKV toenemend aandag aan die uitbreiding van sy gestelde doelwitte gegee ten einde aan Artikel 7 van die Wet op Verslagdoening te voldoen deur prestasie-inligting te ontwikkel wat aan doelwitte gekoppel kan word wat in 'n kernregulatoriese konteks relevant is.

In hierdie opsig is dit belangrik om te verduidelik dat die noodsaaklike onafhanklikheid van 'n kern-regulatoriese liggaam van die industrie wat deur hom gereguleer word, hom noodwendig ook van daardie kommersiële en finansiële oorwegings en kriteria moet distansieer wat meer dikwels gekies word om die ekonomiese, doeltreffende en effektiewe aanwending van hulpbronne binne die gereguleerde organisasies te beoordeel. Wanneer oordele van hierdie aard op 'n kern-regulatoriese owerheid van toepassing gemaak word, word dit geheel en al oorweldig deur die komplikasies van 'n kernongeluk, waarvan die voorkoming die hoofrede vir die bestaan van sodanige liggame is.

Om hierdie rede is 'n soektog na geskikte alternatiewe onderneem wat homself as moeilik en tegelykertyd as tydrowend bewys het. Nietemin is die stadium bereik waar die volgende doelwitte, wat kwalitatiewe doelwitbeoordeling toelaat, vir hierdie jaar geïdentifiseer is. Verdere stappe word beoog om die RKV se doelwitte te verfyn ten einde kwantifiseerbare werkverrigtingsevaluering toe te laat, ten einde aan die vereistes van die Wet op Verslagdoening te voldoen en om die versekering van waarde in die strewes van die RKV aan sy belanghebbendes te bied.

4. Predetermined objectives

In broad, yet serious terms, the objectives of the CNS are predetermined by Section 34 of the Nuclear Energy Act. Since being nominated as a listed entity in terms of the Reporting by Public Entities Act in 1993, the CNS has progressively given consideration to elaborating its given objectives, in order to address Section 7 of the Reporting Act, by developing performance information which can be related to objectives that are relevant in a nuclear regulatory context.

In this regard it is pertinent to explain that the necessary independence of a nuclear regulatory body from the industry which it regulates must perforce also distance it from those commercial and financial considerations and criteria that are more usually chosen to judge the economic, efficient and effective application of resources within the regulated organisations. Judgements of this nature when applied to a nuclear regulatory body are completely overwhelmed by the ramifications of a nuclear accident, the prevention of which is the principle reason for the existence of such bodies.

Thus, the search for appropriate surrogates has been undertaken and this has proved to be both difficult and time-consuming. Nevertheless, the position was reached where the following objectives were identified for this year and these allow for qualitative objective appraisal. Further action is envisaged to refine CNS objectives to permit quantifiable performance evaluation in order both to satisfy the requirements of the Reporting Act and to provide, to its stakeholders, assurance of value in the endeavours of the CNS.

❑ **Om te verseker dat die magtigingswetgewing rakende kernveiligheid op datum gehou word ten einde die relevansie daarvan op kernaktiwiteite te reflekteer**

Met erkenning daarvoor dat die proses wat in terme van die Raad se hulpbronne beoog word, ekonomies moet wees en die publiek moet kan bemagtig, is die konsulterende beleid van die RKV ten opsigte van regulatoriese wetgewing deur persoonlike uitnodigings en advertensies in die pers en oor die radio geïnisieer. Langs hierdie weg is daar 'n beroep op alle belangstellende partye en op die publiek gedoen om voorleggings aan die RKV te doen rakende die beginsels wat in toekomstige kernregulatoriese wetgewing vervat moet wees.

Vanuit die groot aantal geskrewe en mondelinge voorleggings wat ontvang is, is die hoofkwessies geïdentifiseer, en is eenstemmigheid oor vele hiervan tydens die eerste werkswinkel wat op 5 November 1995 in Kaapstad gehou is, bereik.

Alle uitstaande kwessies is by 'n tweede werkswinkel wat op 12 Februarie 1996 in Centurion, Gauteng, gehou is, bespreek. 'n Nuwe model vir die regulatoriese owerheid is voorgestel, en het in beginsel wye ondersteuning ontvang. 'n Voorstel vir 'n ten volle konsulterende proses wat gedurende die voorbereiding van die wetgewing gevolg moet word, is eenparig aanvaar en daar is met die opstel daarvan begin.

❑ **To ensure that the enabling legislation regarding nuclear safety is kept up to date in order to reflect its relevance to nuclear activities.**

Recognising that the process to be embarked upon must be economical in terms of the Council's resources and should also empower the public, the consultative policy of the CNS regarding regulatory legislation was initiated through personal invitations, and advertisements in both the press and on radio, calling on all interested parties and the public to make submissions to the CNS regarding the principles to be adopted in future nuclear regulatory legislation.

The main issues were identified from the large number of written and verbal submissions received and unanimity was reached on many of these at the first workshop held in Cape Town on 5 November 1995.

All outstanding issues were discussed at a second workshop held on 12 February 1996 in Centurion, Gauteng. A new model for the regulatory authority was proposed and this received broad support in principle. A proposal for a fully consultative process to be followed in the preparation of the legislation was unanimously accepted, and drafting commenced.

❑ **Om te verseker dat die RKV alle bronne van potensiële kernskade aanspreek**

Die lisensie ten opsigte van die Koeberg Kernkragsentrale, sowel as die lisensies vir die Atoomenergiekorporasie se terreine, onderskeidelik te Pelindaba en Vaalputs, is deur die jaar gehandhaaf.

❑ **To assure that the CNS addresses all sources of potential nuclear damage**

The licence in respect of Koeberg Nuclear Power Station, and the licences for the Atomic Energy Corporation's sites at Pelindaba and Vaalputs, respectively, were maintained during the year.

