



AUSTRALIAN RADIATION PROTECTION AND NUCLEAR SAFETY AGENCY

**ANNUAL REPORT
OF THE
CHIEF EXECUTIVE OFFICER
OF ARPANSA
1999-2000**

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OF THE
CHIEF EXECUTIVE OFFICER
OF ARPANSA
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6 October, 2000

Senator the Hon Grant Tambling
Parliamentary Secretary to the Minister for Health and Aged Care
Parliament House
CANBERRA ACT 2600

Dear Senator Tambling

In accordance with section 59 of the *Australian Radiation Protection and Nuclear Safety (ARPANS) Act 1998*, I present to you for transmittal to the Parliament the Annual Report of the Australian Radiation Protection and Nuclear Safety Agency (ARPANSA) which covers the period 1 July 1999 to 30 June 2000.

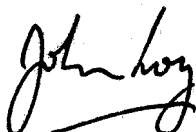
The Chief Executive Officer (CEO) of ARPANSA is required to report each financial year to the Minister on the operations of the CEO, ARPANSA and the Council and Committees. The Act also requires that I report details of:

- directions given by the Minister to the CEO under section 16 of the Act;
- any breach of licence conditions by a licensee, of which the CEO is aware; and
- all reports received by the CEO from the Council or the Nuclear Safety Committee.

The report includes the financial statements of ARPANSA for 1999-2000 and the report of the independent auditor on those financial statements.

The report also meets the Requirements for Departmental Annual Reports issued by the Department of the Prime Minister and Cabinet as updated in May 2000.

Yours sincerely



John Loy
CEO of ARPANSA

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Part 1

REVIEW BY THE CEO

1 REVIEW BY THE CEO

OVERVIEW OF PERFORMANCE AND FINANCIAL RESULTS

1999-2000 was ARPANSA's first full year of operation.

It was a harder year than I expected and we have not succeeded in achieving a number of important goals.

Setting up a new organisation, being a statutory agency under the *Public Service Act* and a prescribed agency under the *Financial Management and Accountability Act*, is harder than it sounds. It requires that a whole raft of policies and procedures be established bearing the stamp of this organisation, not simply borrowed from a parent Department. The Department of Health and Aged Care has helped, but at the end of the day it has to be up to us.

Early in the piece, we also had to negotiate our own Certified Agreement. This process was hugely demanding of the very resources that were also needed to tackle the financial and human resources policy matters. We also carried out a review of administrative positions and recruited a significant number of staff.

Partly as a result, we have not achieved as much progress in establishing important policies and practices as we should have. And the auditor has pointed to some basic control weaknesses, though I am glad to say that our accounts are unqualified.

The process of licensing Commonwealth entities using radiation sources or facilities has also been tougher than we first envisaged. We have been determined to make sure that our licences are effective instruments, both legally and in terms of assisting Commonwealth entities in managing their use of radiation. Examination of the Australian Nuclear Science and Technology Organisation (ANSTO) applications for their existing facilities has been a drawn out process. We have had to seek additional information and also needed to interact with the public and community groups about access to that information and public submissions. It has been a learning process for all concerned.

An important foundation was laid for promoting uniformity in the radiation protection framework amongst the Commonwealth, States and Territories when Ministers approved the idea of a National Directory for Radiation Protection. However, it was not possible to make much progress in actually fleshing out the Directory as an effective tool.

We were determined to achieve National Association of Testing Authorities (NATA) accreditation for the larger scientific services we offer – we have not achieved this goal as yet. Again, we underestimated just how much resource is required to prepare the documentation to support an effective accreditation process. But we have made good progress in several significant services, notably the radiofrequency (RF) measurement service.

But this report is certainly not all negative - the year has seen very worthwhile achievements.

We delivered on our contract to supply vehicles equipped with sophisticated detectors and location equipment and associated software to the Chinese Northwest Institute of Nuclear Technology (NINT).

The building of the Melbourne and Perth radionuclide monitoring stations we are operating for the Comprehensive Test Ban Treaty Organisation (CTBTO) was completed and planning started for stations in Townsville and Darwin.

The Maralinga remediation project was completed. ARPANSA was required to provide advice to the Department of Industry, Science and Resources (DISR) about steps to complete the project. ARPANSA has also been completing the final measurements to provide the assurance that the remediation has satisfied the clean-up criteria. In March 2000, I provided a certificate to the Minister for Industry, Science and Resources stating that the sought after criteria had been achieved for the main areas of the range. The remediation of Maralinga has been a very large part of the Agency's work for a number of years and it is a very significant achievement.

I issued a licence to prepare a site for the Replacement Research Reactor in September 1999. The form of this licence supported by a Safety Evaluation Report from the Regulatory Branch and covered by a formal statement of reasons for my decision set a model for the ARPANSA licensing of major facilities.

We completed and published a survey of radiofrequency emissions from mobile phone base stations in fourteen locations around Australia. The significance of this survey was that it established a firm methodology for undertaking these measurements and that it demonstrated that the level of emissions was very low compared with the maximum levels mandated by the Australian Communications Authority.

The detail that is provided in this report also shows a great deal of other work was completed successfully by ARPANSA during 1999-2000:

- operating and improving a successful personal radiation monitoring service;
- testing the level of protection against ultraviolet radiation offered by garments;
- testing and evaluating air filter samples from stations in the radionuclide monitoring network;
- controlling the importation of radioactive materials;
- measuring the radioactivity in a whole range of materials, including foodstuffs, to verify compliance with national and international standards;
- promoting radiation safety and providing advice on exposures in diagnostic radiology tests, including for pregnant women;
- taking part in the emergency response arrangements for visiting nuclear powered warships;
- testing lasers to ensure that their power lies within regulatory limits;
- undertaking quality assurance testing of radiopharmaceuticals used in nuclear medicine;

- calibrating the measuring instruments used in hospital radiotherapy centres and improving the accuracy of radiation doses in medical procedures;
- ensuring that the Agency was Year 2000 (Y2K) compliant and later preparing for the implementation of the new taxation system;
- contributing to the work of the International Atomic Energy Agency (IAEA) and providing on the job training to a number of international visitors; and
- undertaking research into improved approaches to the measurement of radiation.

Another important highlight during 1999-2000 was the appointment of the Radiation Health and Safety Advisory Council (the Council). The Council was created by the *Australian Radiation Protection and Nuclear Safety (ARPANS) Act 1998* and has a role of advising the CEO on radiation protection and nuclear safety. Two committees support the Council: the Radiation Health Committee and the Nuclear Safety Committee. The CEO appointed these committees shortly after the appointment of the Council was announced. The Council met on two occasions during 1999-2000 and is establishing a policy agenda for consideration together with a set of working principles to apply to its work and to that of the two committees. The Radiation Health Committee inherited a very long-standing agenda from its predecessors and is beginning the work of setting and implementing priorities. The Nuclear Safety Committee is a new body which has the function of advising on standards and codes of practice to apply in nuclear installations – it has commenced work looking at the safety assessment principles used by ARPANSA to assess licence applications for nuclear facilities.

This report also contains some more discursive descriptions of the aspects of the work of ARPANSA during the year:

- there is a piece on the radionuclide monitoring stations program under the Comprehensive Nuclear-Test-Ban Treaty;
- the process of establishing radiation protection standards for Australia based upon international guidance is set out; and
- and the role of ARPANSA as the Australian Standards Laboratory for certain radiation standards is described.

One of the roles inherited by ARPANSA from the Nuclear Safety Bureau is the monitoring of the operations of the ANSTO nuclear plant. From its monitoring over the year, ARPANSA has concluded that overall ANSTO's nuclear plant continued to be operated safely during the year. A specific issue that we paid attention to was, of course, the preparation for the possibility of operating problems arising from the Y2K changeover. In brief, nothing happened.

In accordance with Section 60 of the *ARPANS Act*, quarterly reports covering the periods 1 July to 30 September 1999, 1 October to 31 December 1999, 1 January to 31 March 2000 and 1 April to 30 June 2000, have been provided to the Minister.

As required by Sections 59(2), (3) and (4) of the *ARPANS Act*, I report that:

- there were no directions issued by the Minister under Section 16 of the Act;
- no licence conditions were breached; and

- there were no formal reports from the Council or the Nuclear Safety Committee under para 26 (1)(d) of the Act.

Parliamentary appropriation received in 1999-2000 was \$8.929m including \$0.264m Capital Use Charge. This is close to the level previously included in forward estimates for the former Nuclear Safety Bureau and the former Australian Radiation Laboratory.

An additional amount of \$168,000 yearly was provided in 1999-2000 to cover the cost of new lease arrangements for the Commonwealth-owned property at Yallambie.

An operating loss of \$0.9m was incurred during the year before Capital Use Charge. The loss was expected because regulation income will not cover the full cost of new regulation functions until 2001-2002. Establishment funding to cover the loss was provided to ARPANSA in 1998-1999.

Income from external sources was \$6.289m, exceeding expectation by \$1.2m mainly due to additional income from special projects, including the two radiation monitoring vehicles for the NINT and work on the radionuclide monitoring stations in connection with the Comprehensive Nuclear-Test-Ban Treaty Organisation (CTBTO).

OUTLOOK FOR 2000 - 2001

My objectives for the year ahead are, *inter alia*, to be able to report that:

- we have issued licences for all Commonwealth radiation sources and radiation facilities and that we have undertaken a significant program of inspections and audits;
- we have obtained NATA accreditation for the RF laboratory and the personal radiation monitoring service and have established a quality management and risk management culture throughout ARPANSA;
- we have a full suite of financial and human resources policies and practices in place and working effectively; and
- the issue of uniformity being progressed through the National Directory has actually taken substance and is being seen to work.

JOHN LOY
CEO

Part 2

ARPANSA OVERVIEW

2 ARPANSA OVERVIEW

ROLE AND FUNCTIONS

The functions of the CEO of ARPANSA are to:

- promote uniformity of radiation protection and nuclear safety policy and practices across jurisdictions of the Commonwealth, the States and the Territories;
- provide advice on radiation protection, nuclear safety and related issues;
- undertake research in relation to radiation protection, nuclear safety and medical exposures to radiation;
- provide services relating to radiation protection, nuclear safety and medical exposures to radiation;
- accredit persons with technical expertise for the purposes of the *ARPANS Act*;
- monitor and report on the operations of ARPANSA, the Radiation Health and Safety Advisory Council, the Radiation Health Committee and the Nuclear Safety Committee;
- monitor compliance with the prohibitions set out in the Act at Division 1 of Part 5 and make recommendations to the Director of Public Prosecutions; and
- undertake such other functions as are conferred by the Act, the regulations or any other law.

Sections 32 and 33 of the *ARPANS Act* allow the CEO to issue licences to controlled persons (a Commonwealth entity, Commonwealth contractor or employee of the Commonwealth contractor, a person in a prescribed Commonwealth place) that authorises such persons to undertake conducts in relation to nuclear installations, prescribed radiation facilities and dealings with controlled material or controlled apparatus.

ORGANISATION STRUCTURE

At 30 June 2000, ARPANSA employed 121 staff located in Sydney and Melbourne.

ARPANSA has:

- a Regulatory Branch, centred in Sydney, that is responsible and accountable for regulation activities;
- a Standards, Policy and Corporate Support Branch, divided between Sydney and Melbourne, that provides:
 - the focus for the overall leadership of ARPANSA: external relationships, including with the Minister and the Parliament, the Council and Committees, States and the public;

- strategic policy and corporate services; and
- support for the development of national codes and guidance and the Council and Committees;
- a Scientific Services Branch, centred in Melbourne, that manages the services provided by the Agency; and
- three scientific branches, centred in Melbourne, namely the Environmental and Radiation Health, Medical Radiation, and Non-ionizing Radiation Branches, each of which:
 - conducts research;
 - develops risk, safety and efficacy assessment methods;
 - maintains and develops high level measurement capacity; and
 - provides expert advice,in its own area of responsibility.

An organisation chart for ARPANSA that includes the names of the senior executives and their responsibilities, is shown at Figure A1 in Appendix 7.

OUTCOME AND OUTPUT STRUCTURE

ARPANSA contributes to the Health and Aged Care portfolio as part of Outcome 1: Population Health and Safety. The objective of this outcome is 'to promote and protect the health of all Australians and minimise the incidence and severity of preventable mortality, illness, injury and disability'.

This is consistent with the object of the *ARPANS Act* - 'to protect the health and safety of people, and to protect the environment, from the harmful effects of radiation'. The activities of ARPANSA reflect the statutory functions of the CEO.

ARPANSA supports the objective of the *ARPANS Act* by:

- building and maintaining world class expertise in measurement of radiation and assessment of health impacts;
- leading the development of standards, codes of practice, guidelines and other relevant material to support radiation protection and nuclear safety, including regulation throughout Australia;
- using its licensing powers and working with Commonwealth entities to ensure the safety of their radiation facilities and sources;
- offering high quality scientific services;
- advising the Government and other stakeholders on issues related to radiation protection and nuclear safety;
- building effective lines of communication with, and being accountable to the public and their elected representatives;
- providing education and training in radiation protection and nuclear safety for Australian and overseas students;
- building strategic partnerships, especially with the States and relevant academic and research organisations;
- undertaking research and development in radiation protection and nuclear safety;

- maintaining an advanced engineering facility providing responsive specialised support to the Agency's regulatory, service, research and development and commercial activities;
- supporting emergency preparedness arrangements; and
- participating in relevant national and international organisations.

RELATIONSHIP BETWEEN THE FORMER PROGRAM STRUCTURE AND THE CURRENT OUTCOMES STRUCTURE

This report is structured to correspond with the new outcomes and output framework for managing resources in the public sector. ARPANSA shares one of the ten outcomes of the Department of Health and Aged Care. The following matrix shows the relationship between the former program structure and the current outcome/output structure for ARPANSA, adopted in 1999-2000 for accrual budgeting and reporting purposes:

Table 1: Relationship Between the Program and Outcome/Output Structure

1999-2000 Outcome	1998-1999 Program structure
1. Population Health and Safety Protection and promotion of the health of all Australians and minimisation of the incidence and severity of preventable mortality, illness, injury and disability.	1.1 Public Health Development and Programs (part) 1.2 Health Regulation

A resource summary table which shows ARPANSA's total resources for its contribution to Portfolio Outcome number 1, including revenue from Government (Appropriation) for output, and the total price of the output is shown at Appendix 8.

Part 3

**PERFORMANCE AGAINST FUNCTIONS OF THE CEO
RELATING TO ARPANSA**

3 PERFORMANCE AGAINST FUNCTIONS OF THE CEO RELATING TO ARPANSA

PORTFOLIO BUDGET STATEMENTS PERFORMANCE INFORMATION

The table below shows the output analysis against the specific performance information set out in the 1999-2000 Portfolio Budget Statements.

Table 2: Output Analysis for ARPANSA

<u>Portfolio Outcome</u>	<u>Quality</u>	<u>Achievement</u>
Protection and promotion of the health of all Australians and minimisation of the incidence and severity of preventable mortality, illness, injury and disability	<p>A high level of satisfaction of the Minister with the relevance, quality and timeliness of policy advice, research and other services.</p> <p>100% of States and Territories adopt national radiation protection guidelines and recommendations.</p> <p>100% compliance by Commonwealth agencies and installations with authorised safety requirements.</p>	<p>Not formally measured</p> <p>See report on uniformity process (p 16).</p> <p>No breaches recorded</p>
<u>ARPANSA Output</u> Protection of the health and safety of people, and of the environment, from the harmful effects of radiation.	<p style="text-align: center;"><u>Quantity</u></p> <p>All licence applications processed for Commonwealth installations and facilities (baseline data on numbers will be collected during 1999-2000 as ARPANSA was established in February 1999).</p> <p>Establish baseline data on radiation source licence application numbers.</p> <p>Conduct 15 inspections of Commonwealth installations and facilities.</p> <p>Review of status of 20 Codes of Practice and Safety Guides and develop action plans.</p> <p style="text-align: center;"><u>Price</u></p> <p>\$13.984m.</p>	<p>Initial review undertaken of all 11 facility licence applications covering 33 facilities, six being nuclear installations. One licence issued.</p> <p>Baseline data established on about 3700 Commonwealth sources.</p> <p>118 visits, 55 inspections and 9 audits conducted.</p> <p>Status reviewed and priorities assigned. See Report on Council and Committees (p 33).</p>

UNIFORMITY OF RADIATION PROTECTION FRAMEWORKS

NATIONAL DIRECTORY FOR RADIATION PROTECTION

On 4 August 1999, the Australian Health Ministers Conference (AHMC), agreed to the following approach to achieving national uniformity of radiation protection frameworks:

1. *The development of a national guidance document – The National Directory for Radiation Protection – to provide an overall agreed framework for radiation safety, including both ionizing and non-ionizing radiation, together with clear regulatory statements that are able to be adopted within existing Commonwealth and State / Territory legislative frameworks.*

Ministers noted the timelines specified, a proposed table of contents for the directory, and an indicative draft of the directory which illustrates how issues are likely to be addressed.

2. *Proposals for development and amendment of the directory be managed by the Radiation Health Committee which will be established under the Commonwealth's Australian Radiation Protection And Nuclear Safety Act 1998.*
3. *On the basis that decisions on the contents of the directory are taken by the Radiation Health Committee:*
 - *Via a process for issue resolution, which has been designed to meet the requirements for national standard setting by Ministerial Councils and standard-setting bodies agreed by the Council of Australian Governments;*
 - *By a majority of ten out of the thirteen members of the Radiation Health Committee;*
 - *Following full consultation with relevant stakeholders, including Radiological Advisory Councils in most States and Territories; and*
 - *With final changes to the directory to be approved by AHMC.*

Ministers agreed that, upon consideration and approval of the provisions of the directory, the regulatory elements of the directory shall be adopted in each jurisdiction as soon as possible, using existing Commonwealth / State / Territory regulatory frameworks.

4. *Recognising that a variety of agencies have a legislated responsibility for aspects of radiation safety (e.g. mines, occupational health and safety and transport agencies in many jurisdictions), these other agencies are to be actively involved in measures to progress national uniformity, including the development of the national directory.*
5. *The adoption of uniform national regulatory controls (e.g. via mirror legislation) will be considered further following the completion of the*

initial draft of the national directory, and in light of the recommendations of the planned national competition policy review of radiation protection.