Aansoeke vir lisensies vir dertig ondernemings binne die mynbou- en mineraalverwerkingsnywerhede is ontvang en oorweeg. Lisensies is aan vyf van hierdie ondernemings toegestaan. Die oorblywende aansoeke is óf weens die behoefte aan addisionele inligting wat verkry moes word, óf weens die vereiste dat finansiële sekuriteite ingevolge onderskeidelik artikels 50 en 69 van die Wet op Kernenergie vervul moes word, vertraag.

Die benadering wat deur die RKV gevolg is, was om ten eerste die potensieel hoër risikoareas aan te spreek, en om dan die prosesse en materiale stroom-af te volg. In hierdie opsig was die vordering met operasies waarvoor 'n beperking van 1Bq per gram radionukliede in Regeringskennisgewing R848 gespesifiseer is, suksesvol.

Weens die gebrek aan data ten opsigte van die aanwesigheid van radon-gas in mynbouoperasies, was vordering op hierdie gebied stadiger alhoewel alle fasiliteite waar hoër risiko's bestaan intussen gelisensieer is en tans hul risiko-peilings voorberei.

Licence applications were received and considered for thirty enterprises within the mining and minerals processing industries. Licences were granted for five of these. The remaining applications were delayed owing either to the need for supplementary information having to be obtained or the requirement for financial security to be fulfilled, in terms of sections 50 and 69, respectively, of the Nuclear Energy Act, 1993.

The approach adopted by the CNS has been to address first the potentially higher risk areas and follow the processes and materials downstream. In this respect progress has been satisfactory regarding operations for which a limit of 1 Bq per gram of radionuclides was specified in Government Notice R848.

Owing to the paucity of data regarding the presence of radon gas in mining operations, progress in this area has been slower, although all the facilities where higher risks exist have been licensed and these are preparing hazard assessments.

❑ Om te verseker dat die RKV paslike stralingsveiligheidstandaarde daargestel het

Die RKV het sy pogings opgeskerp om homself aangaande die aanvaarbaarheid van sy fundamentele veiligheidstandaarde – wat 'n hele aantal jaar gelede formeel deur die Raad aanvaar is – te vergewis, sowel as van sy werkstandaarde wat hieraan ontleen is. Die RKV het die prosesse wat deur die Internasionale Atoomenergie-agentskap (IAEA) daargestel is om al die standaarde en gidsdokumente van laasgenoemde te hersien, nougeset nagevolg en in sommige gevalle daaraan deelgeneem, met die doel om hulle in lyn te bring met die basiese veiligheidstandaarde wat voorheen deur die IAEA, die

❑ To ensure that the CNS has imposed standards of radiation safety that are appropriate

The CNS increased its efforts to assure itself regarding the acceptability of its fundamental safety standards, formally adopted by the Council several years ago, and of its working standards derived from these. The CNS closely followed, and in some cases participated in, the processes established by the International Atomic Energy Agency (IAEA) to review all the standards and guidance documents of this latter body with a view to bringing those in line with the basic safety standards previously adopted by the (IAEA), World Health Organisation (WHO), Food and Agricultural

Wêreldgesondheidsorganisasie (WGO), die Voedsel- en Landbou-organisasie (VLO), die Internasionale Arbeidsorganisasie (IAO) en die Atoomenergie-agentskap (AEA) van die Organisasie vir Ekonomiese Samewerking en Ontwikkeling (OESO) aangeneem is, ten einde dit in lyn te bring met die 1990 aanbevelings van die Internasionale Kommissie vir Radiologiese Beskerming (IKRB).

Tydens die hersiening van sy veiligheids-vereistes teenoor die internasionaal aanvaarde norms, het die RKV geen beduidende teenstrydighede gevind nie, en het dit sy werk om die toepassing van hierdie norms na nuwe gebiede wat regulatoriese aandag verg – soos die ontwikkeling van kriteria vir die verwydering van materiale van gelisensieerde persele – voortgesit.

Die RKV het ook die ratifikasie van die Internasionale Konvensie vir Kernveiligheid, wat reeds deur Suid-Afrika onderteken is, by die Regering gemotiveer. Wanneer die ratifikasie eers van krag is, sal hierdie Konvensie verseker dat internasionale hersiening van die veiligheid van alle kommersiële kernkraginstallasies op 'n uitgebreide basis deur eweknieë onderneem word, in ooreenstemming met die huidige internasionale norms en standaarde. Die Konvensie sal dan ook die RKV in sy tegniese beheer en openbare versekeringsfunksies bystaan.

Die Raad was steeds tevrede met die geskiktheid van sy kernveiligheids-vereistes binne die nasionale konteks, en dat dit sy mandaat om die werkers en die publiek in hierdie opsig te beveilig, verantwoordelik vervul het.

❑ Om die mate van voldoening aan RKV-vereistes te bepaal

Die beheermaatreëls wat deur die RKV ingestel is, is in die vorm van voorwaardes tot die

Organisation (FAO), International Labour Organisation (ILO) and the Nuclear Energy Agency (NEA) of the Organisation for Economic Co-operation and Development (OECD), to harmonise with the 1990 recommendations of the International Commission on Radiological Protection.

In reviewing its safety requirements against the internationally accepted norms, the CNS has found no significant discrepancies, and has proceeded with its work of extending the application of these norms into new areas warranting regulatory attention, such as the development of criteria for clearance of materials from licensed sites.

The CNS also motivated to Government the ratification of the International Convention on Nuclear Safety, already signed by South Africa. Once in force, this Convention will ensure that international peer review of the safety of all commercial nuclear power plants is comprehensively undertaken according to the currently accepted international norms and standards, and will assist the CNS in both its technical control and public assurance functions.

The Council remained satisfied regarding the appropriateness of its nuclear safety requirements within the national context and that it responsibly fulfilled its mandate of protecting the workers and the public in this regard.

❑ To determine the extent of compliance with CNS requirements

The controls imposed by the CNS are in the form of conditions to the nuclear licence, and

kernlisensie wat stam uit die veiligheidsevaluerings wat deur die lisensiehouer uitgevoer is, en aan die RKV vir ondersoek en goedkeuring voorgelê is. 'n Opname van voldoening aan lisensies is gedoen deur middel van die daarstelling en implementering van 'n breë-basis ondersoekprogram wat aangevul is deur die evaluering van gebeure, tendense, toetsresultate en werkverrigtingsvlakke ten einde die veiligheidstatus van alle gelisensieerde aktiwiteite te moniteer. Versekering ten opsigte van die behoorlike implementering van ondersoeke is verseker deur die oorhoofse benadering van die RKV in die identifisering en evaluering van potensiële gevare, en in die aanwending van sy hoogs gekwalifiseerde en ervare vakkundiges in die bepaling van voldoening aan die gevolglike lisensievereistes en in die toepassing van sanksies op lisensiehouers deur middel van die Wet op Kernenergie.

they emanate from the safety assessments conducted by the licensee submitted to the CNS for scrutiny and approval. Licence compliance was surveyed through the establishment and implementation of a broad-based programme of inspection which was supplemented by the assessment of events, trends, test results and performance levels in order to monitor the safety status of all licensed activities. Assurance of proper implementation of inspections was provided by the overall approach adopted by the CNS in identifying and assessing potential hazards and applying its highly-qualified and experienced professionals in determining compliance with the resulting licence requirements and applying sanctions on licensees through the Nuclear Energy Act.

❑ **Om te verseker dat die bestaande menslike hulpbronne van die RKV vir sy missie, doelwitte en werkslading voldoende is, en dat die personeel-samestelling optimaal is wanneer opvolgingsvereistes en opleidingsbehoeftes in ag geneem word.**

Alhoewel daar in vergelyking met vorige jare aansienlike vordering in die bereiking van doelwitte gemaak is, was die teiken van die vulling van vakante poste as gevolg van die tekort aan paslik gekwalifiseerde en ervare kandidate in the plaaslike kernindustrie onbereikbaar. Desnieteenstaande is daar twaalf personeellede gedurende die jaar gewerf. Weens aftredes en bedankings het die balans van poste wat teen die einde van die jaar nog gevul moes word, op vyf te staan gekom. Aanbiedings is aan drie kandidate gemaak met die oog op hul aansluiting by the RKV in die komende jaar.

❑ **To ensure that the existing human resources of the CNS are adequate for its mission, objectives and workload, and that the staff composition is optimum bearing in mind succession imperatives and training needs.**

Compared with previous years considerable progress was made in meeting the objectives, the target of filling all the vacancies proved to be too ambitious due to the scarcity of suitably qualified and experienced candidates in the local nuclear industry. Nevertheless, twelve members of staff were recruited during the year. Owing to retirements and resignations the balance of posts remaining to be filled at the end of the year was five. Offers were made to three candidates with a view to their joining the CNS early in the following year.

❑ Om 'n regstellende aksie-plan te implementeer

Die aard van die RKV se besigheid vereis hoogs opgeleide personeel met toepaslike ondervinding in die kernindustrie, en om geskikte regstellende aksie-kandidate in die Suid-Afrikaanse arbeidsmark te werf, het weens die afwesigheid van toepaslike ondervinding moeilik geblyk. Met erkenning aan hierdie probleme het die RKV 'n beursskema vir honneurs- en ander nagraadse studente daargestel en het hy 'n verdere beurshouer aangewys om 'n kursus gedurende die jaar te volg. Dit was ongelukkig onmoontlik om die teiken van drie beurshouers vir die jaar te bereik. Sewe van die twaalf lede van die personeel wat gedurende die jaar aangestel is, het direk daartoe bygedra om die personeelsamestelling meer verteenwoordigend te maak, met 10% van die RKV se personeel wat nou uit die voorheen gemarginaliseerde gemeenskappe kom.

Drie van die sewe is in administratiewe poste aangestel en die oorblywende vier in wetenskaplike en tegniese poste, alles ter versterking van die jonger range.

❑ To implement an affirmative action plan

The nature of the CNS' business requires highly qualified staff, with relevant experience in the nuclear industry, and it has proved difficult to recruit suitable affirmative action candidates in the South African labour market owing to the absence of relevant experience.
Recognising this difficulty the CNS has established a bursary scheme for honours and other post-graduate students and appointed a further bursar to undertake a course during the year. It was unfortunately not possible to reach the target of three bursars for the year. Seven of the twelve members of staff appointed during the year directly contributed to making the staff complement more representative, with 10% of CNS staff now drawn from the previously marginalised communities.

Three of the seven were appointed to administrative posts and the remaining four to scientific and technical posts, all helping to bolster the younger ranks.

Finansieel

- **Om te verseker dat die koste van die RKV binne aanvaarbare perke, wat vroegtydig geïdentifiseer word, bly**

Die voorgestelde uitgawes van die RKV is teen sy verwagte inkomste opgeweeg. Die toename in die begroting in vergelyking met dié van die vorige jaar was hoër as die heersende VPI weens die behoefte om met die toename in personeellede die groeiende aantal lisensiehouers tot diens te wees.

Die Staat se bydrae van R5,4m (1995: R5,48m) tot die Raad se begroting was gerig op bepaalde Staatsgeörienteerde projekte en werksareas soos: Interaksie met die Sentrale, Provinsiale en Plaaslike Regerings; die ontwikkeling van wetgewing; voldoening aan internasionale verpligtinge (veral met die Internasionale Atoomenergie-agentskap); die ontwikkeling van regulatoriese tegnieke en metodologie; en die bevordering van kernveiligheid, opleiding en navorsing.

Bogenoemde is almal aspekte wat binne die RKV se verantwoordelikheidsveld val en wat volgens die Raad nie 'n finansiële las op lisensiehouers moet plaas nie.