As a result of this agreement, in November 1999 the National Uniformity Implementation Panel (Radiation Control) [NUIP(RC)] established a number of working groups to develop proposals for consideration by the Radiation Health Committee. The working groups covered licensing of use versus responsibility, style of regulations, fractionation of controls, legal issues, transboundary movements, and definitions. A further working group was proposed on licensing of general practitioner and X-ray operator radiography. Progress was reported by some working groups at the March 2000 meeting of NUIP(RC). However, it was subsequently decided to put proposals to the July 2000 meeting of Radiation Health Committee that would enable substantial progress to be made quickly on development of the Directory.

NATIONAL COMPETITION POLICY (NCP) REVIEW OF RADIATION CONTROL FRAMEWORKS

Terms of reference for a national competition policy review of radiation protection frameworks were settled with the various jurisdictions. It is expected that the arrangements to appoint a project officer or consultant to manage the review process will be quickly finalised, and the NCP review will commence shortly.

ADVICE ON RADIATION PROTECTION AND NUCLEAR SAFETY

ARPANSA contributes to the protection of the health and safety of people and the environment, from the harmful effects of radiation by providing advice and services in relation to monitoring the dispersion of radioactive material in the environment.

INDUSTRIAL WASTE CONTAINING NATURALLY OCCURRING RADIOACTIVE MATERIALS

There has been a growing awareness in recent years that many industrial processes may concentrate and disperse naturally occurring radioactive materials. Advice has been given to several industries on the significance of, and disposal options for, wastes that they produce.

NATIONAL AND INTERNATIONAL STANDARDS

ARPANSA participates in national and international committees to assist in the development of uniform national standards on radiation protection that are consistent with international best practice.

ARPANSA officers attended meetings of the IAEA radiation safety, waste safety and transport safety committees to contribute to the development of international radiation protection standards. Dr Ches Mason, acting Director of the Standards, Policy and Corporate Support Branch, was appointed chair of the IAEA Radiation Safety Advisory Committee and Mr Peter Burns, acting Director of the Environmental and Radiation Health Branch is the Australian representative to the United Nations Scientific Committee on the Effects of Atomic Radiation.

CONTRIBUTION TO EMERGENCY RESPONSE ARRANGEMENTS

ARPANSA contributed to Australia's emergency response arrangements and planning. During the year, ARPANSA upgraded the equipment and training of its own emergency response teams. These teams would be available to assist State authorities in the event of a radiation accident.

The Australian Medical Counter Disaster Coordination Group has prepared a detailed medical manual for responding to emergencies involving public exposure to chemical and biological agents. ARPANSA and the Peter MacCallum Cancer Institute are members of this Working Group and are producing a manual for the medical management of radiation accidents.

A revised reference accident for planning purposes for visiting nuclear powered warships was developed and ARPANSA participated in port assessments. There were ten nuclear powered warship visits during the year.

NON-IONIZING RADIATION (NIR)

Advice on ultraviolet radiation (UVR) and electromagnetic radiation (EMR) is given in many ways:

- directly to the public through telephone conversations, information bulletins, UVR charts on television, 'swing tags' placed on millions of garments, participation in public meetings on mobile telephone base stations and powerlines and in the provision of measurement results through the Internet;
- provision of technical and scientific advice for documents being developed by the various State cancer councils on solar UVR and population exposure;
- through participation in a number of Australian Communication Authority (ACA) Task Groups and through submissions for the Senate inquiry into EMR; and
- through presentations at the International Workshop on UVR Exposure, Measurement and Protection (Oxford, October 1999), at the Australian Institute of Occupational Health Conference (Coolumb, Queensland, November 1999), at the International Commission on Non-Ionizing Radiation Protection 4th International Non-Ionizing Radiation Workshop (Kyoto, Japan, May 2000) and at the 25th Annual Conference of the Australasian Radiation Protection Society (Sydney, May 2000).

MEDICAL RADIATION

ARPANSA participated in the work of the Medical Electrical Equipment Committee and the Diagnostic X-ray Equipment Sub-Committee of Standards Australia, which produce standards for the safety aspects of equipment. A significant contribution was made to the development of standards for the safety of diagnostic X-ray equipment.

Advice is provided on radiation doses and risks in relation to patients undergoing diagnostic radiology examinations. During the year, 15 dose reconstructions have been performed and detailed advice on risk provided about individual patients, including pregnant women.

Technical advice was provided to the Medicare Services Advisory Committee to assist with an evaluation of an application for the Medicare listing of gamma knife surgery technology and procedures.

RESEARCH ON RADIATION PROTECTION, NUCLEAR SAFETY AND MEDICAL EXPOSURES TO RADIATION

NATIONAL SURVEYS OF PATIENT DOSES

Diagnostic radiology is by far the largest source of radiation dose to the population from man made sources. Unlike the dose from many other sources they are amenable to reduction by quality control, modification of techniques, appropriate limitation of the number and extent of examinations and the use of reduced dose technology.

ARPANSA researches, develops measurement techniques and evaluates radiation doses and risks both for individual patients and for the Australian population. The Agency has a long history of involvement in diagnostic radiology including a broad survey of general radiographic techniques that was made in the late 1970s, which required considerable resources and still omitted several areas that were growing rapidly due to the appearance of new technologies. More recently, the strategy has been to select an area of diagnostic radiology for detailed study that has priority in terms of the expected contribution to the population dose, the potential risk, the anticipated growth of the procedure, and the newness of the technology. Surveys have, over the past decade, been completed on mammography, nuclear medicine and computed tomography (CT).

During 1999-2000, the method used for estimation of CT dose using thermoluminescent dosimeters, which was used in the CT survey, was reported at National Conferences.

The reporting, both overseas and in Australia, of radiation burns resulting from cardiac interventional radiology indicated the need for a survey of these procedures. Background work and the planning for this study were commenced and are progressing.

It is now nearly a decade since the survey of nuclear medical procedures was performed. In order to evaluate the changes in procedures and population doses, a new survey of these procedures has commenced. It is beyond current resources to revisit a complete survey of doses for conventional radiological (plain film) procedures. An attempt has been made to evaluate population doses from published data on the doses from various procedures and Medicare data on the frequency of procedures. The difficulty in matching the Medicare item numbers with the procedures for which doses have been reported, led to unreliable estimations of population doses. Work, involving a limited survey, to refine this methodology is continuing.

UVR

To provide expert advice on solar UVR it is necessary to have a complete understanding of the solar UVR environment in Australia and the factors that

affect it. Hence research on ground based solar UVR measurements continues to be important and provides valuable input into public educational programs.

The behaviour of people outdoors and the presence of shade and personal protection are all factors that govern the UVR exposure of the population. ARPANSA has undertaken collaborative research with many Australian research organisations to assess exposure of various population groups undergoing a variety of activities.

Recent research publications include:

- O’Riordan, D.L., Stanton, W.R., Eyeson-Annan, M., Gies, P. and Roy, C. 2000, 'Correlations between reported and measured ultraviolet radiation exposure of mothers and young children', *Photochemistry and Photobiology*, 71:60-64;
- Lugg, D.J. and Roy, C.R. 1999, 'Ultraviolet radiation and health effects in the Antarctic', *Polar Research*, 18(2):353-359;
- Roy, C.R. and Gies, H.P. 2000, 'Ultraviolet radiation protection methods', *Radiation Protection Dosimetry*, 91:239-245;
- Gies, P., Roy, C. and Holmes, G. 2000 'UVR protection by clothing: comparison of *in vivo* and *in vitro* measurements', *Radiation Protection Dosimetry*, 91:247-250; and
- Gies, H.P., Roy, C.R., Toomey, S. and Tomlinson, D. 1999, 'Ambient solar UVR, personal exposure and protection', *Journal of Epidemiology*, 9:115-121.

EMR

Previously, an Australia-wide survey on environmental radiofrequency levels near mobile telephone GSM (Global Monitoring System for mobile communication) base stations was undertaken. As a result of public interest and concern about environmental RF levels from mobile telephone base stations, the data from the individual area surveys was further analysed. A Technical Report No. 29 '*Levels of Radiofrequency Radiation from GSM Mobile Telephone Base Stations*' was published on the ARPANSA web site:

http://www.arpansa.gov.au/eme_pubs.htm.

LINEAR ACCELERATOR

The ARPANSA linear accelerator accelerates electrons to megavoltage energies. The electrons can be used directly, or indirectly to create X-rays, similar to radiation beams produced in medical therapy linear accelerators used for cancer radiotherapy treatment. The linac is primarily used within ARPANSA to support absorbed dose standards at therapy energies.

ARPANSA has been invited by the Swiss Office of Metrology to participate in a mainly European intercomparison of beam quality measurements for standard accelerator X-ray beams. This intercomparison is of fundamental importance for the calibration of therapy dose meters and the dissemination to clinical conditions.

The accelerator has been made available for collaborative research and feasibility studies of high dose irradiation, typically of tens of thousands of grays, for processes including sterilisation, food treatment and bonding of composite materials. Appropriate dosimetry techniques are being developed for such applications. A pulse radiolysis facility is maintained for the Australian Institute of Nuclear Science and Engineering supported research institutions for chemical reaction studies relevant to the development of chemotherapy drugs, and the environmental impact of pesticides and pollution.

MULTI-PROCESSOR PC BASED FACILITY

ARPANSA uses a multi-processor PC based facility to undertake complex modelling applications. The facility, which has close to mainframe-equivalent computing power, is used to evaluate dosimetry and medical uses of radiation and to perform Monte Carlo modelling for absorbed dose and high energy standards. The following paper was published:

Wise, K.N., Sandborg, M., Persliden, J. and Carlsson, G.Alm, 1999, 'Sensitivity of coefficients for converting entrance surface dose and kerma-area product to effective dose and energy imparted to the patient', *Physics in Medicine and Biology*, 44:1937-1954.

SERVICES PROVIDED IN RADIATION PROTECTION, NUCLEAR SAFETY AND MEDICAL EXPOSURES TO RADIATION

PERSONAL RADIATION MONITORING SERVICE (PRMS)

ARPANSA continued the tradition of offering a personal radiation monitoring service for persons who may be exposed to radiation as a consequence of their occupation. The service, which commenced using 'film badges' in 1932, has adopted new technology over the years and now provides a monitoring service for 35,000 persons annually. In 1986 the process of providing cumulative dose reports for clients was streamlined through the introduction of a new data base and this year marked the occasion of the one hundred thousandth person being entered into this data base.

RADON MONITORING SERVICE

The PRMS provides a service for the measurement of radon and natural background radiation levels. Monitors are used to measure the radon levels in homes and in the environment.

Personal radon monitors are also provided to determine the radon levels to which certain workers are exposed as part of their occupation (*e.g.* cave tour guides and miners).

NORTHWEST INSTITUTE OF NUCLEAR TECHNOLOGY (NINT)

The fit out of two specially modified vehicles equipped with radiation detection equipment was completed and the vehicles delivered to NINT in China. This equipment was essentially identical to that used by ARPANSA in undertaking the audit of the effectiveness of the rehabilitation procedures at the Maralinga atomic test site.

Two engineers, the project manager and a scientist from ARPANSA visited X'ian during October to commission the equipment and participate in the final acceptance criteria.

COMPREHENSIVE NUCLEAR-TEST-BAN TREATY ORGANISATION (CTBTO)

ARPANSA has maintained a program to monitor global fallout from nuclear weapons testing for over forty years and has several monitoring stations around the country. As part of its commitment to the Comprehensive Nuclear-Test-Ban Treaty, Australia has undertaken to be part of a global network to detect the detonation of nuclear weapons. ARPANSA has the responsibility for establishing and running Australia's radionuclide monitoring stations, which are integrated into the global network.

The design, development, installation and commissioning of airborne radionuclide particulate matter monitoring stations located at Perth and Melbourne was completed on behalf of the Preparatory Commission of the CTBTO. These stations form part of a network of eighty radionuclide monitoring stations to be established to ensure compliance of member states within the terms of the Treaty. Site surveys for additional stations at Darwin and Townsville were completed and negotiations commenced in relation to the installation and commissioning of these stations [see Part 5(a)].

In addition, ARPANSA staff continued to provide support to the Provisional Technical Secretariat of the CTBTO through the conduct of a training course for station operators, a workshop to progress the Station Operation Manual and participation in meetings of Working Group B in Vienna.

MARALINGA REHABILITATION

ARPANSA has contracts with DISR to provide services and advice in relation to the Maralinga Rehabilitation Project, on monitoring contamination at Maralinga, providing advice on the health impact of residual contamination and monitoring of workers for internal contamination.

During the year, on-site monitoring at Maralinga verified that contaminated areas have been remediated in accordance with established criteria. Advice was provided on the disposal of contaminated debris in burial tranches and almost all workers involved in the rehabilitation have had their final lung monitoring clearance in the whole body monitor at the Yallambie premises.

MEASUREMENT SERVICES

A service is provided on a cost recovery basis to various industry and government agencies to monitor the radioactive content of samples. The samples are measured to assess either potential exposure to radioactive materials or to ensure compliance with recommended standards. Often these standards are to ensure that potable water and food comply with standards for radioactivity content.

During the year a total of 715 water samples were measured to verify compliance with national water quality standards and 262 food samples were measured to verify compliance with international food quality standards.

ULTRAVIOLET PROTECTION FACTOR (UPF) RATING SCHEME

In Australia solar UVR personal protection is often required and the most effective form is clothing. ARPANSA developed a test protocol for the measurement of UVR protection provided by materials and fabrics which was incorporated into an Australian standard. In 1996 Australia became the first country to implement a standard on Sun Protective Clothing. An UPF rating

scheme was developed by ARPANSA to allow clothing to be tested and rated for UVR protection. ARPANSA swing tags attached to rated garments carry useful information on clothing and UVR and have a sun protection message from the Australian Cancer Society on the reverse side. The UPF Rating scheme has been operating since 1992 and more than 2200 client jobs have been completed, 10,600 different fabrics have been rated and more 10.5 million swing tags have been issued. There are currently approximately 100 licensed users of these swing tags.

UV HAZARD ASSESSMENT

To minimise unintentional UVR exposure in the workplace, hazard assessment of artificial sources of UVR is undertaken and advice on protective measures and controls is provided. Polysulphone film dosimeters were used in preliminary assessments at a number of industrial locations, including a mining site, a printing company and a car assembly area. A portable hazard assessment unit based on diode array technology is being developed for more accurate assessments.

EMR, LASER AND OPTICAL RADIATION

Radiofrequency survey meters and personal radiofrequency dosimeters are used in the communications and manufacturing industry sectors to determine electromagnetic radiofrequency field strength to assist in reducing personal exposure. Such devices are vital for establishing and maintaining compliance with relevant exposure limits and ARPANSA is the only organisation in Australia to offer routine broadband calibration services.

There was a continuing strong demand for commercial survey work and many requests were unable to be met owing to limited staff resources. Radiofrequency field survey and consultation work was conducted mainly for local councils and telecommunications carriers.

ARPANSA conducted a workshop involving communications carriers and interested parties to develop an agreed measurement protocol for mobile phone base stations. The workshop concentrated primarily on digital GSM and CDMA (code division multiple access) transmission protocols.

Laser and optical devices are in widespread use throughout the community in applications ranging from bar code scanning devices, road traffic speed detectors, laser pointers, wireless optical communications links, robot vision systems, surgical lasers, military devices and industrial processing and cutting lasers. There was a strong demand for commercial evaluation tests on laser products to ensure compliance with laser product emission limits.

DEVELOPMENT OF QUALITY SYSTEMS AND ACCREDITATION OF SERVICES

ARPANSA is committed to achieving Quality Systems accreditation for a range of scientific services. The documents required by NATA for the accreditation of the RF calibration laboratory against AS-ISO\IEC 17025, 1999, '*General requirements for the competence of testing and calibration laboratories*' were submitted in March and an initial assessment completed. Accreditation will be sought for the UPF rating scheme and documentation is being drafted. An internal audit program has been established to facilitate the review of the quality manuals being developed for other services.

CUSTOMS PROHIBITED IMPORT PERMITS FOR RADIOACTIVE MATERIALS

Certain ARPANSA officers are authorised by the Minister of Health and Aged Care to issue permits for the importation of radioactive materials into Australia under Regulation 4R of the Customs (Prohibited Imports) Regulations. During 1999-2000, 406 permits for customs release of medical radioisotopes and 394 permits for non-medical radioisotopes were issued, including single-shipment and twelve-monthly permits.

RADIOPHARMACEUTICALS

ARPANSA has continued to support the work of the Therapeutic Goods Administration by the evaluation of the chemistry, manufacture, quality control and radiation dosimetry data submitted in applications to register radiopharmaceutical drugs on the Australian Register of Therapeutic Goods, and in applications to vary the conditions of registration. A post-marketing surveillance quality assurance testing program is conducted to monitor radiopharmaceuticals used in nuclear medicine practice in Australia for compliance with the required standards of purity and quality.

INSTRUMENT CALIBRATION

ARPANSA provides calibration services for radiation measurement equipment used by radiotherapy centres, hospitals, industry and regulatory authorities. Calibrations for megavoltage, medium and low energy X-rays, gamma rays and beta and neutron radiations are directly traceable to the Australian standards of measurement for ionizing radiations maintained by ARPANSA [see Part 5(c)]. Standard radiation exposures are provided for the calibration of personal radiation monitoring services.

X-RAY EXAMINATION TECHNOLOGIES

ARPANSA has continued to provide consulting services to the Australian Customs Service on high voltage X-ray technologies appropriate for the non-invasive examination of shipping containers and the detection and examination of illicit goods, primarily drugs. Industrial portable fluoroscopy equipment proposed for licensing has been evaluated for operator safety.

REGULATION

LICENCE APPLICATIONS

The *ARPANS Act* was proclaimed to come into effect on 5 February 1999. Consequently, Commonwealth entities had until 5 August 1999 to submit applications to license their use of facilities and sources.

During the reporting period, 82 applications for source and facility licences were received by the CEO, making a total of 85 applications received by the Agency by the end of the reporting period. Some 33 separate Commonwealth entities involved in activities covered by the *ARPANS* legislation lodged applications. One additional Commonwealth agency was identified as falling under the legislative requirement, but an application was yet to be submitted. (subsequently submitted). In addition to radiation sources, the applications include 33 controlled facilities, five of which are nuclear installations.

ANSTO applied to the CEO of ARPANSA for a facility licence to operate the following nuclear installations:

- HIFAR research reactor
- Waste Operations
- Fuel Operations
- Radiopharmaceuticals Operations

and to decommission:

- Moata research reactor.