- **Om die koste van die RKV te meet teenoor soortgelyke dienste wat elders verskaf word**

'n Vergelykende oorsig van die personeelsamestelling en uitgawes van regulatoriese liggame oorsee het getoon dat RKV-koste in bepaalde areas relatief laag was en dat dit oor die algemeen matig was. Hierdie ondersoek sal voortgesit word om verdere inligting in te samel.

Financial

- **To ensure that the costs of the CNS are contained within acceptable limits that are identified in advance**

The proposed expenditure of the CNS was balanced with its expected income. The increase in the budget compared to the previous year was higher than the prevailing CPI owing to the need to provide for increases in staff in order to service the growing number of licensees.

The State's contribution of R5,4m (1995 : R5,48m) to the Council's budget was directed towards specific State-oriented projects and areas of work, such as: Interaction with Central, Provincial and Local Governments; development of legislation; meeting international commitments (particularly with the International Atomic Energy Agency); development of regulatory techniques and methodology; promotion of nuclear safety, training and research.

These are all aspects of the CNS area of responsibility which the Council considers should not financially burden the licensees.

- **To benchmark the costs of the CNS against similar services provided elsewhere.**

A comparative review of the complements and expenditure of nuclear regulatory bodies overseas revealed that the CNS costs were relatively low in specific areas and generally lean overall. This investigation will be pursued to collect further information.

Openbare betrekkinge

- Om 'n verhoogde bewustheid van die RKV by beide die media en die publiek te bevorder

- Om formeel aan nasionale en internasionale aktiwiteite deel te neem ten einde 'n wyer erkenning van die RKV en sy vermoëns te verkry.

  Die eerste vol jaar van die RKV se openbare betrekkinge-inisiatief was geslaagd in die identifisering van 'n reeks van belangstellendes en partye wat deur die RKV geraak word, wat ook RKV-belanghebbendes en hul belange-areas insluit. Inligtingsessies en opvoedkundige aanbiedings is onderskeidelik aan die Parlementêre Portefeuljekomitee, aan NRO's en op openbare vergaderings gedoen.

Public Relations

- To promote an enhanced awareness of the CNS with both the media and the public.

- To participate formally in national and international activities in order to obtain wider recognition of the CNS and its capacity.

  The first full year of the CNS public relations initiative was successful in identifying the range of interested and affected parties comprising CNS stakeholders, and their areas of concern. Briefings and educational presentations were made respectively to the Parliamentary Portfolio Committee and to NGOs and public meetings.

5. Raadslede

Die name van Raadslede wat vir die grootste deel van die boekjaar gedien het, verskyn op bladsy 14. 'n Nuwe Raad is met ingang van 21 Februarie 1996 aangestel en die name van lede wat hierop dien, verskyn op bladsy 15.

6. Die ouditkomitee

Die volgende lede het op die Ouditkomitee gedien:

- Dr D Reitmann (Voorsitter): Ondervoorsitter van die Raad en voormalige Direkteur van die Nasionale Versnellersentrum: Stigting vir Navorsingsontwikkeling.
- Mnr M du Toit: Raadslid en Adjunk-direkteur-generaal, Departement van Grondsake.
- Mnr O P Sadler, GR (Eksterne Lid): Vennoot, KPMG.
- Mnr E L Langford (Sekretaris): Bestuurder, Sentrale Dienste Departement, RKV.

Die Ouditkomitee het op twee geleenthede gedurende die boekjaar vergader. Die hoofdoel van hierdie vergaderings was om die oorhoofse eksterne Ouditplan, die finansiële state en die Verslag van die Eksterne Ouditeure – almal met betrekking tot die vorige jaar – te hersien. Die Komitee het ook finansiële bestuursaangeleenthede bespreek, waarvan een die instelling van interne oudit was, nieteenstaande die vrystelling wat ingevolge artikel 8 van die Wet op Verslagdoening in hierdie opsig verleen is.

5 .Council members

The names of Council members holding office for most of the financial year are presented on page 14. A new Council was appointed with effect from 21 February 1996 its membership appears on page 15.

6. Audit committee

The following members served on the Audit Committee:

- Dr D Reitmann (Chairperson): Vice Chairperson of the Council and former Director, National Accelerator Centre: Foundation for Research Development.
- Mr M du Toit: Council Member and Deputy Director-General, Department of Land Affairs
- Mr O P Sadler, CA (External Member): Partner, KPMG.
- Mr E L Langford (Secretary): Manager, Central Services Department, CNS.

The Audit Committee met twice during the financial year. The main purpose of these meetings was to review the overall external Audit plan, the financial statements and the External Auditors Report, all of which related to the previous financial year. The Committee also discussed financial management matters, one of which was the introduction of internal audit, notwithstanding the exception obtained in this regard in terms of section 8 of the Reporting Act.

Verslag van die Ouditeur-Generaal oor die Finansiële Jaarstate van die Raad vir Kernveiligheid vir die Boekjaar geëindig 31 Maart 1996

1. Ouditopdrag:

Die rekening en finansiële jaarstate van die Raad uiteengesit op State 1 tot 3 en die aantekeninge daarby is ingevolge die bepalings van artikel 3 van die Wet op die Ouditeur-generaal, 1995 (Wet No. 12 van 1995), gelees met artikel 49 (4) van die Wet op Kernenergie, 1993 (Wet No. 131 van 1993), geouditeer. Hierdie finansiële jaarstate en die instandhouding van doeltreffende beheermaatreëls is die verantwoordelikheid van die Raad se Uitvoerende Beampte. Dit is my verantwoordelikheid om oor hierdie finansiële jaarstate en die aangeleenthede in eersgenoemde Wet uiteengesit, verslag te doen.

2. Reëlmatigheidsouditering

2.1 Finansieel

2.1.1. Aard en omvang:

Die ouditering is ooreenkomstig algemeen aanvaarde owerheidsouditstandaarde uitgevoer. Hierdie standaarde vereis dat die ouditering beplan en onderneem word om redelike sekerheid te verkry dat, in alle wesenlike opsigte, billike aanbieding in die finansiële jaarstate bereik is. 'n Ouditering behels 'n evaluering van die geskiktheid van rekeningkundige beleid, 'n ondersoek op 'n toetsgrondslag van die bewyse wat die bedrae en openbaarmakings wat in die finansiële jaarstate ingesluit is, steun, 'n beoordeling van die redelikheid van beduidende voorsiening en 'n oor-

Report of the Auditor-General on the Annual Financial Statements of the Council for Nuclear Safety for the Financial year ended 31 March 1996

1. Audit assignment:

The accounts and the annual financial statements of the Council set out in 1 to 3 and the notes thereto have been audited in terms of section 3 of the Auditor-General Act, 1995 (Act No. 12 of 1995) read with section 49 (4) of the Nuclear Energy Act, 1993 (Act No. 131 of 1993). These annual financial statements and the maintenance of effective control measures are the responsibility of the Council's Executive Officer. My responsibility is to report on these annual financial statements and the matters stipulated in the first-mentioned Act.

2. Regularity Audit

2.1 Financial

2.1.1 Nature and scope:

The audit was carried out in accordance with generally accepted governmental auditing standards. These standards require the audit to be planned and performed so as to obtain reasonable assurance that, in all material respects, fair presentation is achieved in the annual financial statements. An audit includes an evaluation of the appropriateness of the accounting policies, an examination, on a test basis, of evidence supporting the amounts and disclosures included in the financial statements, an assessment of the reasonableness of significant provisions and a

weging van die geskiktheid van die algehele aanbieding van die finansiële jaarstate. Ek glo dat die ouditprosedures in die omstandighede geskik was om die mening, wat hieronder aangebied word, uit te spreek.

2.1.2 Ouditmening:

Na my mening verstrek hierdie finansiële jaarstate 'n redelike weergawe van die finansiële stand van en die resultate verkry deur die Raad op 31 Maart 1996 in ooreenstemming met algemeen aanvaarde rekeningkundige praktyk, toegepas op 'n grondslag in ooreenstemming met die van die vorige jaar. Voorts is die inligting verstrek ingevolge artikels 6 en 7 van die Wet op Verslagdoening deur Openbare Entiteite, 1992 (Wet No. 93 van 1992) na my mening in alle wesenlike opsigte redelik en, waar van toepassing, op 'n grondslag in ooreenstemming met dié van die voorafgaande jaar.

2.2 Nakoming:

Die funksies van die Raad word deur die Wet op Kernveiligheid, 1993 (Wet No. 131 van 1993) bepaal, en as 'n gelyste openbare entiteit is dit onderhewig aan die bepalings van die Wet op Verslagdoening deur Openbare Entiteite, 1992 (Wet No. 93 van 1992). Nakoming van hierdie en ander toepaslike wetgewing is op 'n toetsgrondslag geouditeer.

2.2.1 Ouditwaarneming:

Na my mening, behalwe vir die aangeleenthede wat in paragraaf (a) hieronder bespreek word:

- het die transaksies van die Raad wat tydens die ondersoek onder my aandag gekom het, ooreenkomstig die toepaslike wette en voorskrifte geskied; en

- was die transaksies wat tydens die ouditering onder my aandag gekom het, in alle wesenlike opsigte ooreenkomstig die by Wet of andersins bepaalde verpligte werksaamhede van die Raad.

consideration of the appropriateness of the overall presentation of the annual financial statements. I consider that the audit procedures were appropriate in the circumstances to express the opinion presented below.

2.1.2 Audit opinion:

In my opinion these annual financial statements fairly present the financial position and the results obtained by the Council as at 21 March 1996 in accordance with generally accepted accounting practice on a basis consistent with that of the preceding year. Furthermore, in my opinion, the information furnished in terms of section 6 and 7 of the Reporting by Public Entities Act, 1992 (Act No. 93 of 1992), is fair in all material respects and, where applicable, on a basis with that of the preceding year.

2.2 Compliance:

The Council's functions are determined by the Nuclear Energy Act, 1993 (Act No. 131 of 1993), and as a listed public entity it is subject to the provisions of the Reporting by Public Entities Act, 1992 (Act No. 93 of 1992). Compliance with this and other appropriate legislation was audited on a test basis.

2.2.1 Audit observation:

Except for the matters discussed in paragraph (a) below, in my opinion:

- the transactions of the Council that came to my notice in the course of my examination were made in accordance with the applicable laws and instructions; and

- the transactions that came to my attention during auditing were in all material aspects in accordance with the mandatory functions of the Council as determined by law or otherwise.

(a) Reporting by Public Entities Act, 1992 (Act No. 93 of 1992): Information

(a) Wet op Verslagdoening deur Openbare Entiteite, 1992 (Wet No. 93 van 1992): Inligting oor die mate waartoe die Raad sy gestelde oogmerk vir die betrokke boekjaar bereik het, asook toepaslike prestasie-inligting oor die ekonomiese, doeltreffende en effektiewe aanwending van hulpbronne soos deur artikels 7 (3) (b) en (c) van die Wet op Verslagdoening deur Openbare Entiteite, 1992 (Wet No. 93 van 1992) vereis, is nie in die Raad se verslag vervat nie.

3. Waardering:

Graag word waardering betuig vir die hoflikheid betoon en bystand wat verleen is deur die Raad se personeel tydens die oudit.

J.C.L. HUGHES
namens Ouditeur-Generaal

Pretoria
18/12/96

regarding the extent to which the Council achieved its objectives for the financial year concerned, as well as appropiate performance information on the economic, efficient and effective utilisation of resources as required by section 7 (3) (b) and (c) of the Reporting by Public Entities Act 1992 (Act No. 93 of 1992), is not included in the Council's Report.