As required by the *ARPANS Act*, the CEO of ARPANSA must notify the receipt of an application relating to a nuclear installation, and of his intention to make a decision on it. Additionally, in making a decision, the CEO is required to take into account matters raised in any public submissions on the application. The public and community were invited, in advertisements placed by ARPANSA in national and local newspapers and the *Commonwealth of Australia Gazette* during early February 2000, to make submissions by 1 May 2000. This deadline was subsequently extended until 31 May 2000.

A number of public submissions commented that additional information about ANSTO's nuclear installations and an extension in time was needed to allow informed submissions to be lodged. The CEO discussed these representations with community members of the Nuclear Safety Committee (which advises the CEO on nuclear safety matters). The CEO decided to revise the timetable and to 'stagger' submissions by the public and provide further time for the submissions, taking into consideration the need for, and availability of, additional information provided by ANSTO in support of their licence application for the nuclear installations.

There were no breaches of licence conditions by a licensee during the reporting period.

LICENSING OF CONTROLLED PERSONS

During the year, ARPANSA developed a process for the administrative, technical and legal review of facility and source licence applications. This includes assessment against objective criteria in accordance with process milestones. The assessment criteria reflect legislative requirements, Australian standards, guidelines and codes of practice, and international best practice.

The *Safety Assessment Principles* document those areas where ARPANSA assigns the most importance, priority and focus in assessing the safety of controlled facilities. The document was submitted for review by a Working Party of the Nuclear Safety Committee and work started on addressing the comments from that Working Party. Further work was carried out developing a guideline for the regulatory assessment of the design of new and modification of existing controlled facilities. An *Expectations Guideline* for reviewing an applicant's plans and arrangements for achieving safety, as required by the *ARPANS Regulations 1999*, was drafted and forwarded to a number of licence applicants for comment. These documents are being used to review licence applications.

A further draft was prepared of the guideline for the regulatory assessment of the decommissioning of controlled facilities. A paper based on that work was presented at the 25th Annual Conference of the Australasian Radiation Protection Society and published:

Diamond, T.V., Mabbott, P.E. and Lawrence, B.R. 2000, 'Decommissioning of Australian Nuclear Facilities - a Regulatory Perspective', *Radiation Protection in Australia*, 17(1):38-47.

General and Standard conditions of licence for low hazard or “Yellow” sources have been published in a “Yellow Handbook” which is to accompany each combined source licence. Conditions to be applied to licensing for more hazardous applications of ionizing radiation are being developed as ‘Blue’ and ‘Pink’ Handbooks and as a “Green” Handbook for non-ionizing radiation sources. These documents are designed to ensure consistency across the range of ARPANSA licences.

LICENSING REVIEWS

ARPANSA commenced reviewing the facility and source licence applications. This is proving to be a challenging task. The process of fitting new Acts and Regulations to existing operating facilities and source dealings is time consuming due to the need to elucidate the regulatory framework and the differing levels of documentation available from licence applicants and their varying understanding of the legislative requirements.

During the reporting period one facility licence was issued, authorising the preparation of a site at Lucas Heights for the proposed replacement research reactor. Ten combined source licences were issued covering approximately 70 individual source licences. All of the source licences are for low-hazard (yellow) category sources. The remaining applications received by ARPANSA

have been reviewed and found to require clarification and additional information from the applicant, prior to completion.

The regulatory review of each licence application is documented in a separate safety evaluation report. These describe the regulatory review process, draw conclusions about compliance with requirements, make recommendations to the CEO of ARPANSA on whether to issue a licence, and recommend licence conditions.

Construction of a computer database, to record the information provided under applications and to record licence information, is well advanced.

REGULATORY VISITS, INSPECTIONS AND AUDITS

During the course of the year, ARPANSA officers carried out a range of visits (118), inspections (55) and audits (9) of the operations of licence applicants.

The majority of visits were associated with:

- providing information on the requirements for licence applications and review process;
- gathering information needed for reviewing licence applications; and
- gaining an understanding of applicant's operational procedures, specific technical aspects and processes important to safety management.

In particular, ARPANSA Regulatory staff made several visits to the:

- Australian Nuclear Science and Technology Organisation (ANSTO);
- Department of Defence;
- Commonwealth Scientific and Industrial Research Organisation (CSIRO);
- Australian National University;
- Australian Customs Service;
- ARPANSA Yallambie campus; and
- the Australian War Memorial.

Audits associated with various aspects of HIFAR operation were conducted on a routine basis. The National Medical Cyclotron and ANSTO Engineering were audited. Inspections were carried out at CSIRO Plant Industry and at HIFAR in response to specific events or reports. Inspections were undertaken at:

- ANSTO (49);
- CSIRO (2);
- Australian Customs Service (2); and
- Australian War Memorial (2).

A number of radiation and contamination monitoring instruments were purchased for the Regulatory Branch to fulfil its audit and inspection functions.

INTERIM FUNCTIONS UNDER THE *ANSTO ACT 1992*

SECTION 37A(1)(A) - SAFETY OF ANSTO'S NUCLEAR PLANT

ARPANSA continued to monitor and review the operation of ANSTO's nuclear plant under the transitional provisions of *the Australian Radiation Protection and Nuclear Safety (Consequential Amendments) Act 1998* against the expectations of the CEO of ARPANSA for nuclear safety and radiation protection.

ARPANSA officers attended, as observers, the accreditation interviews of key reactor operating personnel and also attended meetings of the liaison committee that coordinates the emergency arrangements for the Lucas Heights Science and Technology Centre. In addition, ARPANSA officers witnessed tests of safety systems and spent fuel transport casks. New and spent fuel stores and handling ponds were inspected. Audits were conducted of reactor operating logs and of ANSTO's safety management arrangements for the National Medical Cyclotron.

ARPANSA reviewed and agreed to a number of modifications to safety-related plant and procedures.

Safety-significant abnormal occurrences, *i.e.* those which are Level 1 and above on the International Nuclear Event Scale (INES), are a measure of the compliance of the operation of a nuclear installation with a range of safety-related items such as operational limits and conditions. There was one event determined to be INES Level 1 in 1999-2000.

Further details of ARPANSA's review of the safety of the ANSTO plant, including Y2K issues and HIFAR major shutdown, are provided at Appendix 2.

CONCLUSIONS ON THE SAFETY OF ANSTO'S NUCLEAR PLANT

As described above, ARPANSA continued to monitor and review the operation of ANSTO's nuclear plant against ARPANSA's expectations for nuclear safety and radiation protection. These expectations are drawn from Australian and international standards and recommendations and to reflect best practice for regulation of nuclear facilities.

ARPANSA concluded that, overall, ANSTO's nuclear plant continued to be operated safely during the year. Moata remained in a safe condition in its permanently closed-down state. The risk to on-site personnel and the public was maintained at an acceptably low level.

Part 4

**OPERATION OF THE
COUNCIL AND COMMITTEES**

4 OPERATION OF THE COUNCIL AND COMMITTEES

The *ARPANS Act 1998* established a Radiation Health and Safety Advisory Council, a Radiation Health Committee and a Nuclear Safety Committee. The Committee and Council members were appointed and commenced operations during the year. The Council members were appointed by the Minister for Health and Aged Care, with the exception of the CEO of ARPANSA who was legislatively appointed. The CEO of ARPANSA appointed members of the two Committees after consultation with the Council.

RADIATION HEALTH AND SAFETY ADVISORY COUNCIL

The Minister appointed members for a term of three years — 19 August 1999 – 19 August 2002. There is one vacancy remaining on the Council.

The members are:

Chair:

Dr Rick McLean (NSW), consultant physician in nuclear medicine

CEO of ARPANSA:

Dr John Loy (NSW)

State Radiation Control officers:

Mrs Jill Fitch (SA), Director, Radiation Protection Branch, Department of Human Services

Ms Lorraine Plues*(NSW), Manager, Radiation Control Section, Environment Protection Authority

Community Representative:

Mr Peter Raue (NSW), computer software consultant, Bangor

Other Members:

Dr Richard Smart (NSW), medical physicist, St George Hospital

Dr Garry Smith (NSW), Environmental Services Division, Sutherland Shire Council

Dr Graeme Dickie (Qld), Deputy Director of Oncology, Royal Brisbane Hospital

Ms Sylvia Kidziak (NSW), Managing Director, SL Engineering, occupational health and safety consultant

Dr Lorraine Robb (Vic), Senior Research Fellow, Walter and Eliza Hall Institute

Dr Nick de Klerk (WA), Department of Public Health, University of WA

*Ms Plues was appointed on 12 June 2000 for a three-year term. Ms Plues replaced Mr Howard Ackland, who was originally appointed to the Council, but resigned after the first meeting following his resignation from the NSW Environment Protection Authority.

The Council met three times during the year, holding its inaugural meeting on 15 September 1999, and was pleased that the Minister was able to attend for part of that meeting. The Council's role is to advise the CEO on emerging issues, matters of major concern to the community, and the adoption of

recommendations, policies, codes and standards in relation to radiation protection and nuclear safety. It discussed its operating procedures, its role and relationships with ARPANSA and the Radiation Health Committee and Nuclear Safety Committee, and the key issues Council would need to address. Council determined that its proceedings needed to be as open as possible. Summaries of Council meetings have been placed on the ARPANSA web site as a result. Council considered the Replacement Research Reactor, the National Radioactive Waste Repository, ARPANSA's role in the CTBTO monitoring program, Maralinga and some significant overseas radiation accidents. A meeting was also held between the Chairs of the Council and the Committees, the CEO and senior ARPANSA staff to discuss the relationships between the groups and to plan for their future work programs.

RADIATION HEALTH COMMITTEE

The CEO of ARPANSA appointed members for a term of three years from 27 October 1999.

The members are:

Chair:

Mrs Jill Fitch (SA), (Director, Radiation Protection Branch, Department of Human Services

CEO of ARPANSA:

Dr John Loy (NSW)

Radiation Control Officers (each State and Territory):

Mr Brad Cassels (NT), Senior Policy Officer, Territory Health Services

Mr Simon Critchley (Qld), Director, Radiation Health, Department of Health

Dr Sujit Dey (WA), Managing Physicist, Health Department of WA

Mr Morrie Facci (Vic), A/Chief Radiation Officer, Department of Human Services

Mr Len Potapof (NSW), A/Manager, Radiation Policy Unit, Environment Protection Authority

Dr Barbara Shields (Tas), Senior Health Physicist, Department of Health and Human Services

Mr David Smoker (ACT), Director, Radiation Safety Section, Department of Health and Community Care

Nuclear Safety Committee Representative:

Dr Peter Jezukaitis (SA), occupational physician

Person to Represent the Interests of the General Public:

Dr Harry Cohen (WA), gynaecologist

Other members:

Dr Nicholas Daunt (Qld), diagnostic radiologist

Dr Andrew Wood (Vic), Senior Lecturer in Biophysics, Swinburne University of Technology

The Radiation Health Committee (RHC) met three times during the year, holding its inaugural meeting on 23-24 November 1999, and considered a diverse range of radiation protection issues. The RHC is established to formulate draft policies, codes and standards for consideration by the

Commonwealth, the States and Territories. Its role means that it needs to review an existing extensive series of publications in the National Health and Medical Research Council (NHMRC) Radiation Health Series, and several Codes developed under the *Environment Protection (Nuclear Codes) Act 1978*. RHC agreed to a process for the development of an ARPANSA Radiation Protection Series that will in time replace those publications. The Committee also approved a Template Guidance Document that would ensure that RHC developed publications have a consistency in style.

The RHC established priorities and work initiatives in reviewing the adequacy of the existing range of documents. The RHC agreed that the following publications were of high priority:

- Safe Transport of Radioactive Material;
- Radiofrequency Exposure Standard;
- Radiation Protection in Mining/Milling of Radioactive Ores Code;
- Radioactive Waste in Mining/Milling of Radioactive Ores Code;
- Safe Use of Radiation Gauges;
- X-Ray Analysis Equipment;
- Research With Human Subjects;
- Radiation Protection in Dentistry;
- Radiation Protection in Veterinary Science;
- Cabinet X-Ray Equipment;
- Special Applications - Enclosed X-Ray;
- Intervention in Emergency Situations;
- Discharge of Patients Treated with Radioactive Materials;
- Occupational UV Standard; and
- Nuclear Density/Moisture Gauges.

The Australian Code of Practice for the Safe Transport of Radioactive Substances 1990 is to be updated to include the 1996 edition of the IAEA Transport Regulations. This is expected to occur before its worldwide implementation in mid-2001.

The Committee also established working groups to develop a nationally consistent approach to radioactive waste management, to consider the issue of medical radiation exposure in Australia, and to prepare a discussion paper on the scope of regulation for Australia.

Additional issues that were considered by the RHC included:

- cosmic radiation exposure;
- thorium based gas mantles;
- prohibition of laser pointers above Class 2;
- certification of personal monitoring services;
- Australian Radiation Incidents Register;
- working life of sealed sources;
- *Australian Drinking Water Guidelines*;
- IAEA proposals concerning Safety and Security of Sources; and
- repeal of the *Environment Protection (Nuclear Codes) Act*.

RADIOFREQUENCY EXPOSURE STANDARD WORKING GROUP

ARPANSA, after consultation with the Australian Communications Authority, has agreed to undertake the role of developing a radiofrequency standard via the Radiation Health Committee. In January 2000, the CEO announced the membership of a working group that had been formed to draft the standard. In choosing the members of the working group, ARPANSA consulted widely with a range of relevant groups to achieve a balanced spread of relevant interests and expertise. The RHC agreed the membership of the working group and the Council was also consulted.

The working group met on two occasions during the year. Terms of reference and working procedures for the group were finalised and members provided overviews of the history of development of RF standards, mechanisms of RF absorption, specific absorption rate, human studies, *in-vivo* and *in-vitro* studies, thermal and non-thermal effects, union perspectives and community concerns. Task groups were established to investigate issues that need further debate.

NUCLEAR SAFETY COMMITTEE

The CEO of ARPANSA appointed members for a term of three years from 1 November 1999. There is one vacancy remaining on the Committee.

The members are:

Chair:

Ms. Sylvia Kidziak (NSW), Managing Director SL Engineering, occupational health and safety consultant

CEO of ARPANSA:

Dr John Loy (NSW)

Representative of Radiation Health Committee:

Dr Barbara Shields (Tas), Senior Health Physicist, Department of Health and Human Services

Local Government Representative:

Dr Garry Smith (NSW), Principal Environmental Scientist, Sutherland Shire Council

Person to Represent the Interests of the General Public:

Ms Jean McSorley (NSW)

Other Members:

Dr Peter Jezukaitis (SA), occupational physician

Mr Michael Allen (NSW), former Director, Nuclear Safety Bureau

Dr Rob Lee (ACT), Director Human Factors, Systems Safety and Communications, Australian Transport Safety Bureau

Mr Bob McAneny, (NSW), former Manager, ANSTO, HIFAR (Nuclear Technology Division)

Professor Robert Melchers (NSW), University of Newcastle, Civil Engineering and Surveying Department

Professor Ian Polmear (Vic), Monash University, Materials Science

The Nuclear Safety Committee (NSC) met twice during the year, holding their inaugural meeting on 13 December 1999. The NSC has the role of advising the CEO and the Council on matters relating to nuclear safety and the safety of controlled facilities. The NSC considered a range of issues mainly related to the replacement research reactor at Lucas Heights and the National Radioactive Waste Repository, and considered the ARPANSA licensing process with particular reference to controlled facilities. The NSC established Working Groups to review two significant ARPANSA regulatory documents:

- *Safety Assessment Principles for Controlled Facilities (SAP)*; and
- *Regulatory Assessment Criteria for the Design of New Controlled Facilities and Modifications to Existing Facilities*.

The working group on the SAP review met in March 2000, and forwarded recommendations for revision of the SAP to ARPANSA. The suggested revisions were to be taken into account in a revised version of the SAP. ARPANSA will submit the revised SAP for public comment concurrently with a further review by the working group. This latter review is expected to take place in late 2000.

Part 5

ARTICLES ON SELECTED ACTIVITIES

- (a) COMPREHENSIVE NUCLEAR-TEST- BAN TREATY**
- (b) STANDARDS FOR RADIATION PROTECTION AND NUCLEAR SAFETY IN AUSTRALIA**
- (c) IONIZING RADIATION MEASUREMENT STANDARDS**

(a) COMPREHENSIVE NUCLEAR-TEST- BAN TREATY

The Comprehensive Nuclear-Test-Ban Treaty (the treaty), which was ratified by Australia in 1998 with the passage of the *Nuclear Test Ban Treaty Act*, obliges States that are party to the treaty:

- not to carry out any nuclear weapon test explosion or any other nuclear explosion, and to prohibit and prevent any such nuclear explosion at any place under its jurisdiction or control; and
- to refrain from causing, encouraging, or in any way participating in the carrying out of any nuclear weapon test explosion or any other nuclear explosion.

A Provisional Technical Secretariat (PTS) has been established to assist the State Parties with the implementation of the provisions of the treaty. In particular, the staff of the PTS are responsible for carrying out the verification of compliance of State Parties through the establishment of a network of monitoring stations using seismic, hydroacoustic, infrasound and radionuclide monitoring.

Data from these monitoring stations that are being established in defined locations around the world will be transmitted, via satellite communication links, to the International Data Centre in Vienna. The staff of the PTS are responsible for:

- supervising and co-ordinating the operation of the international monitoring system;
- operating the International Data Centre;
- receiving, processing, analysing and reporting on the International Monitoring System (IMS) data; and
- providing technical assistance and support in the installation and operation of the monitoring stations.

The network of stations designed to measure radionuclides in the atmosphere, comprises eighty stations equipped with samplers for monitoring airborne particulate matter. Forty of the stations will also incorporate equipment to support the monitoring of radioactive noble gases in the atmosphere. Seven of these stations will be established in Australia and its territories.

ARPANSA, through its predecessor, the Australian Radiation Laboratory, has operated a network of low volume air sampling equipment at various sites throughout Australia since 1966. This has facilitated the determination of the background levels and the negotiation of contracts with the PTS for the installation the high volume sampling equipment necessary to meet the requirements of the IMS.

In essence, a large volume of air is passed through an inert filter for 24 hours and the level of radionuclides trapped by the filter determined through measuring the radionuclide spectrum of the filter. Meteorological data collected in conjunction with the sample allows an assessment of the source of any contamination detected.