3. Appreciation

The courtesy extended and assistance rendered by the staff of the Council during the audit is greatly appreciated.

J.C.L. HUGHES
for Auditor-General

Pretoria
18/12/96

Balance sheet as at 31 March 1996 • Balansstaat soos op 31 Maart 1996

	1995-96 R	Notes Aant.	1994-95 R	
Capital employed				***Kapitaal aangewend***
Income funds	**8 499 967**		6 134 751	Inkomstefondse
Long-term liabilities	**65 606**	2	90 209	Langtermynlaste
	8 565 573		6 224 960	
Employment of capital				***Aanwending van kapitaal***
Fixed assets	**1 224 933**	3	1 637 789	Vaste bates
Net current assets	**7 340 640**		4 587 171	Netto bedryfsbates
Current assets	**9 232 057**		6 877 404	Bedryfsbates
Debtors	**3 476 747**	4	2 979 362	Debiteure
Payments made in advance	**184 055**		–	Vooruitbetalings gemaak
Deposits and immediately claimable amounts	**2 000**		2 000	Deposito's en onmiddellik opeisbare bedrae
Bank balance and cash	**5 569 255**	5	3 896 042	Banksaldo en kontant
Less:				*Min:*
Current liabilities	**1 891 417**		2 290 233	Bedryfslaste
Creditors and provisions	**1 866 814**	6	2 265 631	Krediteure en voorsienings
Short-term loan	**24 603**	2	24 602	Korttermynlening
	8 565 573		6 224 960	

Centurion, 28/10/96

J. Leaver,
Acting Executive Officer,
Waarnemende Uitvoerende Beampte.

J.B. Martin,
Chairperson,
Voorsitter.

Income statement for the year ended 31 March 1996
Inkomstestaat vir die jaar geëindig 31 Maart 1996

	1995-96 R	Notes Aant.	1994-95 R	
Income funds - beginning of the year	**6 134 751**		10 833 474	Inkomstefondse - begin van die jaar
Operating surplus (deficit) before abnormal item	**2 365 216**	7	(98 723)	Bedryfsurplus (tekort) voor abnormale item
Abnormal item	–	7	(4 600 000)	Abnormale item
Income funds - end of the year	**8 499 967**		6 134 751	Inkomstefondse - einde van die jaar

Cash flow statement for the year ended 31 March 1996
Kontantvloeistaat vir die jaar geëindig 31 Maart 1996

	1995-96 R	Notes Aant.	1994-95 R	
Cash (retained from) operating activities	**(1 914 316)**		(3 211 998)	***Kontant (teruggehou uit) bedryfsaktiwiteite***
Cash (surplus)/deficit generated from operations	**(2 514 335)**	A	21 616	Kontant (surplus) tekort deur bedrywighede voortgebring
Income from interest	**(480 237)**		(790 068)	Rente-inkomste
Employed to increase/ (decrease) operating capital	**1 080 256**	B	(2 443 546)	Aangewend om bedryfskapitaal te verhoog/(verminder)
Cash utilised in investment activities	**216 500**		1 395 356	***Kontant aangewend in beleggingsaktiwiteite***
Investment to maintain operations:				Belegging om bedrywighede te handhaaf:
Additions to fixed assets	**250 602**	C	1 395 356	Toevoegings tot vaste bates
Proceeds from sale of fixed assets	**(34 102)**	D	_	Opbrengs uit die verkoop van vaste bates
	(1 697 816)		(1 816 642)	
Cash effects of financing activities				***Kontantgevolge van finansieringsaktiwiteite***
Increase/(decrease) in cash on hand	**1 673 213**		(2 693 149)	Toename/(afname) in kontant voorhande
Decrease/(increase) in long term liabilities	**24 603**		(90 209)	Afname/(toename) in langtermynlaste
Payment to CNS Retirement Fund	_		4 600 000	Betaling aan RKV-Aftreefonds
Net movement of cash	**1 697 816**		1 816 642	Netto vloei van kontant

Notes to the cash flow statement
Aantekeninge by die kontantvloeistaat

	1995-96 R	1994-95 R	
A) Cash surplus/(deficit) generated from operations			**A) Kontantsurplus/(tekort) deur bedrywighede voortgebring**
Surplus/(deficit) for the year	**2 365 216**	(98 723)	Surplus/(tekort) vir die jaar
Adjustment for:			Aansuiwering vir:
Depreciation	**525 189**	867 175	Waardevermindering
Adjustments to fixed assets	**105 865***	–	Verstelling van vaste bates
Net (profit) on sale of obsolete assets	**(1 698)**	–	Netto wins op verkoop van uitgediende bates
Income interest	**(480 237)**	(790 068)	Rente-inkomste
	2 514 335	(21 616)	
** Footnote to "Note 3 fixed assets" refers*			** Voetnota by "Aantekeninge 3 vaste bates" verwys*
B) Employed to increase operating capital			**B) Aangewend om bedryfskapitaal te verhoog**
Increase/(decrease) in debtors	**497 385**	(1 691 213)	Toename/(afname) in debiteure
Increase/(decrease) in payments made in advance	**184 055**	–	Toename/(afname) in vooruitbetalings gemaak
Increase/(decrease) in creditors	**398 817**	(727 731)	Toename/(afname) in krediteure
Increase/(decrease) in short-term loan	**(1)**	(24 602)	Toename/(afname) in kortermynlening
	1 080 256	(2 443 546)	
C) Additions to fixed assets			**C) Toevoegings tot vaste bates**
Computer equipment	**151 414**	1 202 648	Rekenaartoerusting
Scientific and technical equipment	**779**	(53 432)**	Wetenskaplike en tegniese toerusting
Furniture	**14 298**	23 834	Meubels
Office equipment	**84 111**	222 306	Kantoortoerusting
	250 602	1 395 356	
D) Proceeds from sale of fixed assets			**D) Opbrengs van die verkoop van vaste bates**
Cost price	**435 523**	–	Kosprys
Accumulated depreciation	**(403 119)**	–	Opgehoopte waardevermindering
Net book value	**32 404**	–	Netto boekwaarde
Net profit on disposal	**1 698**	–	Netto wins op wegdoening
	34 102	–	
** As a result of the reclassification of assets			** As gevolg van die herklassifisering van bates

Notes to the financial statements

Aantekeninge by die finansiële state

	1995-96 R	1994-95 R

1. Accounting policy

The financial statements are compiled on the historical cost basis in accordance with the undermentioned policies which were applied consistently in every material respect except where otherwise stated.