As these stations have been established to verify compliance of the member states with the provisions of the treaty, the security of the samples is a vital element in respect of the integrity of the data. To this end, the sampling station includes the flow rate, meteorological conditions, identity of the filter at each stage of the process and status of the equipment.

ARPANSA has established radionuclide monitoring stations in Melbourne and Perth and a radionuclide detection suite established in Melbourne. It is negotiating arrangements for the establishment of additional stations at Townsville and Darwin, and to provide support to the PTS in establishing a station at Kavieng.

In the longer term, the experience gained in establishing the stations at Darwin and Kavieng will assist with the installation of the remaining three “Australian” stations at Macquarie Island, Cocos Island and the Mawson Base at Antarctica.

ARPANSA is proud of the role it has played in establishing the stations in Melbourne and Perth and looks forward to establishing and operating the remainder of the Australian stations in the radionuclide monitoring network to meet Australia's obligations under the treaty.

(b) STANDARDS FOR RADIATION PROTECTION AND NUCLEAR SAFETY IN AUSTRALIA

Governments and health authorities everywhere agree that exposure to radiation should be controlled, and there are clear public expectations of governments that this should be done. But what standards should apply under a regulatory system for radiation control? One of ARPANSA's major functions is to facilitate the development of radiation protection and nuclear safety standards that can be applied consistently across both federal and state/territory jurisdictions.

A process has been established which permits the managed development of standards and which features consultation with stakeholders, including the public. One of its prime objectives is to promote uniformity of radiation protection and nuclear safety practices across Australia. In addition, ARPANSA stays in close touch with international best practice in radiation protection and nuclear safety and ensures that appropriate advice is available to the standards-setting process.

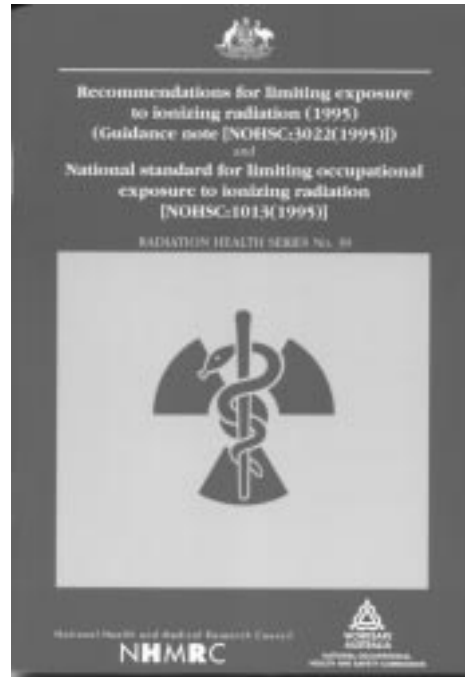
The *ARPANS Act* sets out a number of requirements for both ARPANSA and its advisory committees. In particular, the Radiation Health Committee (RHC) and the Nuclear Safety Committee (NSC) are charged with advising the CEO of ARPANSA and the Radiation Health and Safety Advisory Council (the Council) on matters related to radiation protection and nuclear safety, including the development of policies and draft standards and codes for consideration by the Commonwealth, States and Territories. In the following, the process established for the RHC is described in some detail – a broadly equivalent process is being set in place for guidance to be produced by the NSC.

The term 'standards' is used here in a broad sense. It covers prescriptive radiation protection standards, such as those that define limits of exposure to radiation, codes of practice that set out good safety practices to be followed, safety guides that are less prescriptive but which provide useful advice on how to meet the requirements of the standards and codes, and recommendations that provide advice which is seen as desirable but which cannot be cast in the form of a radiation protection standard or code. A comprehensive suite of publications is in development to appear as the *Radiation Protection Series* under ARPANSA's overall management. The work has been facilitated by the existence of a prior process of much the same kind, which operated until 1999 under the auspices of the NHMRC. Indeed, many of the publications now envisaged are updates of existing NHMRC documents.

The genesis of a publication in this series follows a common general pattern. A proposal for a new publication may be developed by members of the RHC, by ARPANSA or by any other party and put to RHC. If it supports the idea, the RHC will request that a Document Development Plan (DDP) be prepared; this will set out the terms of reference of the proposed publication and provide essential guidance for a subsequent drafting group. Once the DDP is approved by RHC, a drafting group can be established to work up the text of the document. Drafting groups may include RHC members, ARPANSA staff and other persons with the skills and experience deemed necessary to prepare a

draft. When the drafting group has taken the draft to a reasonable state of maturity, it will be provided to the RHC for comment and assessment against the DDP. When the RHC is satisfied that a draft has been prepared that is suitable to go to public comment, the public comment and review process is initiated.

The review process includes the provision for comment by interested parties and by the public and for assessment under regulatory review principles. The process will be consistent with the requirements of the Council of Australian Governments (COAG) guidelines for standards setting. The need for a standard or code must be demonstrated and it must be shown that alternative non-regulatory strategies for achieving safety would be unacceptable. The drafting group deals with the feedback from the public review process, makes amendments to the draft as necessary, and provides a revised draft and a report of the review to the RHC. If the RHC is satisfied with the document and confident that the review process has been conducted properly, it will recommend to the CEO and to the Council that the document be published. The Council, in turn, will make its advice known to the CEO, who will finalise a decision to publish.



These Recommendations and the National Standard form the basis for radiation protection standards in Australia today. It is intended to reissue this publication in the *Radiation Protection Series* in 2001.

Publications in the *Radiation Protection Series* that are regulatory in style will form part of a National Directory for Radiation Protection. The National Directory is intended to provide a comprehensive suite of regulatory guidance for radiation protection, which can be utilised by each Commonwealth, State and Territory jurisdiction to ensure national uniformity of radiation safety practice. Australian health ministers have agreed to the process, which ARPANSA will begin implementing during the period 2000-2001.

A key consideration in developing national standards is to take note of international good practice. There is much international advice and guidance covering radiation protection and nuclear safety. The major sources are the publications of the International Commission on Radiological Protection (ICRP) and the IAEA and, for non-ionizing radiation, the International Commission on Non-Ionizing Radiation Protection (ICNIRP).

The first meetings of the RHC during 1999-2000 have established the processes described above and have begun the work of identifying priorities for document preparation for the next few years. It is anticipated that the first publications in the new Radiation Protection Series will appear early in 2001, to be followed at intervals by up to six documents per year until all existing guidance has been reviewed and revised, supplemented by any new publications deemed

necessary. Consideration is also being given by the NSC to the publication of a number of documents dealing with nuclear safety and its regulation. It is planned that by the middle of the decade, Australia will have a comprehensive suite of regulatory style guidance which, through the National Directory, will allow uniform radiation protection and nuclear safety practices to be adopted throughout the country that are second to none in the world.

(c) IONIZING RADIATION MEASUREMENT STANDARDS

The ability of ionizing radiation to penetrate matter is useful to obtain information about an object's internal condition. Ionizing radiation, mainly as X-radiation, is used for medical purposes in diagnosis and treatment, resulting in exposure of patients and medical staff. X- and gamma radiation is used in industry for thickness and moisture measurement, and for weld inspection, exposing users and, sometimes, the public. In all cases, it is important to ensure that radiation doses to any exposed persons (except patients) comply with relevant exposure limits. While patient doses are not required to comply with any limits, these doses should be minimised consistent with efficient diagnostic or therapeutic outcomes. Accurate measurements of radiation doses must, therefore, be made with instruments that have been properly calibrated against appropriate measurement standards, such as those held by ARPANSA.

The accurate calibration of hospital dose meters is critical to the optimum delivery of radiation to target organ(s) in radiotherapy. Diagnostic and protection level dose meters also need to have reliable calibrations to ensure that medical, occupational and public exposures can be minimised. ARPANSA provides a calibration service for therapy and diagnostic level dose meters as well as for protection level instruments. A caesium-137 calibration facility has been developed and provided to each State and Territory to enable them to undertake protection level calibrations for activities in their jurisdictions.

ARPANSA holds by delegation from the CSIRO, the Australian primary measurement standards of air kerma (exposure) and absorbed dose for ionizing radiation. These standards are maintained through a continuous process of measurement, comparison and evaluation to validate the physical quantities. ARPANSA participates in comparison programs with other international bodies including the International Bureau of Weights and Measures (BIPM) in Paris, to provide a basis of consistency of radiation measurements within Australia and with those in the rest of the world. ARPANSA also holds standards traceable to overseas primary standards for beta and neutron radiations at the protection level.

For measurements of air kerma (exposure in air) intensities, the Australian primary standard for X-rays is maintained with parallel plate free air ionisation chambers. Two versions of these large volume devices are used to cover the energy range, 20-300 kV, used by diagnostic and conventional therapy X-ray machines. Several X-ray tubes are employed to generate beams at these energies, the largest being a Siefert tube able to generate X-rays up to 450 kV.

International intercomparisons provide a level of confidence in the accuracy and reliability in the measured quantities. A comparison of X-ray standards was performed in early 1998 between Australia and Canada. While the results are still to be finalised, agreement between the two laboratories in the medium energy X-ray range (50-250 kV) was within 2%. Preliminary results of a medium energy X-ray comparison with Taiwan in 1999 also gave an agreement within 2%. A comparison with the BIPM of standards of low (less than 50 kV) and medium energy X-rays is scheduled for 2001.

The primary standard of air kerma for cobalt-60 gamma radiation is a carbon cavity chamber that is used for calibrations of therapy dose meters in the beam from a cobalt-60 teletherapy source. Cobalt-60 gamma radiation is recognised internationally as being most suitable for comparisons between national measurement institutes. An alignment system similar to that in use with the cobalt-60 teletherapy source is being installed on a comparable caesium-137 teletherapy source to facilitate the calibration of hospital dosimeters in brachytherapy applications.

In radiotherapy the quantity of interest is the absorbed dose to water. Hospital quality assurance procedures are based on dosimetry in water phantoms that approximate the response of human tissue. While an absorbed dose calibration can be derived from the exposure standard, it is becoming more relevant to obtain an absorbed dose calibration directly as demand for greater accuracy of treatment increases. A calibration in absorbed dose to water is obtained from the relative response of water and graphite, as the latter is a more reliable material in which to measure the effect of absorbed dose. The Australian primary standard of absorbed dose for cobalt-60 gamma radiation and for high energy (megavoltage) X-rays is a graphite calorimeter that can precisely measure the deposited energy or dose. Provided that temperature drifts are minimised, the uncertainty of a set of measurements of the absorbed dose to graphite is better than 0.2%.

When an absorbed dose to water calibration is provided at cobalt-60 at an effective energy of 1.25 MeV, the hospital physicist must transfer the calibration to the higher linear accelerator energies by means of a calculation protocol. In Australia, the protocol most widely used is that prescribed by the IAEA. In an alternative approach, overseas standards laboratories have used linear accelerators to calibrate dose meters directly in megavoltage X-ray beams at qualities equivalent to those used in radiotherapy centres. The ARPANSA linear accelerator produces similar beams and a calibration facility has been developed. Appropriate beams are being characterised to allow calibrations up to 20 MeV, which is sufficient to cover the highest energy therapy accelerators currently in use in Australia.

To properly maintain the Australian standards described above, ARPANSA maintains secondary standards of quantities involved in the realisation of the primary standards. These quantities include dc voltage, capacitance, time, temperature, pressure, length and mass. Some of the equipment needed to maintain these standards is also used for calibrating other equipment both within ARPANSA and for outside clients.

The facilities above allow a wide range of traceable instrumental calibrations and exposures to be performed by ARPANSA. ARPANSA is presently seeking NATA accreditation for a number of its activities, including the calibration and measurement services it provides. This will facilitate the international recognition of ARPANSA exposure and absorbed dose calibration and measurement certificates under the Mutual Recognition Arrangement that is being coordinated by the BIPM.

Part 6

MANAGEMENT AND ACCOUNTABILITY

6 MANAGEMENT AND ACCOUNTABILITY

CORPORATE GOVERNANCE

THE EXECUTIVE

The Executive of ARPANSA consists of the CEO and the Branch Heads. It usually meets on a weekly basis with the Corporate Counsel and other relevant staff in attendance. The role of the Executive is to ensure good information flow in the top management of ARPANSA, to discuss management issues coming before ARPANSA and to keep under review the performance of the Agency. The Executive also acts as ARPANSA's Quality Management Committee.

The Executive is supported by a number of committees:

- the Audit Committee, which guides the Agency's audit activities;
- the Information Technology Steering Committee which develops and implements information technology (IT) strategies and initiatives; and
- the Occupational Health and Safety Committee which reviews and reports on health and safety issues relevant to ARPANSA.

FRAUD MINIMISATION STRATEGIES

As a first step in the development of a fraud control plan for ARPANSA, work commenced with the completion of a fraud risk assessment questionnaire approved by the Law Enforcement Co-ordination Division of the Attorney-General's Department.

The CEO has articulated clear standards and procedures to deter instances of fraud, and to enable the detection of offences should they occur. The business rules of ARPANSA require staff, including the CEO, to behave in accordance with the Australian Public Service (APS) Code of Conduct and to adhere to the APS values, as set out in the *Public Service Act 1999*. The corporate plan also emphasises:

- the APS values, including the need for the highest ethical standards and accountability for actions; and
- the ARPANSA values of professionalism, making things happen through taking personal responsibility, and effective communication.

To enhance awareness of workplace ethical issues and standards, a Department of Health and Aged Care video based on the Geoffrey Robertson 'Hypothetical' television program was shown to staff.

CORPORATE PLANNING

Whilst ARPANSA is clearly focused on its purpose and priorities, the Agency continued to be responsive to changes occurring in its environment. In a review of the Corporate Plan in April, the need to develop a policy regarding ARPANSA's scientific work and to adopt a project management approach for all ARPANSA tasks was emphasised.

Negotiations for the Agency's certified agreement commenced in June 1999 and it came into effect on 9 December 1999 as the *ARPANSA Agreement 1999-2001*. This agreement provides the framework of remuneration, performance management, and terms and conditions to support ARPANSA staff in making the Agency a performing organisation. It will assist in progressing it towards its vision to become by 2002, the leading organisation in Australia for scientific excellence and practical expertise in radiation protection and nuclear safety, and a highly effective and efficient regulator of Commonwealth entities.

HUMAN RESOURCES

ARPANSA PERFORMANCE DEVELOPMENT SYSTEM

The ARPANSA Performance Development System (APDS) was introduced as a central feature of the *ARPANSA Agreement 1999-2001* in response to the government's policy requiring all APS agencies to have a performance management system.

As well as assisting the Agency and individuals to meet their goals, the APDS provides a framework for the planning and management of work and development activities, promotes communication, and encourages better working relationships. It is envisaged that the APDS will provide a means for implementing the Corporate Plan, provide a basis for a range of human resources, planning and management activities, encourage improved productivity and performance, and ensure that the skills of the staff are matched to current and future needs.

For staff, it allows participation in goal setting, provides role clarity, encourages the recognition of good performance, provides feedback and links individual work tasks to broader business and Agency objectives.

All staff are involved in the APDS which has three essential parts:

- an annual Individual Work Agreement, which sets out the goals agreed by the staff member and supervisor that are expected to be attained in that year;
- a Work Support Agreement which specifies the support needed for the individual staff member to achieve the goals and expectations of both the current Individual Work Agreement and continue future development; and
- quarterly performance feedback to be conducted to review the progress of the system and make amendments where necessary.

ARPANSA STAFF CONSULTATIVE FORUM

An ARPANSA Staff Consultative Forum was created by the *ARPANSA Agreement 1999-2001*. The Forum comprises:

- eight staff members, six elected by staff at the Yallambie campus and two by staff at Miranda; and
- one nominee from each of the Community and Public Sector Union, the Professional Officers Association (Victoria), and the Australian Manufacturing Workers' Union.

Where requested by a significant number of staff at the Sydney campus and provided that they have membership at the Sydney campus, the CEO may invite the Association of Professional Engineers, Scientists and Managers Australia to send a representative to the Forum as a participatory observer.

Elected members are elected for a term of two years. The Forum elects a chair and deputy from its members. The Forum meets with the CEO at least four times per year.

The objectives of these consultative arrangements are to:

- promote constructive workplace relations within the Agency;
- facilitate the exchange of information and to promote understanding of management and staff/union issues;
- provide a forum for consultation and open discussion between management and staff/union representatives and to aim to resolve any differences in a mutually acceptable manner; and
- ensure that staff can raise issues of concern to them and have them considered in a substantive manner.

Regular meetings of the Forum have taken place throughout the year.

STATISTICS ON STAFFING

Table 3: Categories of ARPANSA Staff on the Last Payday for 1999-2000

	Female	Male	Total
CEO		1	1
Professional Staff	10	49	59
Technical Staff	7	24	31
Administrative Staff	24	6	30
Total	41	80	121

Table 4: Distribution of Staff by Branch as at 30 June 2000

Branch	Female		Male		Total
	Ongoing	Non-ongoing	Ongoing	Non-ongoing	
CEO			1		1
Standards, Policy and Corporate Support	17	3	14	2	36
Regulatory	6	0	12	0	18
Medical Radiation	3	0	10	0	13
Non-Ionizing Radiation	2	0	7	1	10
Environmental and Radiation Health	2	1	15	1	19
Scientific Services	6	1	16	1	24
Total	36	5	75	5	121

Table 5: Summary of Equal Employment Opportunity Statistics as at 30 June 2000

	Number Employed	% of Staff	Average Salary
Female	41	33.88	\$39905
Male	80	66.12	\$59823
Total Staff	121	100	

Table 6: Specific Employment Categories as at 30 June 2000

	Number Employed	Average Salary
People with disabilities	3	\$67845
Females at the Executive 2 level	2	\$76045
People from diverse cultural and linguistic backgrounds	23	\$49044

FINANCIAL MATTERS

Amending the financial system and revising existing processes to ensure the Agency complied with all legislative requirements when the new taxation system came into effect on 1 July 2000 was a major activity during the year. A Goods and Services Tax (GST) project team was set up to manage the change process. Based on result of testing and review of procedures, it is expected that the financial systems will be able to capture all relevant data for the production of the Business Activity Statement in August 2000.

On 30 June 2000, Treasury issued Determination 2000 (No 2) which exempted the following services provided by ARPANSA from the application of GST:

- application fees;
- annual charges;
- charges for services provided by the CEO of ARPANSA; and
- fees charged to issue permits.

However, the Determination relating to the charges for services provided by the CEO of ARPANSA is under review and may be amended.

To comply with current legislation, GST has not been applied to all fees and charges for services offered by ARPANSA. Additionally our fees and charges remained at the pre 1 July levels, pending any review of the Determination.

The financial system was identified as a critical function with respect to possible impact of Y2K. Following a comprehensive test and remediation process conducted during the year, the system continued to operate correctly beyond 31 December 1999.

To comply with the Finance Ministers Orders, the Agency undertook a complete revaluation of its assets, including plant and equipment, using the deprival valuation method. The net effect on ARPANSA assets was an increase of \$0.3m. ARPANSA assets include various specialised pieces of scientific and technical equipment located at Yallambie.

The valuation forms the basis for the published values of plant and equipment disclosed in the financial statements appended to this report.

In preparation for input to the 2000-2001 Federal Budget under the accrual budgeting framework, ARPANSA developed budget estimates, including budgeted operating statements, balance sheet, cash flow and capital expenditure, on a full accrual basis.

LIABILITIES

During 1999-2000 ARPANSA assumed responsibility for employee entitlements liabilities of \$2.1m for staff transferred from the Department of Health and Aged Care. In accordance with normal practice for transfers of staff between departments and agencies covered by the *Financial Management and Accountability Act*, no cash has been provided to cover these liabilities. ARPANSA may need to seek an injection of equity funding from the Government to cover these liabilities in the future.

OPERATING LOSS

The annual financial statements for ARPANSA show that during 1999-2000 an operating loss of \$0.9m was incurred before Capital Use Charge. A loss of \$0.7m was expected and reported in the Portfolio Budget Statements for 1999-2000 in May 1999. The loss was expected because regulation income will not cover the full cost of new regulation functions until 2001-2002. The purpose of delaying full cost recovery is to assist regulated agencies to make the transition to the new charging arrangements. Establishment funding to cover the loss was provided to ARPANSA in 1998-1999 Appropriations, and was reported as an operating surplus for ARPANSA in that year in accordance with accounting standards which require recognition of revenues from appropriations in the year the appropriations were received.

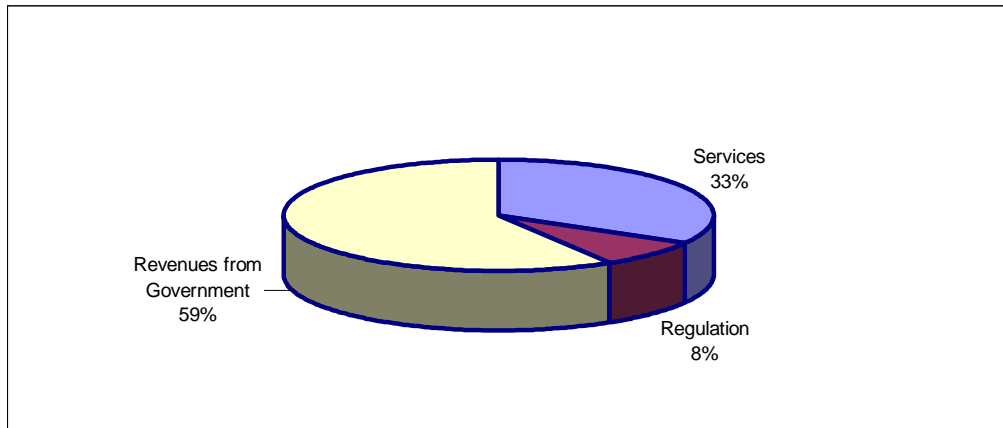
PROPERTY

ARPANSA continues to occupy three leased premises. The Yallambie premises, which remain in Commonwealth ownership, are leased from the Department of Finance and Administration under a Commonwealth lease. At Miranda, ARPANSA continues to lease premises in adjoining buildings in Central Road, Miranda. A new lease was finalised for the 12 Central Road location in Miranda during the financial year. Negotiations are being finalised for a new lease of 14-16 Central Road, Miranda.

OPERATING INCOME

ARPANSA has three main sources of income – government appropriations, regulation, and scientific services including special projects.

Fig 1: Sources of Income 1999 - 2000



Income from all sources of \$15.2m was \$1.2m more than projected, mainly due to additional income from special projects.

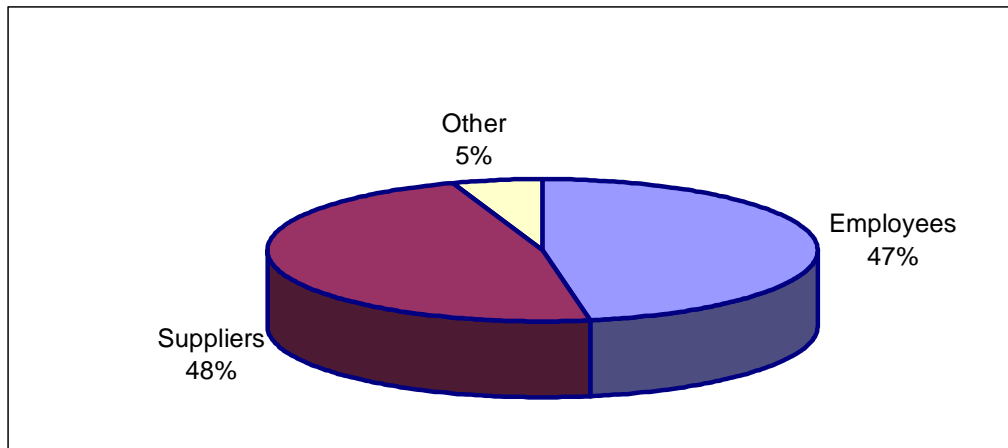
Appropriations have been maintained close to the level previously included in Forward Estimates for the former Nuclear Safety Bureau and the former Australian Radiation Laboratory. An additional amount of \$168,000 yearly was provided in 1999-2000 Additional Estimates to cover the cost of new lease arrangements for the Commonwealth-owned property at Yallambie.

Scientific services income relates to a number of cost-recovered services including the Personal Radiation Monitoring Service and various testing and measurement activities. Two major projects were completed during 1999-2000: the Maralinga clean up, and two radiation monitoring vehicles for NINT. Work started on a number of radionuclide monitoring stations in connection with the CTBTO.

OPERATING EXPENSES

Total expenses of \$16.1m included \$0.3m loss on disposal of assets transferred to the Department of Health and Aged Care in connection with new information technology service arrangements. Employee expenses accounted for 47% of total expenditure and payments to suppliers accounted for 48% of expenditure for the year.

Fig 2: Expenditure Profile 1999 - 2000



Appendixes

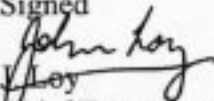
Appendix 1	AUDITED FINANCIAL STATEMENTS
Appendix 2	REVIEW OF ANSTO NUCLEAR PLANT
Appendix 3	CONSULTANTS AND PURCHASING
Appendix 4	OCCUPATIONAL HEALTH AND SAFETY
Appendix 5	GOVERNMENT CLIENT SERVICE INITIATIVES
Appendix 6	FREEDOM OF INFORMATION
Appendix 7	ORGANISATION CHART
Appendix 8	RESOURCE SUMMARY TABLE

**Australian Radiation Protection
and Nuclear Safety Agency
(ARPANSA)**

**Financial Statements
For the Year Ended 30 June 2000**

ARPANSA
Statement by the Chief Executive Officer

In my opinion, the attached financial statements give a true and fair view of the matters required by Schedule 2 to the Finance Minister's Orders made under section 63 of the *Financial Management and Accountability Act 1997*.

Signed

John Hoy
Chief Executive Officer

15 August 2000

ARPANSA
AGENCY OPERATING STATEMENT
for the year ended 30 June 2000

	Notes	1999-00 \$	5 Feb 1999 to 30 June 1999 \$
Operating revenues			
Revenues from government	3A	8,929,000	6,540,856
Sales of goods and services	3B	4,888,727	2,071,630
Licence Fees		1,230,885	-
Interest	3C	167,602	-
Total operating revenues		15,216,214	8,612,486
Operating Expenses			
Employees	4A	7,581,859	2,577,501
Suppliers	4B	7,662,380	2,652,444
Depreciation and amortisation	4C	480,781	300,252
Write down of assets	4D	17,602	-
Net losses from sales of assets	4E	347,478	15,102
Total operating expenses		16,090,100	5,545,299
Operating surplus or deficit before extraordinary items		(873,886)	3,067,187
Gain on extraordinary items	5	-	3,992,050
Net surplus or deficit after extraordinary items		(873,886)	7,059,237
Net surplus or deficit attributable to the Commonwealth		(873,886)	7,059,237
Accumulated surplus at beginning of reporting period		7,059,237	-
Total available for appropriation		6,185,351	7,059,237
Equity distribution on restructuring	5	(2,173,545)	-
Capital use paid		(263,763)	-
Correction to employee entitlements	2.7	(86,004)	-
Accumulated surpluses at end of reporting period		3,662,039	7,059,237

The above statement should be read in conjunction with the accompanying notes.

ARPANSA
AGENCY BALANCE SHEET
as at 30 June 2000

	Notes	1999-00 \$	1998-99 \$
ASSETS			
Financial assets			
Cash		2,758,738	3,382,086
Receivables	6A	1,069,333	1,313,112
Accrued revenues - interest	6B	43,543	-
Total financial assets		3,871,614	4,695,198
Non-financial assets			
Land and buildings	7A,D	405,324	434,506
Infrastructure, plant and equipment	7B,D	2,326,526	2,871,817
Inventories	7E	1,319,519	1,143,587
Intangibles	7C,D	4,951	5,046
Other	7F	73,211	33,629
Total non-financial assets		4,129,531	4,488,585
Total assets		8,001,145	9,183,783
LIABILITIES			
Provisions and payables			
Employees	8A	3,011,912	349,274
Suppliers	8B	761,001	736,529
Other	8C	270,727	1,038,743
Total provisions and payables		4,043,640	2,124,546
Total liabilities		4,043,640	2,124,546
EQUITY			
Accumulated surpluses		3,662,039	7,059,237
Reserves		295,466	-
Total equity	9	3,957,505	7,059,237
Total liabilities and equity		8,001,145	9,183,783
Current liabilities		1,885,339	1,901,051
Non-current liabilities		2,158,301	223,495
Current assets		5,264,344	5,872,413
Non-current assets		2,736,801	3,311,370

The above statement should be read in conjunction with the accompanying notes.

ARPANSA
STATEMENT OF CASH FLOWS
for the year ended 30 June 2000

	Notes	1999-00	5 Feb 1999 to 30 June 1999
		\$	\$
OPERATING ACTIVITIES			
Cash received			
Appropriations for outputs		8,627,000	6,404,000
Sales of services		4,350,578	1,356,197
Licence fees		1,228,035	-
Interest		124,059	-
Other		-	295,900
Total cash received		14,329,672	8,056,097
Cash used			
Employees		7,441,445	2,198,004
Suppliers		6,611,469	1,565,863
Total cash used		14,052,914	3,763,867
Net cash from operating activities	10	276,758	4,292,230
INVESTING ACTIVITIES			
Cash received			
Proceeds from sales of property, plant and equipment		-	-
Total cash received		-	-
Cash used			
Purchase of property, plant and equipment		636,343	910,144
Total cash used		636,343	910,144
Net cash used by investing activities		(636,343)	(910,144)
FINANCING ACTIVITIES			
Cash used			
Capital use paid		263,763	-
Total cash used		263,763	-
Net cash used by financing activities		(263,763)	-
Net increase in cash held		(623,348)	3,382,086
Cash at the beginning of the reporting period		3,382,086	-
Cash at the end of the reporting period		2,758,738	3,382,086

The above statement should be read in conjunction with the accompanying notes.

ARPANSA
SCHEDULE OF COMMITMENTS
as at 30 June 2000

	1999-00	1998-99
	\$	\$
BY TYPE		
Total capital commitments	nil	nil
OTHER COMMITMENTS		
Operating leases	9,627,308	495,042
Other commitments	317,480	156,765
Total other commitments	9,944,788	651,807
COMMITMENTS RECEIVABLE		
Net commitments	nil	nil
	9,944,788	651,807
BY MATURITY		
All net commitments		
One year or less	1,798,347	309,433
From one to two years	1,211,584	87,939
From two to five years	2,838,150	217,661
Over five years	4,096,707	36,774
Net commitments	9,944,788	651,807
Operating lease commitments		
One year or less	1,480,867	152,668
From one to five years	4,049,734	305,600
Over five years	4,096,707	36,774
Net commitments	9,627,308	495,042

The above schedule should be read in conjunction with the accompanying notes.

ARPANSA
SCHEDULE OF CONTINGENCIES
as at 30 June 2000

	1999-00	1998-99
	\$	\$
CONTINGENT LOSSES		
Claim for damages/costs	-	3,216
Total contingent losses	-	3,216
CONTINGENT GAINS		
Net contingencies	-	-
	-	3,216

The above schedule should be read in conjunction with the accompanying notes.

ARPANSA
NOTES TO AND FORMING PART OF THE FINANCIAL STATEMENTS
for the year ended 30 June 2000

Note Description

1. Objectives of ARPANSA
2. Summary of significant accounting policies
3. Operating revenues
4. Operating expenses
5. Extraordinary items
6. Financial assets
7. Non-financial assets
8. Provisions and payables
9. Equity
10. Cash flow reconciliation
11. Appropriations
12. Reporting by Outcomes
13. Executive remuneration
14. Services provided by the Auditor-General
15. Act of grace payments and waivers
16. Average staffing levels
17. Financial instruments

Note 1 - Objectives of ARPANSA

The continued existence of the Agency in its present form, and with its present programs, is dependent on Government policy and on continuing appropriations by Parliament for the Agency's administration and programs.

The objectives of ARPANSA are described in the body of this annual report.

Note 2 - Summary of Significant Accounting Policies**2.1 - Basis of Accounting**

The financial statements are required by section 49 of the *Financial Management and Accountability Act 1997* and are a general purpose financial report.

The statements have been prepared in accordance with:

- *Requirements for the Preparation of Financial Statements of Commonwealth Agencies and Authorities* made by the Minister for Finance and Administration in August 1999 (Schedule 2 to the Financial Management and Accountability (FMA) Orders);
- Australian Accounting Standards;
- other authoritative pronouncements of the Australian Accounting Standards Boards (including Guidance Releases); and
- the Consensus Views of the Urgent Issues Group.

The statements have been prepared having regard to:

- Statements of Accounting Concepts; and
- the Explanatory Notes to Schedule 2 issued by the Department of Finance and Administration.

The financial statements have been prepared on an accrual basis and are in accordance with historical cost convention, except for certain assets which, as noted, are at valuation. Except where stated, no allowance is made for the effect of changing prices on the results or the financial position.

2.2 - Changes in Accounting Policy

Changes in accounting policy have been identified in this note under their appropriate headings.

2.3 - Agency and Administered items

Agency assets, liabilities, revenues and expenses are those items that are controlled by the Agency including:

- computers, plant and equipment and infrastructure used in providing goods and services;
- liabilities for employee entitlements;
- revenues from appropriations or independent sources in payment for outputs, and
- employee, supplier and depreciation expenses incurred in producing agency outputs.

Administered items are those items which are controlled by the Government and managed or oversighted by the Agency on behalf of the Government. These items include benefit payments and other taxes, fees and fines. The purposes of the separation of agency and administered items is to enable assessment of the administrative efficiency of the Agency in producing outputs. ARPANSA did not manage any administered items during 1999-00.

2.4 - Reporting by Outcomes

A comparison of Budget and Actual figures by outcome specified in the Appropriation Acts relevant to the Agency is presented in Note 12. The net cost to Budget outcomes shown includes intra-government costs that are eliminated in calculating the actual budget outcome for the Government overall.

2.5 - Revenues from Government

Revenues from government are revenues relating to the core operating activities of the Agency, except to the extent that they represent the receipt of assets arising from a restructuring of administrative arrangements.

Agency Appropriations

From 1 July 1999, the Commonwealth Budget has been prepared under an accruals framework.

Appropriations to ARPANSA for its departmental outputs are recognised as revenue to the extent they have been received into the Agency's bank account or are entitled to be received by the Agency at year end.

Resources Received Free of Charge

Services received free of charge are recognised in the Operating Statement as revenue when and only when a fair value can be reliably determined and the services would have been purchased if they had not been donated. Use of those resources is recognised as an expense.

In 1998-99, net assets received under a restructuring of Administrative Arrangements were recognised as revenue. From 1 July 1999, net asset transfers are designated as transactions of owners and are adjusted directly against equity.

2.6 - Other Revenue

Revenue from the sale of goods is recognised upon the delivery of goods to customers. Interest revenue is recognised on a proportional basis taking into account the interest rates applicable to the financial assets. Revenue from disposal of non-current assets is recognised when control of the asset has passed to the buyer.

Agency revenue from the rendering of a service is recognised by reference to the stage of completion of contracts or other agreements to provide services to Commonwealth bodies. The stage of completion is determined according to the proportion that costs incurred to date bear to the estimated total costs of the transaction.

All revenues described in this note are revenues relating to the core operating activities of the Agency, whether in its own right or on behalf of the Commonwealth. Details of revenue amounts are given in Note 3.

2.7 - Employee Entitlements

Leave

The liability for employee entitlements includes provision for annual leave and long service leave. No provision has been made for sick leave as all sick leave is non-vesting and the average sick leave taken in future years by employees of the Agency is estimated to be less than the annual entitlement for sick leave.

The liability for annual leave reflects the value of total annual leave entitlements of employees at 30 June 2000 and is recognised at the nominal amount.

The non-current portion of the liability for long service leave is recognised and measured at the present value of the estimated future cash flows to be made in respect of employees at 30 June 2000. In determining the present value of the liability, the Agency has taken into account attrition rates and pay increases through promotion and inflation.

The majority of ARPANSA staff at 30 June 1999 were on secondment from the Department of Health and Aged Care. The employee entitlements for those employees were reflected in the financial statements of the Department. All remaining staff were transferred to ARPANSA during 1999-00. The liability applicable to employee entitlements as at 4 February 1999 has now been transferred to ARPANSA from 1 July 1999 and subsequent movements in the amount of liability have been recognised as an expense for ARPANSA in 1999-00.

Superannuation

Staff of ARPANSA contribute to the Commonwealth Superannuation Scheme and the Public Sector Superannuation Scheme. Employer contributions in relation to these schemes have been expensed in these financial statements.

No liability is shown for superannuation owing to staff in the Balance Sheet as the employer contributions fully extinguish the accruing liability which is assumed by the Commonwealth .