1.1 Income acknowledgement in general

Income is recognised on the accrual basis.

1.2 State contributions received

State contributions are accounted for in the period with which the allocation is is associated.

1.3 Fixed assets and depreciation

Fixed assets are shown at cost less accumulated depreciation and are written off over the expected useful life according to the fixed instalment method.

Expected useful life of office furniture is ten years, computer and scientific and technical equipment is three years and office equipment is five years.

1.4 Expenditure for research and development

These expenditures are written off in the Income statement in the year in which they were incurred.

1. Rekeningkundige beleid

Die finansiële state is op die historiese kostegrondslag opgestel ingevolge onderstaande beleid wat in alle wesenlike opsigte konsekwent toegepas is tensy anders aangetoon.

1.1 Inkomste-erkenning in die algemeen

Inkomste word ooreenkomstig die toevallingsgrondslag erken.

1.2 Staatstoekenning ontvang

Staatstoekenning word verantwoord in die tydperk waarop die toekenning betrekking het.

1.3 Vaste bates en waardevermindering

Vaste bates word getoon teen kosprys min opgehoopte waardevermindering en word oor die verwagte nutsduur volgens die vastepaaiement-metode afgeskryf.

Verwagte lewensduur van kantoormeubels is tien jaar, en wetenskaplike- en tegniese toerusting is drie jaar en kantoortoerusting is vyf jaar.

1.4 Uitgawe vir navorsing en ontwikkeling

Hierdie uitgawes word in die Inkomstestaat afgeskryf in die jaar waarin dit aangegaan is.

	1995-96 R	1994-95 R
1.5 Leased assets Assets acquired under finance lease agreements are capitalised. Lease rentals are in respect of operating leases and are debited against income as incurred. This is a change in policy compared with the previous year and has no material effect.		
2. Long term liability Liability under a capitalised finance lease repayable over the period 1 December 1994 to 30 November 1999 at an effective interest rate of 19.25% (1995: 18,5%) per annum and repayable in monthly instalments of R2538 (1995: R2393) (Exl. VAT)	**90 209**	114 811
Less: Payable in ensuing year included under current liabilities.	**24 603**	24 602
	65 606	90 209

1.5 Gehuurde bates Bates verkry deur middel van finansieringshuurooreenkomste word gekapitaliseer. Huurgeld is ten opsigte van bedryfshuurooreenkoms en is soos aangegaan teen inkomste gedebiteer. Dit is 'n verandering in beleid vergeleke met die vorige jaar en het geen wesenlike uitwerking nie.		
2. Langtermynlas Las onder 'n gekapitaliseerde finasieringshuurkontrak terugbetaalbaar oor die periode 1 Des. 1994 tot 30 Nov. 1999 teen 'n effektiewe rentekoers van 19.25% (1995: 18.5%) per jaar en terugbetaalbaar in maandelikse paaiemente van R2538 (1995: R2393) (BTW uitgesluit).		
Min: Betaalbaar in die daaropvolgende jaar onder bedryfslaste.		

3. Fixed assets/Vaste bates

	Furniture/ Meubels	Computer equipment/ Rekenaar-toerusting	Scientific & technical equipment Wetenskaplike & tegniese toerusting	Office equipment/ Kantoor-toerusting	Total/ Totaal
	R	R	R	R	R
Carrying amount at 31 March 1995					
Bedrag oorgedra soos op 31 Maart 1995	272 472	1 063 144	43 601	152 707	1 531 924*
At cost/teen kosprys	351 674	3 132 560	1 998 845	209 257	5 692 336*
Accumulated depreciation/					
Opgehoopte waardevermindering	(79 202)	(2 069 416)	(1 955 244)	(56 550)	(4 160 412)*
Additions/Toevoegings	14 298	151 414	779	84 111	250 602
Disposals/Wegdoenings	(2 300)	(28 138)	(1 892)	(74)	(32 404)
Depreciation for the year/					
Waardevermindering vir die jaar	(35 815)	(424 690)	(21 896)	(42 788)	(525 189)
Carrying amount at 31 March 1996/					
Bedrag oorgedra soos op 31 Maart 1996	248 655	761 730	20 592	193 956	1 224 933
At cost/teen kosprys	362 498	2 859 934	1 991 865	293 118	5 507 415
Accumulated depreciation/					
Opgehoopte waardevermindering	(113 843)	(2 098 204)	(1 971 273)	(99 162)	(4 282 482)

* Opening figures have been adjusted because of the introduction of a new asset register system and the reclassification of certain assets.

* Openingsbalans is verstel omrede 'n nuwe batebeheerstelsel in gebruik geneem is en sekere bates geherklassifiseer is.