A liability has been recognised for employer contributions which are expected to be paid in respect of that portion of accrued leave which may be taken by employees while still in service. This liability is recognised for the first time in 1999-00 and accordingly an adjustment in relation to prior years has been recognised in the Agency Operating Statement as a correction to Accumulated Surplus.

2.8 - Leases

Operating lease payments are charged to the Operating Statement on a basis which is representative of the pattern of benefits derived from the leased assets.

2.9 - Cash

Cash includes notes and coins held, deposits held at call with a bank or financial institution.

2.10 - Financial Instruments

Accounting policies for financial instruments are stated at Note 17.

2.11 - Acquisition of Assets

Assets are recorded at cost on acquisition except as stated below. The cost of acquisition includes the fair value of assets transferred in exchange and liabilities undertaken.

Assets acquired at no cost, or for nominal consideration, are initially recognised as assets and revenues at their fair value at the date of acquisition, unless acquired as a consequence of restructuring administrative arrangements. In the latter case, assets are initially recognised at the amounts at which they were recognised in the transferor agency's accounts immediately prior to the restructuring.

The cost of assets constructed by the entity includes the cost of materials, direct labour and an appropriate proportion of fixed and variable overheads.

2.12 - Property, plant and equipment

Asset recognition threshold

Purchases of property, plant and equipment are recognised initially at cost in the Balance Sheet, except for purchases costing less than \$2,000, which are expensed in the year of acquisition (other than where they form part of a group of similar items which are significant in total).

Revaluations

ARPANSA property plant and equipment assets were revalued in accordance with the 'deprival' method of valuation as at 1 July 1999 and will be revalued progressively on that basis every three years.

Recoverable amount test

Schedule 2 requires the application of the recoverable amount test to agency non-current assets in accordance with AAS10 *Accounting for the Revaluation of Non-Current Assets*. The carrying amounts of non-current assets have been reviewed to determine whether they are in excess of their recoverable amounts. In assessing recoverable amounts, the relevant cash flows have been discounted to their present value.

Depreciation and Amortisation

Depreciable property plant and equipment assets are written-off to their estimated residual values over their estimated useful lives to the Agency using, in all cases, the straight line method of depreciation. Leasehold improvements are amortised on a straight-line basis over the lesser of the estimated useful life of the improvements or the unexpired period of the lease.

Depreciation/amortisation rates (useful lives) and methods are reviewed at each balance date and necessary adjustments are recognised in the current, or current and future reporting periods, as appropriate. Residual values are re-estimated for a change in prices only when assets are revalued.

Depreciation and amortisation rates applying to each class of depreciable asset are based on the following useful lives:

	1999-00	1998-99
Leasehold improvements	Lease term	Lease term
Plant and equipment	4 to 30 years	4 to 30 years
Intangibles	10 to 15 years	15 years

The aggregate amount of depreciation allocated for each class of asset during the reporting period is disclosed in Note 4C.

2.13 - Inventories

Inventories held for resale are valued at the lower of cost and net realisable value. Inventories not held for resale are valued at cost, unless they are no longer required, in which case they are valued at net realisable value.

2.14 - Taxation

The Agency is exempt from all forms of taxation in Australia except fringe benefits tax and the goods and services tax.

2.15 - Capital Use Charge

A capital use charge of 12% is imposed by the Government on the net departmental assets of the agency. For 1999-00 the charge has been made equal to the amount of supplementation provided in appropriations, to avoid the effect of fluctuations in net assets arising from the transfer of assets and liabilities into ARPANSA.

2.16 - Foreign Currency

Transactions denominated in a foreign currency are converted at the exchange rate at the date of the transaction. Foreign currency receivables and payables are translated at the exchange rates current as at balance date. Associated currency gains and losses are not material.

2.17 - Insurance

The Commonwealth insurable risk managed fund, called 'Comcover' commenced operations as from 1 July 1998. The Agency has insured with the fund for risks other than workers compensation, which is dealt with via continuing arrangements with Comcare. The premium for 1999-2000 is shown as a resource received free of charge.

2.18 - Comparative Figures

Comparative figures are from the ARPANSA 1998-99 financial statements which cover the period since ARPANSA commenced operations on 5 February 1999 to 30 June 1999.

2.19 - Rounding

Amounts have been rounded to the nearest dollar.

Note 3 - Operating revenues3A - Revenues from Government

	1999-00	5 Feb 1999 to 30 June 1999
	\$	\$
Appropriations for outputs	8,627,000	6,404,000
Resources received free of charge	302,000	136,856
Total	8,929,000	6,540,856

Resources free of charge includes an estimated Comcover premium of \$271,000 based on the 1998-99 estimate, as a premium for 1999-00 has not yet been determined.

	1999-00	5 Feb 1999 to 30 June 1999
	\$	\$

3B - Sales of Goods and Services

Goods	-	-
Services	4,888,727	2,071,630
Total	4,888,727	2,071,630

Note 3C - Interest

Deposits	167,602	-
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Note 4 - Operating Expenses4A - Employee Expenses

Remuneration (for services provided)	7,526,723	2,529,015
Separation and redundancy	36,973	22,775
Total remuneration	7,563,696	2,551,790
Other employee expenses	18,163	25,711
Total	7,581,859	2,577,501

4B - Suppliers Expenses

Supply of goods and services	6,488,721	2,342,004
Operating lease rentals	1,173,659	310,440
Total	7,662,380	2,652,444

4C - Depreciation and Amortisation

Depreciation of plant and equipment	394,688	218,707
Amortisation of computer software	2,850	12,494
Amortisation of trade marks	325	1,456
Amortisation of leasehold improvements	82,918	67,595
Total	480,781	300,252

Depreciation expenses in 1999-2000 are \$4,005 lower than they would have been as a result of the extension of useful lives, and changes in depreciable amounts in consequence of revaluation of plant and equipment.

4D - Write-down of assets

Receivables - Bad debts	17,602	-
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4E - Net losses from sales of assets

Plant and equipment	347,478	15,102
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Note 5 - Extraordinary Items - Restructuring

ARPANSA assumed responsibility on 5 February 1999 for the assets and liabilities of the former Nuclear Safety Bureau and of the Australian Radiation Laboratory within the Department of Health and Aged Care. All assets and liabilities shown below were recognised at the date of transfer, except for employee entitlements. Staff were subsequently transferred from Health and Aged Care to ARPANSA in 1999-00 and the employee entitlement liability as at 5 February 1999 was also transferred in 1999-00.

In accordance with current government policy for restructuring of administrative arrangements, no cash or equity injection has been provided to ARPANSA in respect of the transfer of \$2.2m employee entitlement liability.

	1999-00	1998-99
	\$	\$
Assets		
Cash	-	304,162
Receivables	-	221,031
Plant and Equipment	-	2,697,584
Intangibles	-	18,996
Inventories	-	1,523,598
Other - prepayments	-	197,973
Total assets recognised	-	4,963,344
Liabilities		
Creditors	-	52,354
Provisions	2,173,545	238,346
Prepayments received	-	680,594
Total liabilities recognised	2,173,545	971,294
Net assets assumed	-	3,992,050
Net revenues from restructuring	-	3,992,050
Equity distribution on restructuring	(2,173,545)	-

Note 6 - Financial Assets6A - Receivables

Sales of services	1,114,663	1,359,381
Less: Provision for doubtful debts	(45,330)	(46,269)
	1,069,333	1,313,112

Receivables (gross) which are overdue are aged as follows:

Overdue by:

▪ Less than 30 days	88,486	102,027
▪ 30 to 60 days	22,154	22,784
▪ 60 to 90 days	46,641	(1) 65,315
▪ more than 90 days	90,187	

(1) More than 60 days \$65,315 at 30 June 1999

	1999-00	1998-99
	\$	\$

6B - Accrued revenue

Interest on deposits	43,543	-
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Note 7 - Non-financial assets

<u>7A - Land and Buildings</u>	1999-00	1998-99
Leasehold improvements - at cost	-	502,101
Less: Accumulated amortisation	-	(67,595)
	<u>-</u>	<u>434,506</u>
Leasehold improvements - at 1999-00 valuation	527,101	-
Less: Accumulated amortisation	(121,777)	-
	<u>405,324</u>	<u>-</u>
Total leasehold improvements	<u>405,324</u>	<u>434,506</u>

7B - Plant and equipment

Plant and equipment - at 1999-00 valuation	7,242,663	-
Less: Accumulated depreciation	(5,429,234)	-
	<u>1,813,429</u>	<u>-</u>
Plant and equipment - at cost	532,392	6,869,147
Less: Accumulated depreciation	(19,295)	(3,997,330)
	<u>513,097</u>	<u>2,871,817</u>
Total plant and equipment	<u>2,326,526</u>	<u>2,871,817</u>

The revaluations were at management's valuation and were in accordance with the revaluation policy stated at Note 2. Revaluation increments of \$30,236 for leasehold improvements and \$265,230 for Plant and Equipment were made to the asset revaluation reserve.

7C - Intangibles

Computer software (internally developed) - at cost	38,002	38,002
Less: Accumulated amortisation	(35,806)	(32,956)
Total computer software	<u>2,196</u>	<u>5,046</u>
Trademarks - at cost	3,080	10,395
Less: Accumulated amortisation	(325)	(10,395)
Total trademarks	<u>2,755</u>	<u>-</u>
Total intangibles	<u>4,951</u>	<u>5,046</u>

7D - Analysis of property, plant, equipment and intangibles

TABLE A
Movement summary 1999-00 for all assets irrespective of valuation basis

Item	Leasehold improvements \$	Plant and equipment \$	Intangibles \$	Total \$
Gross Value:				
As at 1 July 1999	502,101	6,869,147	48,397	7,419,645
Assets transferred in	42,746	(42,746)	-	-
Additions	-	615,664	3,080	618,744
Revaluation	(17,746)	1,973,457	-	1,955,711
Sales (Projects)	-	(660,517)	-	(660,517)
Disposals	-	(979,950)	(10,395)	(990,345)
As at 30 June 2000	527,101	7,775,055	41,082	8,343,238
Accumulated Depreciation/ Amortisation:				
As at 1 July 1999	67,595	3,997,330	43,351	4,108,276
Assets transferred in	19,246	(19,246)	-	-
Depreciation charge for:				
- assets at 1 July 1999	82,918	367,568	2,850	453,336
- additions	-	27,120	325	27,445
Adjustment for:				
- revaluations	(47,982)	1,708,229	-	1,660,247
- disposals	-	(632,472)	(10,395)	(642,867)
As at 30 June 2000	121,777	5,448,529	36,131	5,606,437
Net Book Value as at 30 June 2000	405,324	2,326,526	4,951	2,736,801
Net Book Value as at 1 July 1999	434,506	2,871,817	5,046	3,311,369

TABLE B
Summary of balances of assets at valuation as at 30 June 2000

Item	Leasehold improvements \$	Plant and equipment \$	Total \$
As at 30 June 2000			
Gross value	527,101	7,242,663	7,769,764
Accumulated depreciation/amortisation	121,777	5,429,234	5,551,011
Net book value	405,324	1,813,429	2,218,753
As at 30 June 1999			
Gross value	-	-	-
Accumulated depreciation/amortisation	-	-	-
Net book value	-	-	-

	1999-00	1998-99
	\$	\$
<u>7E - Inventories</u>		
All Agency inventories are current assets.		
Inventories not held for sale (cost) - Radiation measuring devices and consumables	1,273,271	1,113,938
Inventories held for sale (cost) - Radiation monitors	46,248	29,649
	1,319,519	1,143,587

7F - Other

Prepayments	73,211	33,629
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Note 8 - Provisions and Payables8A - Employees

Salaries and wages	182,958	15,647
Leave	2,800,593	331,661
Superannuation	28,361	1,966
Aggregate employee entitlement liability	3,011,912	349,274

8B - Suppliers

Trade creditors	761,001	734,945
Operating lease rentals	-	1,584
Total	761,001	736,529

8C - Other

Prepayments received	270,727	1,038,743
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Note 9 – Equity

Item	Accumulated Results		Asset revaluation reserve		Total	
	1999-00 \$	1998-99 \$	1999-00 \$	1998-99 \$	1999-00 \$	1998-99 \$
Opening balance as at 1 July	7,059,237	-	-	-	7,059,237	-
Operating results	(873,886)	7,059,237	-	-	(873,886)	7,059,237
Correction	(86,004)	-	-	-	(86,004)	-
Restructuring	(2,173,545)	-	-	-	(2,173,545)	-
CUC Paid	(263,763)	-	-	-	(263,763)	-
Net revaluation increment/ decrement	-	-	295,466	-	295,466	-
Closing balance as at 30 June	3,662,039	7,059,237	295,466	-	3,957,505	7,059,237

Note 10 - Cash Flow Reconciliation

Reconciliation of operating surplus to net cash from operating activities:	1999-00	5 Feb 1999 to 30 June 1999
	\$	\$
Operating surplus (deficit)	(873,886)	3,067,187
Extraordinary item – restructuring		3,992,050
Net surplus (deficit)	(873,886)	7,059,237
Depreciation/Amortisation	480,781	300,252
Write down of assets	17,602	-
Loss on disposal of non-current assets	347,478	15,102
Property, plant, equipment and intangibles taken on/off	660,517	(2,716,580)
Decrease (increase) in receivables	243,779	(1,313,112)
Increase in accrued revenues	(43,543)	-
Increase in inventories	(175,932)	(1,143,587)
Increase in prepayments	(39,581)	(33,629)
Increase in employee liabilities	2,662,638	349,274
Less employee liability - restructuring	(2,173,545)	-
Less employee liability - correction	(86,004)	-
Increase in suppliers liability	24,472	736,529
Increase (decrease) in other liabilities	(768,018)	1,038,744
Net cash from operating activities	276,758	4,292,230

Net revenues from restructuring

Transfers of assets and liabilities to and from the Agency as a result of restructuring are disclosed in Note 5.

Note 11 Appropriations11A - Agency Appropriations

Annual appropriations for departmental items (price of outputs)

APPROPRIATION ACTS No.1 & 3 1999-00	1999-00
	\$
Balance available at 1 July	-
Section 6 & 12 - Act No 1 - basic appropriation	8,459,000
Section 6 & 12 - Act No 3 - basic appropriation	168,000
Total appropriations available for the year	<u>8,627,000</u>
Expenditures during the year	8,627,000
Balance of appropriation for outputs at 30 June	<u><u>-</u></u>

The whole amount provided under this appropriation was credited to the ARPANSA Special Account.

11B - ARPANSA Special Account

Legal authority – *ARPANS Act 1998 and Financial Management and Accountability Act 1997.*

The purpose of the Special Account is set out in the ARPANS Act at section 56(4):

“The purposes of the Special Account are to make payments:
 (a) to further the object of this Act (as set out in section 3); and
 (b) otherwise in connection with the performance of the CEO’s
 functions under this Act or the regulations.”

	1999-00
	\$
Balance as at 1 July 1999	3,382,086
Add: Receipts from appropriations	8,627,000
Receipts from other sources	<u>5,702,672</u>
	17,711,758
Less: Expenditure in 1999-00	<u>14,953,020</u>
Balance as at 30 June 2000	<u><u>2,758,738</u></u>

ARPANSA’s cash resources are represented by the ARPANSA Official Departmental Account and various deposits held at the Reserve Bank of Australia. The transactions of those bank accounts were wholly contained in the Special Account at 30 June 2000. ARPANSA had full control over those cash resources. These financial statements comply with the full reporting requirements of Schedule 2, rather than just the limited financial statement reporting requirements for Special Accounts.

Note 12 - Reporting by Outcomes

All transactions of ARPANSA fall within Outcome 1 in the Health and Aged Care Portfolio.

	Outcome 1	
	Budget	Actual
Net cost of outputs	9,178,000	9,802,886
Total assets deployed at 30/6/00	3,845,000	8,001,145
Net assets deployed at 30/6/00	1,320,000	3,957,505

Outcomes	Outputs			Total appropriation	Total expenses
	Expenses against revenue from Government (appropriations)	Expense against revenue from other sources	Total expenses against outputs		
	Annual Appropriation Acts				
Outcome 1					
Actual	(1)	(1)	16,090,100	8,627,000	16,090,100
Budget			14,704,000	8,459,000	14,704,400

(1) It is not possible to identify expenses against specific funding sources.

Note 13 - Executive Remuneration

The number of executive officers who receive or were due to receive total remuneration of \$100,000 or more:	1999-00	1998-99 (Estimate)
\$100 000 to \$110 000	-	1
\$110,001 to \$120,000	-	3
\$120,001 to \$130,000	6	2
\$170,001 to \$180,000	-	1
\$180,001 to \$190,000	1	-
The aggregate amount of total remuneration of executive officers shown above:	\$944,710	\$871,000

No executive officers received more than \$100,000 during the 5 months from commencement of ARPANSA, from 5 February 1999 to 30 June 1999. For comparability with other agencies and later years, the 1998-99 column shows the estimated full year remuneration for the complement of executives as at 30 June 1999.

Note 14 - Services provided by the Auditor-General

	1999-00	5 Feb 1999 to 30 June 1999
	\$	\$
Financial statement audit services are provided free of charge to the Agency. The fair value of audit services provided was:	31,000	24,000

No other services were provided by the Auditor-General.

Note 15 - Act of Grace Payments and Waivers

No Act of Grace payments were made during the reporting period. No waivers of amounts owing to the Commonwealth were made pursuant to subsection 34(1) of the *Financial Management and Accountability Act 1997*.

Note 16 - Average Staffing Level

Average staffing level for the Agency in 1999-00 was 115 (96 for 1998-99).

Note 17 - Financial Instruments17A - Terms, conditions and accounting policies

Financial Instrument	Notes	Accounting Policies and Methods (including recognition criteria and measurement basis)	Nature of underlying instrument (including significant terms & conditions affecting the amount, timing and certainty of cash flows)
<i>Financial Assets</i>		Financial assets are recognised when control over future economic benefits is established and the amount of the benefit can be reliably measured.	
Cash	2.9, 10	Deposits are recognised at their nominal amounts.	The Agency invests funds and operates a Departmental current account with the Reserve Bank of Australia. The average interest rate earned was 5.5%
Receivables	6A	These receivables are recognised at the nominal amounts due less any provision for bad and doubtful debts. Collectability of debts is reviewed at balance date. Provisions are made when collection of the debt is judged to be less rather than more likely.	Receivables are with entities both internal and external to the Commonwealth.
Accrued revenue	6B	Interest is credited to revenue as it accrues. Interest is payable quarterly on current account and on maturity of investments.	As for Cash.
<i>Financial liabilities</i>		Financial liabilities are recognised when a present obligation to another party is entered into and the amount of the liability can be reliably measured.	
Trade creditors	8B	Creditors and accruals are recognised at their nominal amounts, being the amounts at which the liabilities will be settled. Liabilities are recognised to the extent that the goods or services have been received (and irrespective of having been invoiced).	Creditors are entities that are both internal and external to the Commonwealth. Settlement is usually made net 30 days.

17B - Interest Rate Risk

Financial Instrument	Notes	Floating Interest Rate		Non Interest Bearing		Total		Weighted Average Effective Interest Rate	
		99-00	98-99	99-00	98-99	99-00	98-99	99-00	98-99

Financial Assets									
Cash	2.9, 10	2,758,738	3,382,086	-	-	2,758,738	3,382,086	5.5%	n/a
Receivables	6A	-	-	1,069,333	1,313,112	1,069,333	1,313,112	n/a	n/a
Accrued revenue	6B	-	-	43,543	-	43,543	-	n/a	n/a
Total Financial Assets (recognised)		2,758,738	3,382,086	1,112,876	1,313,112	3,871,614	4,695,198	n/a	n/a

Financial Liabilities									
Trade Creditors	8B	-	-	761,001	736,529	761,001	736,529	n/a	n/a
Total Financial Liabilities (recognised)		-	-	761,001	736,529	761,001	736,529	n/a	n/a

17C - Net Fair Values of Financial Assets and Liabilities*Financial assets*

The net fair values of cash, receivables and accrued revenues approximate their carrying amounts.

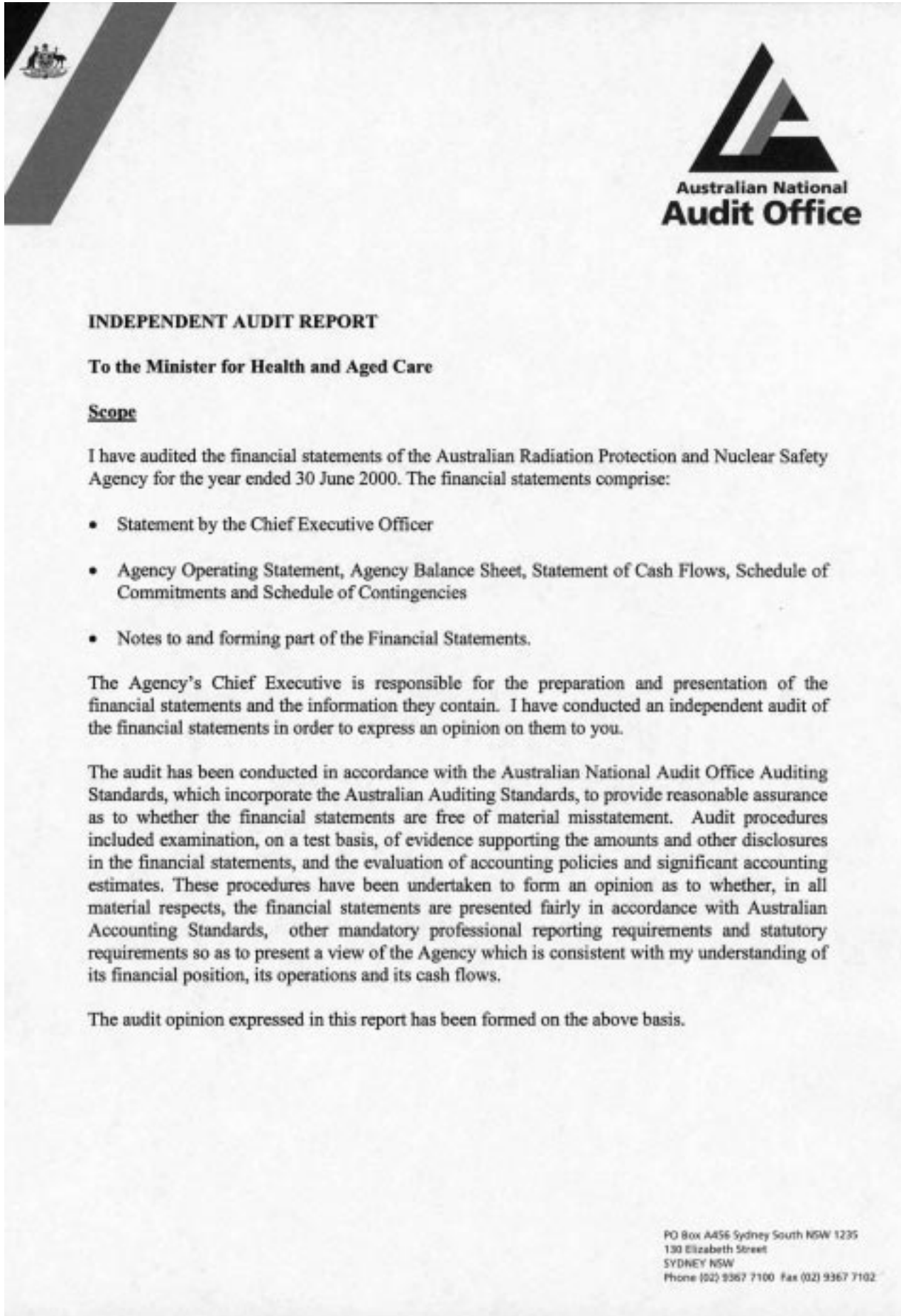
Financial liabilities

The net fair values for trade creditors are approximated by their carrying amounts.

17D - Credit Risk Exposures

The Agency's maximum exposures to credit risk at reporting date in relation to each class of recognised financial assets is the carrying amount of those assets as indicated in the Balance Sheet.

The Agency has no significant exposures to any concentrations of credit risk. All figures for credit risk referred to do not take into account the value of any collateral or other security.




Audit Opinion

In my opinion,

- (i) the financial statements have been prepared in accordance with Schedule 2 of the Finance Minister's Orders
- (ii) the financial statements give a true and fair view, in accordance with applicable Accounting Standards, other mandatory professional reporting requirements and Schedule 2 of the Finance Minister's Orders, of the financial position of the Australian Radiation Protection and Nuclear Safety Agency as at 30 June 2000 and the results of its operations and its cash flows for the year then ended.

Australian National Audit Office



P Hinchey
Senior Director

Delegate of the Auditor-General
Sydney
15 August 2000

REVIEW OF ANSTO NUCLEAR PLANT

ADOPTION OF THE INTERNATIONAL NUCLEAR EVENT SCALE

In 1998 Australia became the 60th country participating in the International Nuclear Event Scale (INES), with ANSTO adopting the scale for reporting events at its reactors. The primary purpose is to facilitate communication between the nuclear community, the media and the public, in relation to events at nuclear installations. The Scale ranges from Level 0, for events of no safety significance, to Level 7 for major accidents, such as happened in 1986 at Chernobyl. Level 1 to Level 3 events are termed 'incidents' while those events at Level 4 and above are termed 'accidents'.

In response to a request from ARPANSA and ANSTO, the IAEA Division of Nuclear Installation Safety held a three-day training seminar, in Sydney, during June, on the application of the Scale. Previous incidents at ANSTO were reviewed, and root cause analysis methodology was discussed.

HIFAR

Unusual Operating Events

Abnormal operational occurrences at the HIFAR reactor must be reported to ARPANSA by ANSTO, together with the assigned INES level for each occurrence. These are reviewed by ARPANSA. During the 1999-2000 reporting period there were a total of twenty abnormal occurrences at HIFAR compared to twenty-one during the previous year. The numbers of events assigned each INES level are shown in Table A1.

Table A1: INES Levels Assigned to HIFAR Abnormal Occurrences

INES Level*	1999-2000	1998-1999
1	1	0
0	19	21
Total	20	21

* Level 0 - of no safety significance
Level 1 - anomalies beyond the authorised operating regime

It should be noted that the reactor was shut down from 7 February to 3 May 2000 for major inspections and maintenance, with the fuel unloaded to the storage block in the containment building for most of that period.

As shown in Table A2 below, the largest category of abnormal occurrences was equipment fault, which is to be expected in an aging plant, and these were all Level 0, *i.e.* of no safety significance. The number of human-factors-related abnormal occurrences, one of which was assigned Level 1 on the INES, *i.e.* an

anomaly beyond the authorised operating regime, was greater than in 1998-1999. The INES Level of one of the human-factors-related abnormal occurrences was increased from Level 0 to 1, in accordance with the IAEA's INES Users' Manual, due to inadequacy of related procedures.

Table A2: HIFAR Abnormal Occurrences - Breakdown by Type

Occurrence Type	1999-2000	1998-1999
Equipment Fault	11	16
Human Factors Related	9	5
Total	20	21

Training and Accreditation of Operating Staff

Appropriate training and periodic retraining of reactor operations and maintenance personnel is essential for the safe operation of nuclear plant. Reactor operations staff must also undergo formal accreditation and periodic re-accreditation to be authorised to perform their duties. ARPANSA closely monitors, and may observe, these processes. During the year ARPANSA officers attended accreditation panels for two HIFAR operations staff. ARPANSA was satisfied that an appropriate standard was maintained.

Y2K Compliance

ARPANSA reviewed and agreed to the planned arrangements and contingency actions detailed by ANSTO to minimise the effect of Y2K. The HIFAR reactor was shut down shortly before mid-night and was returned to power at approximately 0020 hours 1 January 2000. No loss of safety functions or services was experienced.

ARPANSA arranged for HIFAR Management to have read/write access to the Nuclear Energy Agency Y2K Early Warning System database. This database was used by countries possessing nuclear power plants or research reactors to provide on-line updates on the status of their plants during the New Year rollover.

Major Shutdown

The CEO of ARPANSA requires the HIFAR reactor to be shut down every four years for extended periods to allow inspection, maintenance, and modifications of important components and systems not accessible during the routine four-day shut down period each month. ARPANSA staff reviewed and agreed the program of work proposed by HIFAR Management for the major shutdown conducted from 7 February until 28 May 2000.

Regulatory officers carried out numerous inspections during this time and ARPANSA's Reactor Physicist was attached for the duration the reactor start-up tests and rise to power following the shut down. ARPANSA reviewed and agreed to a number of modifications to safety plant and equipment. These included upgrading of systems used to monitor reactor parameters during various situations and the refurbishment of parts of the reactor containment system.

A preliminary report documenting the activities undertaken during the shutdown was received on 28 April. The report confirmed the excellent condition of the internal surfaces of the reactor aluminium tank and that the reactor was in a suitable condition for continued service. In early May, the CEO of ARPANSA gave agreement to recommence operation. ARPANSA requested additional information on a number of matters. These are to be provided by ANSTO in the final shutdown report expected by November 2000.

The next major shutdown is scheduled for April 2004.

Modifications and Maintenance

Safety-related modifications to HIFAR are subject to ARPANSA agreement. ANSTO categorises all modifications in accordance with their potential for impact on reactor safety. The greater the potential to impact on safety, the more stringent the procedures for executing the modification. The safety category ANSTO assigns to each modification is routinely reviewed by ARPANSA. Category 1 safety-related modifications to HIFAR are subject to a prior ARPANSA agreement through a staged approval process.

ARPANSA reviewed and agreed a large number of modifications during the year, including those made during the HIFAR major shutdown. Most of these required safety submissions to be sent to ARPANSA for review and approval, prior to their commencement, and during the various stages of manufacture and installation.

ARPANSA agreed to amendments to items in the Authorisation – HIFAR Operation dealing with modifications to reactor plant and irradiations and experiments. These amendments specified alterations to the approval processes mentioned above.

Follow-up on Fuel Handling Incidents

In response to a request by ARPANSA, ANSTO reported a root cause analysis of the three spent fuel-handling incidents that occurred in 1998 and 1999. ARPANSA agreed with the recommendations of the report and requested a plan and schedule for their implementation. A plan and schedule has been received and is being reviewed the Agency.

A submission was received from ANSTO concerning the modifications to the general purpose flask, which were made as a corrective action following the

three incidents referred to above involving the flask during fuel handling. ARPANSA reviewed the submission and other documentation, and also witnessed the successful operation of the modified general purpose flask. Agreement, subject to a number of conditions, was given to use the flask for the handling of HIFAR spent fuel and its shipment off-site later in the year.

Spent Fuel Handling Flask

During the year a submission from ANSTO for use of a flask to transfer spent fuel between on-site buildings, as part of ongoing fuel handling activities, was reviewed by ARPANSA. Agreement was given for use of the flask.

Shipment of Irradiated Fuel

ARPANSA is the Competent Authority for the inland surface transport of radioactive material undertaken by, or on behalf of, the Commonwealth. In preparation for ANSTO's shipment in November 1999 of HIFAR spent fuel to France, ARPANSA, issued revalidations of foreign transport package approval certificates for two fissile material package designs. Revalidation of fissile material package certificates by the local Competent Authority is a requirement of the Australian Code for the Safe Transport of Radioactive Substances 1990. In November 1999, 308 irradiated HIFAR fuel elements were shipped in four transport casks from the Lucas Heights Science and Technology Centre (LHSTC) via Port Botany to the Cogema nuclear fuel reprocessing plant at La Hague in France.

Nuclear Materials Vault and Store

Following a meeting held between ANSTO and ARPANSA officers in June 1999 to resolve outstanding issues relating to the safety of the Nuclear Materials Vault and Store, ANSTO informed the Regulatory Branch of new arrangements relating to this facility. These included transfer of responsibility for the vault and store to Nuclear Technology Division, installation of new particulate filters and air monitoring for the building ventilation, revision of the safety case, and documentation for operation and maintenance of the vault and store to be provided as part of the facility licence application.

ANSTO RADIOACTIVE DISCHARGES TO THE ENVIRONMENT

Airborne Radioactive Discharges

The HIFAR airborne discharge authorisation requires ANSTO to undertake investigations and remedial actions as soon as practicable and to notify ARPANSA if the discharges exceed specified monthly, quarterly or annual levels. These notification levels are based on the requirement that airborne radioactive discharges, and thus the consequent radiation doses to members of the public, be low as reasonably achievable (ALARA).

ARPANSA reviews the discharges reported by ANSTO, and independently verifies the measurements and inspects the monitoring equipment. Quantities of airborne radioactive discharges from HIFAR as reported by ANSTO are given in Table A3.

Table A3: Airborne Radioactive Discharges from HIFAR

Year	Ar-41 (Bq)	H-3 (Bq)	I-131 (Bq)	Gross Beta ^(a) (Bq)
1998-1999	1.6 x 10 ¹⁴	2.6 x 10 ¹²	11.4 x 10 ⁶	3.4 x 10 ⁶
1999-2000	0.9 x 10 ¹⁴	12.8 x 10 ¹² (b)	4 x 10 ⁶	2.2 x 10 ⁵

(a) Assessed as all strontium-90

(b) This discharge includes a major shutdown which involves a greater release of tritium (H-3)

It is concluded that airborne radioactive discharges from HIFAR are within the notification levels specified in the airborne discharge authorisation issued by ARPANSA.

An airborne discharge authorisation for the entire Lucas Heights Science and Technology Centre is being developed by ARPANSA. This will include the discharges from HIFAR, radiopharmaceutical production and the rest of the ANSTO site. Another discharge authorisation is being developed for the ANSTO National Medical Cyclotron (NMC) at Camperdown.

Liquid Discharges

Liquid discharges from the Lucas Heights site are authorised by Sydney Water under a Trade Waste Agreement, which specifies limits on the concentration of radioactive materials in the effluent at the Cronulla Sewerage Discharge Plant. The concentrations are based on the World Health Organisation's *Guidelines for Drinking Water Quality (1993)*, assuming the consumption of 700 litres of the water each year. ARPANSA reviewed the Trade Waste Agreement and concluded that it provides adequate radiation protection of sewerage workers and the public.

The concentrations of radioactivity in liquid discharges from the site for the year

were within the discharge limits, as shown in Table A4. Groups of unspecified radionuclides are assessed against the limits for the most restrictive radionuclides. ANSTO's measurements of the radioactivity in the liquid discharges were verified by independent ARPANSA measurements.

Table A4: Liquid Radioactive Discharges from the ANSTO Site

Year	Unspecified Alpha Emitters (a) (MBq)	Unspecified Beta Emitters (b) (MBq)	Tritium (GBq)	% of WHO Concentration Limits
1998-1999	89	974	382	18
1999-2000	64	1136	950 ^(c)	22.5

(a) Assessed as all radium-226
(b) Assessed as all strontium-90
(c) This discharge includes a major shutdown, which involves a greater release of tritium (H-3)

It is concluded that liquid radioactive discharges from the Lucas Heights Science and Technology Centre for 1998-99 complied with the Trade Waste Agreement between Sydney Water and ANSTO.

Radiation Protection at ANSTO Facilities

ARPANSA requires ANSTO to have in place adequate arrangements to ensure that radiation doses to operating personnel and the public both on-site and off-site do not exceed the appropriate limits for individuals as recommended by the NHMRC. Additionally, doses are to be kept as low as reasonably achievable in accordance with procedures recommended by the International Commission on Radiological Protection (ICRP), and within dose constraints set for each source of exposure.

In line with ICRP Publication 60, the NHMRC's recommended radiation dose limit for the public is 1mSv per year. For occupational exposures, the dose limit is 20 mSv per year averaged over five consecutive years and not exceeding 50 mSv in any one year.

A dose constraint of 100 μ Sv per year to the public has been set by ANSTO for each facility that discharges radioactive material from the ANSTO to a maximum of 300 μ Sv for the whole of the ANSTO site. This is to ensure that the NHMRC individual public dose limit will not be exceeded when additional exposures from other sources or practices are added, and to promote good management. ANSTO has adopted a dose constraint of 15 mSv per year for occupationally exposed workers and an investigation level of 1 mSv per month. Recorded doses above the investigation level will initiate a documented investigation and follow up action to reduce radiological exposure, where applicable.

Additionally, an ANSTO Safety Directive sets policy and processes for ensuring that radiation exposures are as low as reasonably achievable, and specifies an ALARA dose objective of 20 μ Sv per year for the public. For radiation workers

the objective has been set at 2 mSv per year. Below these levels, it is not considered necessary to demonstrate that the doses are as low as reasonably achievable. ARPANSA considers that the policy is consistent with national and international standards and best practice.