	1995-96 R	1994-95 R	
4. Debtors			**4. Debiteure**
Trade debtors	**3 268 487**	2 974 666	Handelsdebiteure
Less: Provision for bad debts	**100 000**	100 000	*Min:* Voorsiening vir oninbare skulde
Net trade debtors	**3 168 487**	2 874 666	Netto handelsdebiteure
Other debtors	**308 260**	104 696	Ander debiteure
	3 476 747	2 979 362	
5. Interest bearing current account at 10,25% (1995: 9,25%) per annum			**5. Rentedraende lopende rekening teen 10,25% (1995: 9,25%) per jaar**
6. Creditors			**6. Krediteure**
Trade creditors	**658 714**	1 034 318	Handelskrediteure
Other creditors	**1 100**	26 313	Ander krediteure
Provision for accumulated leave	**1 107 000**	1 105 000	Voorsiening vir opgehoopte verlof
Provision for audit fees	**100 000**	100 000	Voorsiening vir ouditgelde
	1 866 814	2 265 631	

7. Operating surplus (deficit) before abnormal item

7. Bedryfsurplus (tekort) voor abnormale item

	1995-96 R	1994-95 R	
Income	**22 956 620**	19 176 599	Inkomste
State contribution	**5 400 000**	5 480 000	Staatsbydrae
Licensing fees	**16 614 740**	12 528 490	Lisensiegelde
*Special services	**437 981**	347 825	*Spesiale dienste
Interest	**480 237**	790 068	Rente
Sundry	**23 662**	30 216	Diverse
Less: Expediture	**20 591 404**	19 275 322	*Min:* uitgawe
Adjustment to fixed assets	**105 865*** **	–	Verstelling van vaste bates
Audit fees	**75 917**	121 429	Ouditgelde
Provision for audit fees	**100 000**	100 000	Voorsiening vir ouditgelde
(Over)/under provision previous year	**(24 083)**	21 429	(Oor-) ondervoorsiening vorige jaar
Bad debts written of as irrecoverable	**23 828**	–	Skuld afgeskyf as onverhaalbaar
Computer software	**318 552**	183 803**	Rekenaarprogramme
Consultancy	**308 450**	233 368**	Konsultantdienste
Consumable stores	**116 166**	72 001	Verbruikbare voorraad
Depreciation	**525 189**	867 175	Waardevermindering
Net profit on disposal of obsolete assets	**(1 698)**	–	Netto wins op wegdoening van uitgediende bates
Finance cost	**5 850**	1 213**	Finansieringskoste
Insurance	**108 022**	50 284**	Versekering
Operating leases	**235 897**	269 374**	Bedryfshuurooreenkomste
Personnel expenses	**15 572 508**	13 971 384	Personeeluitgawes
Postal and telephone services	**280 047**	232 808	Pos- en telefoondienste
Provision for accumulated leave	**2 000**	285 000	Voorsiening vir opgehoopte verlof
Provision for bad debts	**–**	100 000	Voorsiening vir oninbare skulde
Publications	**120 084**	111 585	Publikasies
Rent accommodation	**803 961**	859 633	Huurakkomodasie
Research contracts	**110 264**	166 988**	Navorsingskontrakte
Service contracts and maintenance	**248 126**	270 171**	Dienskontrakte en instandshouding
Stationary and printing	**169 795**	180 032**	Skryfbehoeftes en drukwerk
Subsistence and transport expenses	**1 219 197**	1 037 091**	Vervoer- en verblyfuitgawes
Sundry expenditure	**243 384**	261 983**	Diverse uitgawes
Operating surplus (deficit) before abnormal item	**2 365 216**	(98 723)	Bedryfsurplus (tekort) voor abnormale item

	1995-96 R	1994-95 R	
Abnormal item: CNS Retirement Fund (Note 8 refers)	–	4 600 000	Abnormale item: RKV-Aftreefonds (Nota 8 verwys)

* Radiological protection services rendered to organisations which are not licencees of the CNS

* Radiologiese beskermingsdienste gelewer aan instansies wat nie gelisensieerdes van die RKV is nie.

** Restated because of a change in disclosure policy

** Herbereken as gevolg van 'n verandering in openbaarmaking beleid

*** Footnote to "Note 3 Fixed assets" refers

*** Voetnota by Aantekening 3 Vaste bates verwys

8. CNS Retirement Fund

All employees are members of the CNS retirement fund, a defined benefit fund, which is governed by the Pension Funds Act of 1956.

The Fund was established on 1 December 1994 following withdrawal by the CNS from the Associated Institutions Pension Fund.

The total actuarial shortfall of R4 600 000 as valued on 1 December 1994 was made good from surplus income funds and the fund has been certified sound.

The employer contribution rate is 20,61% of the employees' pensionable salaries, and the employees' rate is 7,5% of pensionable salary for all employees.

8. RKV-Afreefonds

Alle werknemers is lede van die RKV-Aftreefonds, 'n vaste voordeelfonds wat deur die Wet op Pensioenfondse van 1956 gereël word.

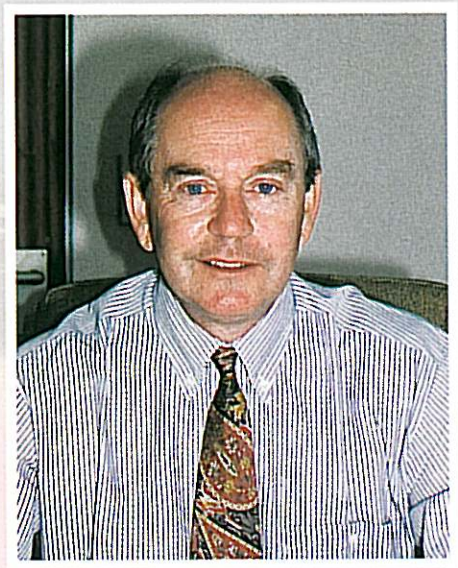
Die fonds is op 1 Desember 1994 gestig na onttrekking deur die RKV uit die Pensioenfonds vir Geassosieerde Inrigtings. Die totale aktuariële tekort van R4 600 000 soos op 1 Desember 1994 gewaardeer, is uit surplus inkomstefondse goedgemaak en die fonds is as gesond gesertifiseer.

Die werkgewer se bydraekoers is 20,61% van die werknemers se pensioendraende salarisse, en die werknemers se bydraekoers is 7,5% van die pensioendraende salaris vir alle werknemers.

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