ANSTO has provided information on the doses to staff within the Divisions that operate nuclear installations at the LHSTC and at the NMC. Information on all of the staff at the site, as a single group, has been provided by ANSTO. These doses are summarised in Table A5.

Table A5: Radiation Doses Received by ANSTO Staff

	Radiopharmaceuticals		Nuclear Technology	Total Site
	(LHSTC)	(NMC)		
	1998-1999 (1999-2000)	1998-1999 (1999-2000)	1998-1999 (1999-2000)	1998-1999 (1999-2000)
<2 mSv	65 (61)	18 (21)	82 (82)	669 (672)
2-5 mSv	16 (19)	7 (12)	37 (37)	67 (75)
5-10 mSv	19 (19)	5 (2)	1 (2)	26 (24)
10-15 mSv	0 (1)	0 (0)	0 (0)	0 (1)
15-20 mSv	0 (0)	0 (0)	0 (0)	0 (0)
>20 mSv	0 (0)	0 (0)	0 (0)	0 (0)
No. of Staff	100 (100)	30 (35)	120 (121)	762 (772)
Average Dose (mSv)	2.1 (2.4)	2.4 (2.0)	1.5 (1.9)	0.8 (1.0)
Collective Dose (person-mSv)	208 (242)	73 (70)	178 (227)	617(754)

No person at the ANSTO site received a dose above the dose constraint or National or International limits during the period. This compares to the previous period where one person received an extremity dose above the limit specified by the NHMRC. Over the whole site, 93 (12%) of personnel received a dose greater than the ALARA objective, compared to 100 (13%) in the previous year.

Radiation Dose from ANSTO's Radioactive Discharges

Airborne radiation doses to the public were calculated by ANSTO using PC-CREAM. This code was developed by the United Kingdom National Radiation Protection Board under a contract for the European Commission. The doses calculated are based on measured routine airborne radioactive discharges and measured weather conditions. ANSTO reported that the maximum dose to the public corresponding to the airborne radioactive discharges from HIFAR for 1999-2000 (1998-1999) was 3.5 μ Sv (5.6 μ Sv). Doses resulting from liquid discharges into the sewage system were negligible. The maximum dose to the public from all sources of discharges from the ANSTO site was calculated to be 7.3 μ Sv for a permanent resident at the Stevens Hall Motel (at the site gate) and less than 2 μ Sv for the nearest resident.

Radiation doses to staff and the public due to radioactive discharges are well within the annual limits recommended by the NHMRC, a fraction of the dose constraints adopted by ANSTO and, for the public, less than ANSTO's ALARA objective, and close to the objective for operators.

MOATA RESEARCH REACTOR

Moata is a university training reactor of the 'Argonaut' type. It commenced operation in 1961 and operated at thermal powers of up to 100 kilowatts until mid-1995 when it was permanently closed down. The irradiated reactor fuel has been unloaded and is temporarily stored adjacent to the reactor, awaiting return to the United States. No abnormal occurrences were reported at Moata during the year.

Moata is the first nuclear reactor in Australia to enter the decommissioning phase of its life. During the year, ARPANSA received the Moata Decommissioning Licence Application and supporting documentation for ongoing care and maintenance. A schedule and options for final decommissioning of the facility are being examined by ANSTO. An ANSTO Engineering Officer visited America to witness a similar facility being decommissioned to a green field site.

CONSULTANTS

ARPANSA engages consultants where specialist skills or expertise is required or where internal resources are unavailable. Consultants are engaged when:

- the expertise required is not available within the Agency or is not readily available from another Commonwealth Agency;
- there is a degree of urgency which cannot be accommodated without disruption to other high priority work; or
- there is a need for an independent view or for information.

ARPANSA engaged consultants during the reporting period for the following projects:

<u>Amount</u>	<u>Description</u>
\$	
4,511.60	Corporate administration
720.00	VMS consultancy
14,950.00	Administration review
54,655.97	Accounting services and GST
31,831.07	Activity based costing
1,830.00	Seismicity matters in the Sydney basin
31,498.50	Technical assessment and preparation of regulation guidelines
101,200.00	Review of staffing in administration, IT systems including Y2K
12,612.00	Media monitoring services
18,189.75	Legal services
25,292.00	Legal advice
21,612.00	Legal advice
19,200.00	Quality assurance accreditation project

PURCHASING

The Agency procures goods and services in performing its functions. All transactions are in accordance with the *Commonwealth Procurement Guidelines* and on normal terms and conditions.

OCCUPATIONAL HEALTH AND SAFETY

POLICY

ARPANSA aims to ensure a safe and healthy working environment for all staff and to fulfil its responsibility under the *Occupational Health and Safety (Commonwealth Employment) Act 1991 (OHS(CE) Act)*. A draft ARPANSA Occupational Health and Safety (OHS) policy is being developed, which will enable effective cooperation between management and staff and their representatives, including unions on OHS matters. The ARPANSA Agreement identifies the responsibilities of staff for workplace health and safety and lists some initiatives available to them to improve injury prevention. An OHS agreement will be negotiated with the unions.

Elections were held in June 2000 for an OHS representative and deputy representative for the period 2000-2002 for each of the three designated work groups (two groups at the Yallambie site and one at the Miranda site).

The OHS Committee meets every two months. Following each meeting a work area of ARPANSA is inspected for any safety deficiencies. Reinspection is conducted after two months and the corrective action taken is reported. The minutes of these meetings and the inspection reports are reviewed by the ARPANSA Executive.

ACCIDENTS AND INCIDENTS

During the year:

- no notices were issued under section 29 of the *OHS(CE) Act*; and
- no directions were given under sections 45, 46 and 47.

Section 68 of the *OHS(CE) Act* requires employers to notify and report certain incidents to Comcare. Comcare was notified of one occupational hazard and injury report relating to an accident at Yallambie. The accident did not involve radiation. The OHS Committee appointed an internal team to:

- conduct an investigation of the circumstances of this accident;
- review safety; and
- make recommendations on measures to improve and ensure safety.

The review team made a number of recommendations, which were presented to the ARPANSA Executive.

Six other occupational hazard and injury reports were made. Two of these incidents occurred off site.

RADIATION PROTECTION

Personal monitoring reports for ARPANSA staff indicate that the annual occupational doses received are mostly zero and rarely exceed the public exposure limit of 1 mSv. The personal doses have continued to decline steadily.

It is the practice at ARPANSA to ensure that doses remain as low as reasonably achievable. This is achieved by checking personal monitoring reports and investigating the reason for any abnormal result in the normal exposure pattern for staff.

GOVERNMENT CLIENT SERVICE INITIATIVES

CUSTOMER SERVICE STANDARDS

ARPANSA received no complaints in respect of its operations within the reporting period.

ARPANSA's commitment to improving the responsiveness and quality of its scientific services is demonstrated by its progress towards quality systems accreditation by NATA for a range of these services. The development of quality systems will improve communication between the Agency and the client, ensure that the services efficiently address the needs of the client, enhance accountability through regular monitoring and review of performance against agreed standards and provide a system for dealing with client complaints. This initiative is consistent with the Government's agreed framework for developing a service charter and echoes the values espoused in the corporate plan for the Agency. The recently revised *Client Service Charter Principles* will form the basis of a formal charter to be developed in consultation with staff, clients and stakeholders.

GOVERNMENT ONLINE POLICY

In 1997 the Prime Minister stated that all appropriate Government services would be provided online by 2001. ARPANSA through the aegis of the Department of Health and Aged Care and within the constraints of the small size of the Agency has complied with the initial stages of this policy. The ARPANSA website complies with:

- accessibility requirements for the handicapped ;
- Australian Government Locator Service metadata standards are applied to the website;
- *Australian Privacy Commission Guidelines*; and
- security requirements.

ARPANSA is currently formulating a strategic plan to enable implementation of the Government Online policy over the coming 12 months. This plan will be made available on the ARPANSA website.

FREEDOM OF INFORMATION

In compliance with Section 8 of the *Freedom of Information Act 1982*, the following information is the annual statement on consultative arrangements, categories of documents maintained and facilities and procedures for access to documents relating to ARPANSA.

The ARPANS legislation provides a licensing framework for the regulation of radiation sources and nuclear and other facilities controlled or operated by Commonwealth agencies and establishes and sets out the functions of the CEO of ARPANSA. In relation to Commonwealth entities the CEO can make a decision, in respect of a controlled source or controlled facility, to:

- issue;
- refuse to grant;
- impose conditions on;
- suspend;
- cancel;
- amend; and
- not approve the surrender of a source or facility licence.

ARRANGEMENTS FOR PARTICIPATION

Community

Quarterly and annual reports, and relevant technical reports of the Agency are provided to the Sutherland Shire Council and other libraries and to community groups. Comments are sought on the Agency's safety processes and positions.

An information officer is available to address requests from the public for information concerning radiation protection, nuclear safety and regulation. Information brochures on particular topics are also available on request, free of charge.

State Government Arrangements

In addition to the Radiation Health Committee, on which all States and Territories are represented, the Agency supports and contributes to regular meetings of a forum of radiation regulatory authorities that was established during the year, and an officer of ARPANSA is a member of the Radiological Advisory Council of Victoria. Reports and documents of ARPANSA are regularly forwarded to State and Territory regulatory authorities for review and comment. As members of the Visiting Ships Panel (Nuclear), ARPANSA officers liaise with State Government departments responsible for safety in conjunction with nuclear powered warship visits to Australia.

Commonwealth Government Arrangements

ARPANSA communicates with other Commonwealth Government Departments and Agencies as required.

CATEGORIES OF DOCUMENTS HELD

Available on Request

Copies of the quarterly and annual reports and technical reports of ARPANSA.

Documents Related to the Decision-Making Process

- Ministerial correspondence;
- determinations and directions;
- memoranda and decisions;
- deeds;
- legal contracts and formal arrangements;
- minutes and submissions; and
- employment, delegations, security, finance and accounting manuals.

General Correspondence

- Ministerial briefs;
- speeches;
- conference papers for national and international meetings;
- Parliamentary questions and answers;
- facsimiles, electronic messages; and
- general records files.

Technical Documents

- scientific and technical reports;
- computer disks and printouts;
- plant and equipment operating manuals;
- records of audits, inspections and reviews;
- maintenance, quality assurance and safety manuals;
- accounting records; and
- photographs.

Health And Safety Related Documents

- accident reports as applicable; and
- emergency response procedures.

Administration Documents

- organisation and establishment reports;
- staff lists and classifications;
- accounting, payroll, attendance and overtime records;
- contract documents;
- building plans;
- instructions, directives and orders;
- memoranda; and
- bulletins and notices.

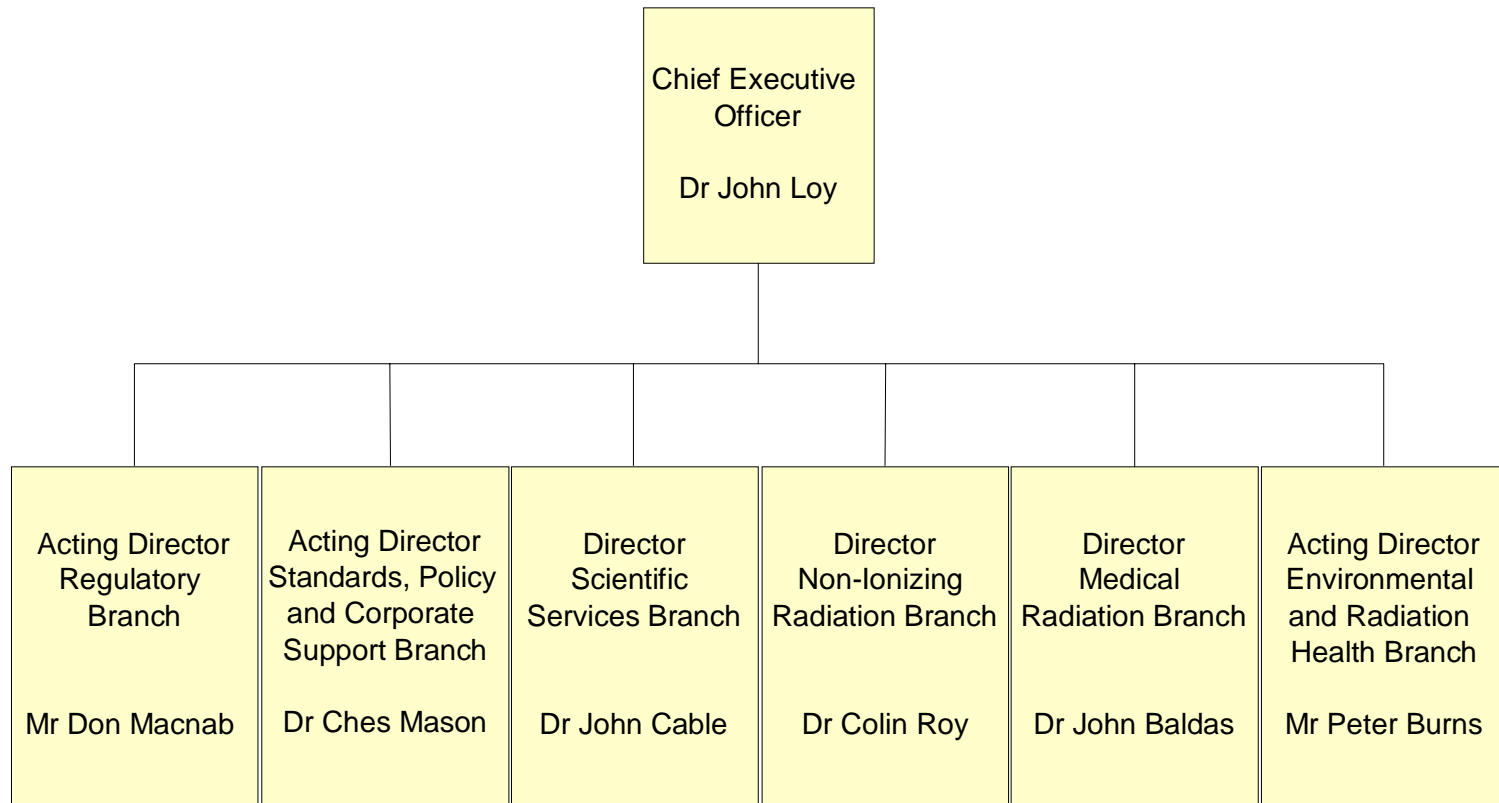
FACILITIES FOR ACCESS

Arrangements for access can be made by contacting the Freedom of Information Coordinator, ARPANSA, PO Box 655, Miranda, NSW 1490 or by email to arpansa@health.gov.au.

Information about ARPANSA is available on the Internet through the Agency's homepage at <http://www.arpansa.gov.au> or from the ARPANSA information officer (Telephone 03 9433 2211).

ORGANISATION CHART

Fig A1: ARPANSA Structure Showing the Responsibilities of the Senior Executives



RESOURCE SUMMARY FOR ARPANSA'S CONTRIBUTION TO PORTFOLIO OUTCOME 1

The following table shows ARPANSA's total resources for its contribution to Portfolio Outcome 1, including revenue from Government (Appropriation) for output, and the total price of the output. The information in the table reconciles with the *Appropriation Acts* and the financial statements.

Table A6: Resources for ARPANSA's Contribution to Portfolio Outcome 1 – Population Health and Safety

Outcome 1 - Population Health and Safety: Protection and promotion of the health of all Australians and minimisation of the incidence and severity of preventable mortality, illness, injury and disability

	(1) Budget* 1999-2000 \$'000	(2) Actual expenses 1999-2000 \$'000	Variation (column 2 minus column 1)	Budget** 2000-2001 \$'000
Administered Expenses (including third party outputs)	NIL	NIL	NIL	NIL
Total Administered Expenses	NIL	NIL	NIL	NIL
Price of ARPANSA Output: Protection of the health and safety of people, and of the environment from the harmful effects of radiation				
Revenue from Government (Appropriation) for ARPANSA Output	8,459	8,627	168	8,916
Revenue from other Sources	6,245	7,363	1,118	6,075
Total Price of Output	14,704	16,090	1,286	14,991
TOTAL FOR OUTCOME 1 (Total Price of Outputs and Administered Expenses)	14,704	16,090	1,286	14,991

	1999-2000	2000-2001
Average Staffing Level	115	130

* Full-year budget, including additional estimates

** Budget prior to additional estimates

Abbreviations

AHMC	Australian Health Ministers' Conference
ALARA	as low as reasonably achievable
ANSTO	Australian Nuclear Science and Technology Organisation
APDS	ARPANSA Performance Development System
<i>ARPANS Act</i>	<i>Australian Radiation Protection and Nuclear Safety Act 1998</i>
ARPANSA	Australian Radiation Protection and Nuclear Safety Agency
APS	Australian Public Service
BIPM	International Bureau of Weights and Measures
CDMA	code division multiple access
CEO	Chief Executive Officer
COAG	Council of Australian Governments
Council, the	Radiation Health and Safety Advisory Council
CSIRO	Commonwealth Scientific and Industrial Research Organisation
CT	computed tomography
CTBTO	Comprehensive Nuclear-Test- Ban Treaty Organisation
DDP	Document Development Plan
DISR	Department of Industry, Science and Resources
EMR	electro-magnetic radiation
GSM	Global Monitoring System for mobile communication
GST	Goods and Services Tax
HIFAR	high flux Australian reactor
IAEA	International Atomic Energy Agency
ICNIRP	International Commission on Non-Ionizing Radiation Protection
ICRP	International Commission on Radiological Protection
IMS	International Monitoring System
INES	International Nuclear Event Scale
LHSTC	Lucas Heights Science Technology Centre
mSv	millisievert - one thousandth of a sievert
NATA	National Association of Testing Authorities
NCP	National Competition Policy
NHMRC	National Health and Medical Research Council
NINT	Northwest Institute of Nuclear Technology
NMC	National Medical Cyclotron
NSC	Nuclear Safety Committee
NUIP(RC)	National Uniformity Implementation Panel (Radiation Control)
OHS	Occupational Health and Safety
<i>OHS (CE) Act</i>	<i>Occupational Health and Safety (Commonwealth Employment Act 1991)</i>
PC	personal computer
PRMS	Personal Radiation Monitoring Service
PTS	Provisional Technical Secretariat
RF	radiofrequency
SAP	<i>Safety Assessment Principles for Controlled Facilities</i>
UPF	ultraviolet protection factor
UV	ultraviolet
UVR	ultraviolet radiation
Y2K	Year 2000
µSv	microsievert - one millionth of a sievert

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